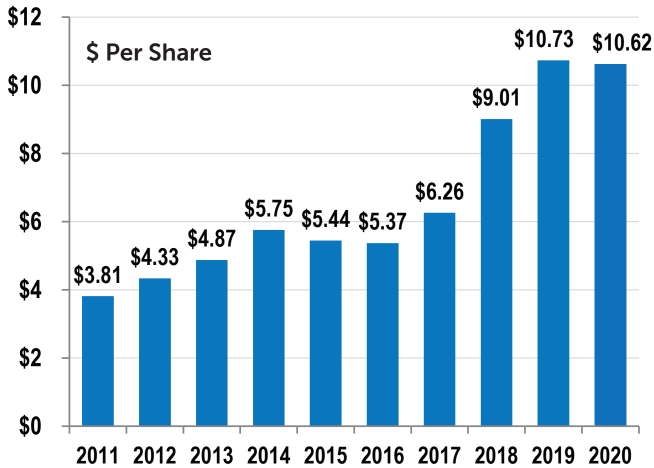
TELEDYNE TECHNOLOGIES
Everywhereyoulook™

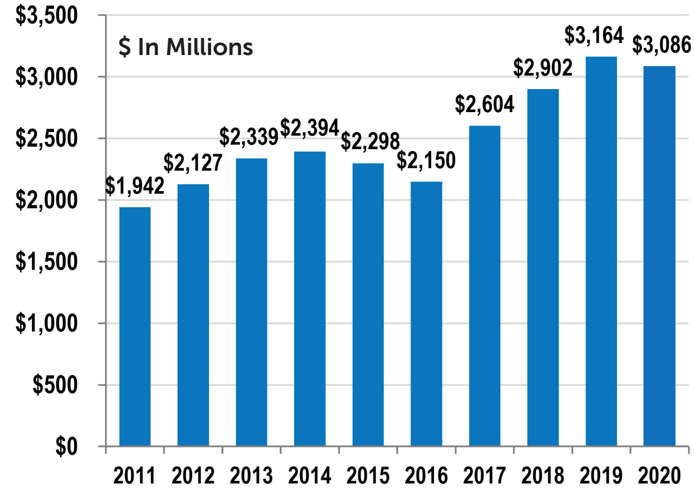
2020
Annual Report

Innovative and Disciplined

GAAP EPS[a]



Sales



(a) Represents total GAAP earnings per diluted share for 2013 through 2020 and GAAP EPS from continuing operations for 2011 and 2012.

Financial Highlights

Selected Consolidated Financial Data

(In millions, except per share data)

Summary Financial Information

	2020	2019	2018	2017	2016
Sales	$3,086.2	$3,163.6	$2,901.8	$2,603.8	$2,149.9
Net income	401.9	402.3	333.8	227.2	190.9
Diluted earnings per common share	10.62	10.73	9.01	6.26	5.37
Weighted average diluted common shares outstanding	37.9	37.5	37.0	36.3	35.5

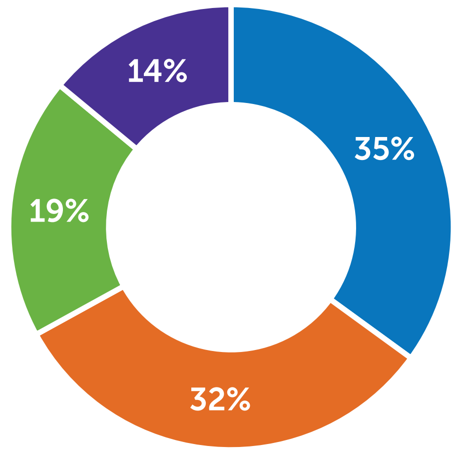
Summary Balance Sheet Data

	2020	2019	2018	2017	2016
Cash and cash equivalents	$673.1	$199.5	$142.5	$70.9	$98.6
Total assets	5,084.8	4,579.8	3,809.3	3,846.4	2,774.4
Long-term debt	680.9	750.0	610.1	1,063.9	509.7
Total equity	3,228.6	2,714.7	2,229.7	1,947.3	1,554.4

See "Management's Discussion and Analysis of Financial Condition and Results of Operations" and the "Notes to Consolidated Financial Statements" in the 2020 Form 10-K for additional information regarding Teledyne Technologies Incorporated's financial data.

2020 Sales by Segment

- **Instrumentation**
  Test and measurement, monitoring and control instrumentation, and power and communications connectivity devices for marine, environmental, electronics and other applications
- **Digital Imaging**
  High performance sensors, cameras and systems within the visible, infrared, ultraviolet and X-ray spectra, used in industrial, government and medical applications
- **Aerospace and Defense Electronics**
  Sophisticated electronic components, subsystems and communications products, including defense electronics, commercial avionics and harsh environment interconnects
- **Engineered Systems**
  Innovative systems engineering, manufacturing and specialized products for government, space, energy and industrial customers

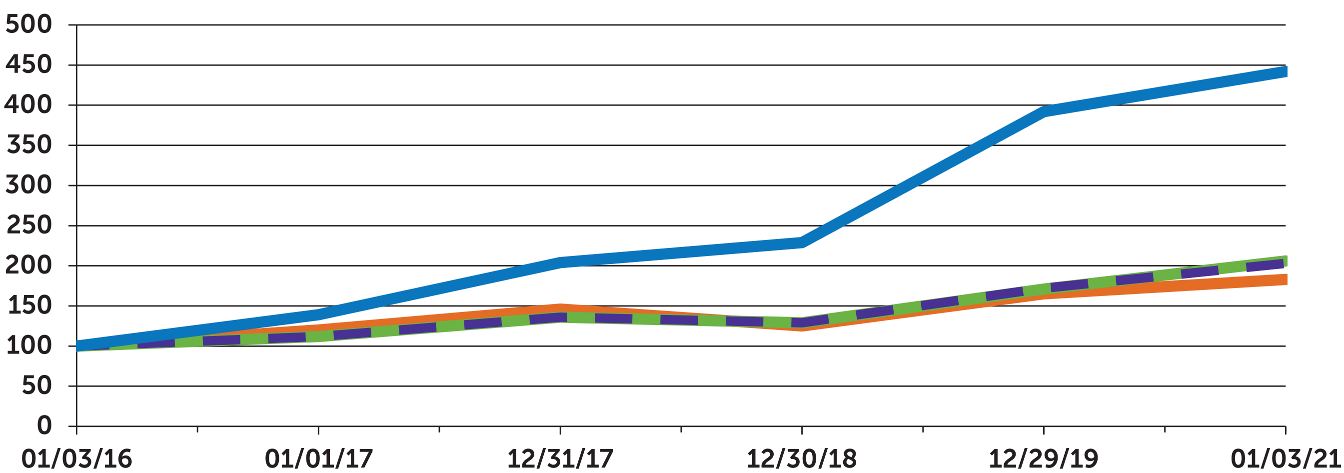


Cumulative Total Stockholder Return

The graph set forth below shows the cumulative total stockholder return (i.e. price change plus reinvestment of dividends) on our common stock for the five fiscal years ending January 3, 2021, as compared to the Standard & Poor's 1500 Industrials, the Russell 1000 Index and the Standard & Poor's 500 Composite.

The graph assumes $100 was invested on December 31, 2015.

In accordance with the rules of the SEC, this presentation is not incorporated by reference into any of our registration statements under the Securities Act of 1933.



	01/03/16	01/01/17	12/31/17	12/30/18	12/29/19	01/03/21
Teledyne Technologies	100	139	204	229	392	442
S&P 1500 Industrials	100	120	146	125	165	183
Russell 1000	100	112	136	129	171	206
S&P 500 Composite	100	112	136	129	172	203

Improving the Health of People, Places, and the Planet.

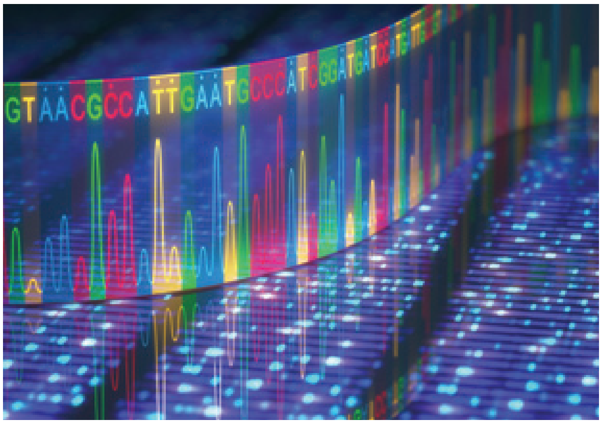
Teledyne provides innovative products and services that people rely on in their daily lives, in good times and in bad.

Continuing themes detailed in the 2018 and 2019 Annual Reports, this year we'd like to address the unprecedented set of challenges the world faced in 2020. Record-setting hurricanes, fires, floods, and a global pandemic all challenged the very core of our way of life. As an Essential Business, Teledyne has been here, working around the clock, in order to meet those challenges today, and into the future.

We have previously written about our enabling technologies for many essential applications including water and air quality, toxic gas detection, hurricane forecasting, earth observation from space, transportation safety, infrastructure inspection, and national security.

But did you know that our technologies also enable human health applications ranging from scientific research to clinical therapies and public health?

Research and Development

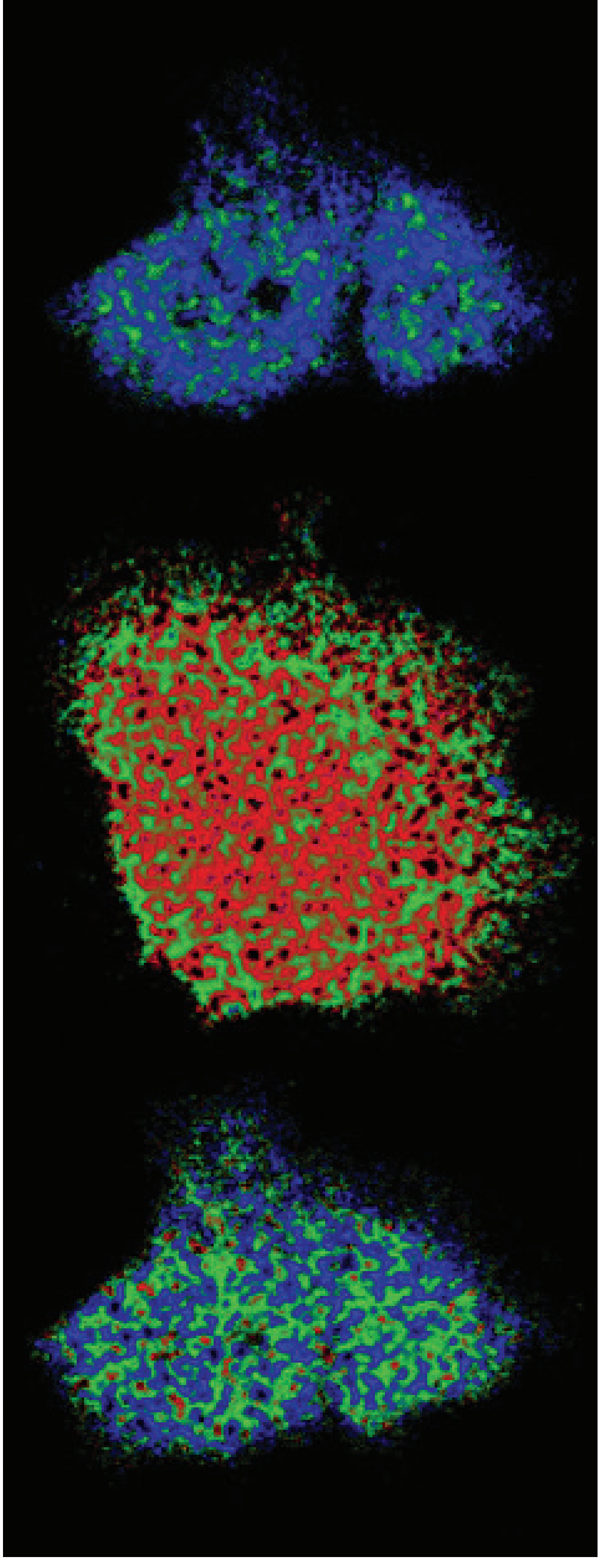


Enabling Rapid, Low Cost DNA Testing

DNA, or deoxyribonucleic acid, contains the instructions for an organism to develop, survive and reproduce itself. Life science researchers rely on DNA testing to identify genetic variations associated with diseases. The advent of affordable rapid DNA testing methods has greatly accelerated research and discovery. According to the National Institutes of Health, the cost of DNA testing has declined by a factor of over 100,000 since 2001. Teledyne has helped enable this transformation by developing automated microfabrication technology to produce millions of microarrays for DNA sensors. We are working with major DNA instrument companies supporting the fabrication of next generation sensors that will extend applications to precision medicine, consumer screening, and agriculture.

Optical Imaging of Living Organisms

Visualizing biological processes and disease progression through optical imaging of living organisms, known as in vivo imaging, is crucial in the study and evaluation of potential drug candidates early in their development stage. The primary aim of these studies is to determine the efficacy, safety, dosing, and toxicity of potential new drugs before human trials begin. Our optimized scientific cameras are specifically engineered to capture high resolution images in the extreme low light environments required for accurate evaluation. We also enable real time imaging deep into tissue with infrared imaging sensors.



Above: *Teledyne scientific cameras excel in Fluorescence Lifetime Imaging Microscopy, used in cell biology to study metabolic states of cells and tissues.*

Left: *Teledyne makes both the MEMS microarrays that hold samples of DNA for analysis and high performance cameras that read the faint, microscopic signals that mark genetic sequences.*

Accelerating Pharmaceutical Development

Pharmaceutical researchers need to purify organic compounds during drug discovery. This was once a time-consuming process, but Teledyne's chromatography systems enable researchers to rapidly purify compounds, including those used in critical batches of COVID-19 vaccines.

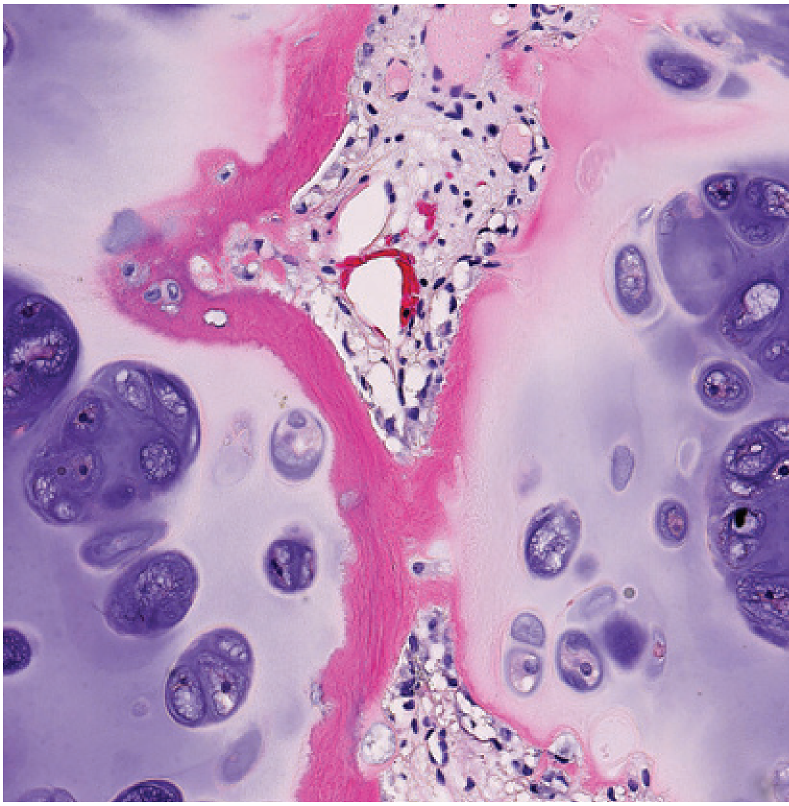
Assuring Pharmaceutical Quality

Our pharmaceutical testing instruments are used in drug research and development, manufacturing and quality control facilities to ensure pharmaceutical products conform to strict requirements for dosage uniformity, tablet hardness, disintegration, and dissolution (release-rate), and to ensure semisolid topical formulations and transdermal drug delivery products such as creams, ointments, and gels perform properly when applied to the skin.

Medical Diagnostics

Faster Examination of Biomedical Samples

Pathologists use microscopes to examine tissue samples and fluids to diagnose diseases. Manual microscopes permit examination of about 350 sections of human tissue per day; but with the power of automation, an optical digital pathology system can scan as many as 3,600 sections per hour, or more than 28,000 per day. The resulting images are far more detailed, more easily and more reliably transferred, and capable of revealing cancerous cells and even malignant cells that may still exist in tissue after chemotherapy treatment. Our fast, ultra-high-resolution cameras and sensors deliver clarity and increased throughput to digital pathology labs.



Above: *A lab technician is using a Flash Chromatography system to help speed up the purification process in the discovery and development of new drugs and treatments.* **Left Page:** *Dissolution testing systems are used worldwide for precision release-rate testing of pharmaceutical products.*

Above: *Pathologists use tissue samples like this one, from a laryngeal chondrosarcoma, to identify and study diseases.*

Clinical Treatment and Therapy

Reliable Worldwide Radiotherapy
The impact of cancer is both near-universal and intensely personal—rare are the families who have not been impacted by it. The need for cancer screening and therapy will only grow and we are proud to enable both diagnosis and treatment. Our products generate and deliver the microwave power required by the linear accelerators within radiotherapy cancer treatment machines, producing the X-rays used in both the imaging and radiation treatment of tumors. Teledyne products power 90% of the world's radiotherapy systems, enabling precise radiation therapy to treat and defeat malignant cancer.

Lower Dose X-ray Sensors

X-ray imaging is an indispensable tool for many diagnostic and interventional medical procedures in both hard and soft tissue. Orthopedic surgeons depend on it when setting fractures; oncologists rely on it in mammography to identify calcifications and to guide stereotactic biopsy needles. Dentists use it daily to find cavities and plan orthodontics. In these applications, the low-dose sensitivity of Teledyne's X-ray detectors clearly shows our leadership. We deliver better images at lower X-ray doses, benefiting both patients and practitioners. The advantages we bring are multiplied in fluoroscopy (X-ray video) applications such as angiography, catheter placement, heart valve replacement and other minimally invasive surgery; because every frame requires less dose, the cumulative dose is dramatically lower than with competing technologies.

Above: *Teledyne's X-ray detectors, used in surgical, orthopedic, and dental applications, provide higher quality images at lower X-ray doses.*
Right: *We have designed and manufactured magnetrons for over 60 years, delivering microwave power to drive linear accelerators for radiotherapy systems that destroy cancer cells.*

Public Health and Safety

Protecting the Integrity of the World's Food Supply

The World Health Organization estimates that 600 million people fall ill and 420,000 die every year after eating contaminated food. Automated optical imaging for food inspection and grading has become instrumental in protecting our food processing systems. Teledyne's imaging technology is used in the detection of physical variables across a wide variety of grains, fruits, and vegetables, distinguishing between defects and natural features, as well as invisible and subsurface markings. Our wide sensor portfolio is capable of imaging across multiple spectral modalities including monochrome, visible color, ultraviolet, infrared, and hyperspectral.

Above and Right: *Industrial machine vision plays an important role in quality control for many foods and pharmaceuticals and their packaging. Teledyne excels in these high-speed applications.*

Improving Water Safety and Early Virus Detection

Improvements in water treatment have resulted in reduced transmission of water-borne viruses and chemicals. Our instruments are used in every step of the treatment process from impurity removal to disinfection and analysis. Our automatic samplers and flow monitoring systems are being deployed in wastewater handling systems world-wide for the detection of the virus that causes Covid-19 genetic material as an early indicator of community spread. Wastewater-based epidemiology techniques have shown the virus is detectable in wastewater collection systems up to a week before symptoms begin to appear within a population through traditional methods such as individual testing and hospital admissions. A recent notable example demonstrated early detection within a student residence hall allowing the university to take early action to identify, isolate and limit the spread of the virus.

Above: *The primary clarifier at a wastewater treatment plant is another location where samples can be taken and then analyzed at a lab to see if any water-borne viruses or chemicals are present.*

Below: *A portable automated sampler is being programmed to collect wastewater samples inside a manhole, to be taken later to a lab to be analyzed.*

Personal Health

Emerging Personal Biosensor Applications

Opportunities to monitor critical biometrics used to measure and track human health continue to grow. Wearable devices are now used in a vast field of applications including medical diagnostics, neural imaging, health monitoring, and performance tracking. The body is now being “sensorized” by wearable devices to monitor for disease, track blood and oxygen levels, manage diabetes, improve vision and hearing, and even tracking viral exposure. Our high-volume microfabrication factories can deliver hundreds of millions of high-quality body sensors at low cost, helping to improve health and save lives.

All Images: *Teledyne-built MEMS devices allow products such as microphones, headphones, activity trackers and novel biosensors to be smaller, lighter, and use less power.*

2021 and Beyond

Teledyne's balanced portfolio of technologies have once again enabled us to navigate tumultuous times. The initiatives we began in 2019 are bearing fruit as we brought record setting value to our stockholders, even during a global pandemic. As we enter a more hopeful new year, we continue our essential work to find solutions to improve the health, safety and well-being of our planet.

In fact, we have never been more excited about Teledyne's future. On the first day of fiscal 2021, we announced the pending acquisition of FLIR Systems for $8.0 billion. Across digital imaging and unmanned systems, FLIR will add uniquely complementary technologies, products, customers and applications to Teledyne's proven business model.

We would like to personally thank all of our talented employees, our devoted Board of Directors, and our loyal stockholders for their continued trust in Teledyne.

Finally, we express our gratitude to Admiral Paul D. Miller, who retired as a Teledyne director in 2020 after 19 years of service, for his dedication, even keel and steadfast support of our company's strategic direction and growth.

Our innovative technologies enable applications in research labs, medical clinics and public health.

Kind regards,

Al Pichelli
President and Chief Executive Officer

Robert Mehrabian
Executive Chairman

February 25, 2021

Board of Directors

Top Images Left to Right:

ROXANNE S. AUSTIN (2)(3)
President, Austin Investment Advisors
Former President and Chief Operating Officer of DIRECTV, Inc.

DENISE R. CADE (1)(2)
Senior Vice President, General Counsel and Corporate Secretary of IDEX Corporation

CHARLES CROCKER (2)(3)(5)
Chairman of the Board and Chief Executive Officer, Crocker Capital
Retired Chairman of the Board and Chief Executive Officer, BEI Technologies, Inc.

KENNETH C. DAHLBERG (1)(3)
Retired Chairman of the Board and Chief Executive Officer, Science Applications International Corporation (SAIC)

MICHELLE A. KUMBIER (1)(3)
Former Chief Operating Officer of Harley-Davidson Motor Company

SIMON M. LORNE (1)(2)(6)
Vice Chairman of the Board and Chief Legal Officer, Millennium Management LLC
Former General Counsel, U.S. Securities and Exchange Commission

Lower Images Left to Right:

ROBERT A. MALONE (1)(3)
Executive Chairman of the Board, President and Chief Executive Officer, First Sonora Bancshares, Inc.
Retired Chairman of the Board and President, BP America Inc.

ROBERT MEHRABIAN
Executive Chairman,
Teledyne Technologies Incorporated

WESLEY W. VON SCHACK (2)(3)
Chairman of the Board, AEGIS Insurance Services
Former Chairman of the Board, President and Chief Executive Officer, Energy East Corporation

JANE C. SHERBURNE (1)(3)
Principal of Sherburne PLLC
Former Senior Executive Vice President, General Counsel and Corporate Secretary, The Bank of New York Mellon Corporation

MICHAEL T. SMITH (1)(2)(4)
Retired Chairman of the Board and Chief Executive Officer, Hughes Electronics Corporation

(1) Audit Committee
(2) Nominating and Governance Committee
(3) Personnel and Compensation Committee
(4) Lead Director and Nominating and Governance Committee Chair
(5) Personnel and Compensation Committee Chair
(6) Audit Committee Chair

Executive Management

ALDO (AL) PICHELLI*
President and Chief Executive Officer

CARL ADAMS
Vice President, Business Risk Assurance

CYNTHIA Y. BELAK*
Vice President and Controller

VICKI BENNE
Group Vice President and General Manager, Environmental Instrumentation

STEPHEN F. BLACKWOOD*
Senior Vice President, Strategic Sourcing, Tax and Treasurer

GEORGE C. BOBB, III*
President, Aerospace and Defense Electronics Segment, and Vice President, Teledyne

MELANIE S. CIBIK*
Senior Vice President, General Counsel, Chief Compliance Officer and Secretary

JASON W. CONNELL
Vice President, Human Resources and Associate General Counsel

JANICE L. HESS
President, Engineered Systems Segment

SCOTT HUDSON
Vice President and Chief Information Officer

SUSAN L. MAIN*
Senior Vice President and Chief Financial Officer

ROBERT MEHRABIAN*
Executive Chairman

SEAN O'CONNOR
Chief Operating Officer and Chief Financial Officer, Environmental and Electronic Measurement Instrumentation

KEVIN PRUSSO
Group Vice President and General Manager, Test and Measurement Instrumentation

MIKE R. READ
President, Teledyne Marine Group

EDWIN ROKS*
President, Teledyne Digital Imaging, and Vice President, Teledyne

JASON VANWEES*
Executive Vice President

* Section 16 Officer

Stockholder Information

CORPORATE OFFICES
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Thousand Oaks, CA 91360
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Fax: (805) 373-4775
www.teledyne.com

TRANSFER AGENT AND REGISTRAR
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Louisville, KY 40233-5000
Customer Service: 1-888-540-9867
computershare.com

STOCKHOLDER PUBLICATIONS — FORM 10-K
Information on how to access Annual Reports (including Form 10-K) and proxy statements is mailed to all stockholders of record. Copies of our SEC periodic reports, corporate governance guidelines, code of ethics and committee charters are also available on our website at www.teledyne.com. For additional information, contact Investor Relations.

STOCK EXCHANGE LISTING
The common stock of Teledyne Technologies Incorporated is traded on the New York Stock Exchange (symbol TDY).

VIRTUAL ANNUAL MEETING
The virtual Annual Meeting of Stockholders will be held on Wednesday, April 28, 2021, at 9:00 a.m. PDT. Information on how to access our virtual annual meeting is contained in our proxy statement for the 2021 Annual Meeting.

INDEPENDENT AUDITORS
Deloitte & Touche LLP
Los Angeles, California

CURRENT NEWS AND GENERAL INFORMATION
Information about Teledyne is available at www.teledyne.com.

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549
FORM 10-K

(Mark One)

☒ **ANNUAL REPORT PURSUANT TO SECTION 13 OR SECTION 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the fiscal year ended January 3, 2021
OR

☐ **TRANSITION REPORT PURSUANT TO SECTION 13 OR 15(d) OF THE SECURITIES EXCHANGE ACT OF 1934**

For the transition period from ______ to ____
Commission file number 1-15295

TELEDYNE TECHNOLOGIES INCORPORATED

(Exact name of registrant as specified in its charter)

Delaware (State or other jurisdiction of incorporation of organization)	25-1843385 (I.R.S. Employer Identification Number)
1049 Camino Dos Rios Thousand Oaks, California (Address of principal executive offices)	91360-2362 (Zip Code)

Registrant's telephone number, including area code: (805)-373-4545

Securities registered pursuant to Section 12(b) of the Act:

Title of each class	Trading Symbol(s)	Name of each exchange on which registered
Common Stock, par value $.01 per share	TDY	New York Stock Exchange

Securities registered pursuant to Section 12(g) of the Act: None

Indicate by check mark if the registrant is a well-known seasoned issuer, as defined in Rule 405 of the Securities Act. Yes ☒ No ☐

Indicate by check mark if the registrant is not required to file reports pursuant to Section 13 or Section 15(d) of the Act. Yes ☐ No ☒

Indicate by check mark whether the registrant (1) has filed all reports required to be filed by Section 13 or 15(d) of the Securities Exchange Act of 1934 during the preceding 12 months (or for such shorter period that the registrant was required to file such reports), and (2) has been subject to such filing requirements for the past 90 days. Yes ☒ No ☐

Indicate by check mark whether the registrant has submitted electronically every Interactive Data File required to be submitted pursuant to Rule 405 of Regulation S-T (Section 232.405 of this chapter) during the preceding 12 months (or for such shorter period that the registrant was required to submit and post such files). Yes ☒ No ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company, or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer", "smaller reporting company" and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer ☒ Accelerated filer ☐ Non-accelerated filer ☐ Smaller reporting company ☐ Emerging growth company ☐

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant section 13(a) of the Act ☐

Indicate by check mark whether the registrant has filed a report on an attestation to its management's assessment of the effectiveness of its internal control over financial reporting under Section 404(b) of the Sarbanes-Oxley Act (15 U.S.C. 7262(b)) by the registered public account firm that prepared or issued its audit report. ☒

Indicate by check mark whether the registrant is a shell company (as defined in Rule 12b-2 of the Exchange Act). Yes ☐ No ☒

As of June 26, 2020, the aggregate market value of Common Stock (based upon closing price of the stock on the New York Stock Exchange) of the registrant held by non-affiliates was approximately $10.9 billion.

At February 23, 2021, there were 37,019,992 shares of the registrant's Common Stock outstanding.

DOCUMENTS INCORPORATED BY REFERENCE

Portions of the registrant's proxy statement to be filed subsequently with the Securities and Exchange Commission pursuant to Regulation 14A for the 2021 Annual Meeting of Shareholders are incorporated by reference in Part III of this Report on Form 10-K. Except as expressly incorporated by reference, the registrant's proxy statement shall not be deemed to be part of this report.

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Explanatory Notes

In this Annual Report on Form 10-K, Teledyne Technologies Incorporated is sometimes referred to as the “Company” or “Teledyne”.

For a discussion of risk factors and uncertainties associated with Teledyne and any forward looking statements made by us, see the discussion beginning on page 5 of this Annual Report on Form 10-K.

PART I

Item 1. Business

Who We Are

Teledyne Technologies Incorporated ("Teledyne" or the "Company"), a Delaware company that spun off from Allegheny Technologies Incorporated as an independent company in 1999, provides enabling technologies for industrial growth markets that require advanced technology and high reliability. These markets include aerospace and defense, factory automation, air and water quality environmental monitoring, electronics design and development, oceanographic research, deepwater oil and gas exploration and production, medical imaging and pharmaceutical research. We differentiate ourselves from many of our direct competitors by having a customer and Company-sponsored applied research center that augments our product development expertise. We believe that technological capabilities and innovation and the ability to invest in the development of new and enhanced products are critical to obtaining and maintaining leadership in our markets and the industries in which we compete.

For discussion on our business and strategy for 2019 and 2018 see our Annual Report on Form 10-K for the fiscal year ended December 29, 2019; for a discussion of our 2019 acquisitions, see Item 7. Management's Discussion and Analysis of Results of Operations and Financial Condition.

Recent Developments

On January 4, 2021, we announced together with FLIR Systems, Inc. ("FLIR") that the companies have entered into a definitive merger agreement under which we will acquire FLIR in a cash and stock transaction valued at approximately $8.0 billion. Under the terms of the merger agreement, FLIR stockholders will receive $28.00 per share in cash and 0.0718 shares of our common stock for each FLIR share, which implies a total purchase price of approximately $56.00 per FLIR share based on the 5-day volume weighted average price of our stock as of December 31, 2020.

The transaction is expected to close in the middle of 2021 subject to the receipt of required regulatory approvals, including expiration or termination of the applicable waiting period under the Hart-Scott-Rodino Antitrust Improvements Act (the "HSR Act") approvals of our stockholders and FLIR stockholders and other customary closing conditions.

Our Business Segments

Our businesses are aligned in four segments: Instrumentation, Digital Imaging, Aerospace and Defense Electronics and Engineered Systems. Financial information about our business segments can be found in Note 12 of the Notes to Consolidated Financial Statements in this Annual Report on Form 10-K for the fiscal year ended January 3, 2021 (this "Form 10-K").

Instrumentation Segment

Our Instrumentation segment provides monitoring and control instruments for marine, environmental, industrial and other applications, and electronic test and measurement equipment. We also provide power and communications connectivity devices for distributed instrumentation systems and sensor networks deployed in mission critical, harsh environments.

Our Instrumentation segment represented approximately 35% of our sales for 2020. Below is a description of the product lines that comprise the Instrumentation segment.

Marine Instrumentation

We offer a variety of products designed for use in harsh underwater environments, instruments that measure currents and other physical properties in the water column, systems that create acoustic images of objects beneath the water's surface, including the bottom of a body of water, and sensors that determine the geologic structure below the bottom. We also design and manufacture vehicles that utilize and transport these sensors over and beneath the water's surface.

We provide a broad range of end-to-end undersea interconnect solutions to the offshore oil and gas, naval defense, oceanographic and telecom markets. We manufacture subsea, wet-mateable electrical and fiber-optic interconnect systems and subsea pressure vessel penetrators and connector systems with glass-to-metal seals. Our waterproof and splash-proof neoprene and glass reinforced epoxy connectors and cable assemblies are used in underwater equipment, submerged monitoring systems and other industrial applications. Other marine products used by the U.S. Navy and commercial customers include acoustic modems for networked underwater communication and optical underwater cameras and LED lighting sources.

We manufacture complete autonomous-operated underwater vehicles systems. Glider applications range from oceanographic research to persistent surveillance systems for the U.S. Navy. We also design and manufacture remotely operated underwater vehicles used in maritime security, military, search and rescue, aquaculture, and scientific research applications.

Environmental Instrumentation

We offer a wide range of products used for environmental monitoring. Our instrumentation monitors trace levels of gases such as sulfur dioxide, carbon monoxide, oxides of nitrogen and ozone, as well as particulate pollution, in order to measure the quality of the air we breathe. We also supply monitoring systems for the detection, measurement and automated reporting of air pollutants from industrial stack emissions, ozone generators and other process gas monitoring instruments. Our instrumentation is used to detect a variety of water quality parameters and in applications found in petrochemical and refinery facilities.

We also manufacture and provide complementary laboratory instrumentation including through laboratory automation and sample introduction systems which automates the preparation and concentration of organic samples.

Our advanced elemental analysis products are used by environmental and quality control laboratories to detect trace levels of inorganic contaminants in water, foods, soils and other environmental and geological samples. We manufacture high-precision pumps utilized in a wide variety of analytical, research clinical, preparative and fluid-metering applications. In addition, we manufacture liquid chromatography instruments and accessories for the purification of organic compounds, which include highly sensitive evaporative light scanning detectors, primarily for pharmaceutical laboratories involved in drug discovery and development. Finally, we manufacture instruments that are used by pharmaceutical scientists to evaluate the release rate characteristics and physical properties of various dosage forms to ensure the safety and efficacy of medicines worldwide.

Test and Measurement Instrumentation

We believe our test and measurement products provide unique, world-class capabilities that enable the designers of complex electronic systems in many industry sectors to bring their products to market reliably and quickly. Our customers use our equipment in the design, development, manufacture, installation, deployment and operation of electronics equipment in broad range of industry end markets, including aerospace and defense, internet infrastructure, automotive, industrial, computer and semiconductor, consumer electronics and power electronics.

We develop, manufacture, sell and license high-performance oscilloscopes, high-speed protocol analyzers, and related test and measurement solutions for a wide range of industries. Our oscilloscopes are used by designers and engineers to measure and analyze complex electronic signals to develop high-performance systems, validate electronic designs, and improve time to market. We also make high-speed, high-resolution modular analog-to-digital conversion systems for applications including test and measurement, medical imaging, Light Detection and Ranging, and software defined radio.

Design and test engineers use our protocol analysis solutions to monitor accurately and reliably high data-rate communication interfaces and diagnose operational problems in a wide range of systems and devices to ensure that they comply with industry standards, including the area of cloud computing and networks. Our product lines, along with our leadership in USB technology, provide a unique base to service the mobile, internet of things, automotive and consumer electronics test market. Our most recent acquisition of OakGate Technology, Inc. ("OakGate") during 2020 provides protocol validation and test tools for disk drives, both spinning and solid state, and servers used for cloud-based storage.

We also manufacture torque sensors and automatic data acquisition systems that are used to test critical control valves in nuclear power and industrial plants. Our torque sensors are also used in other markets, including automotive and power tools.

Digital Imaging Segment

Our Digital Imaging segment includes high-performance sensors, cameras and systems, within the visible, infrared, ultraviolet and X-ray spectra for use in industrial, scientific, government, defense and security and medical applications, among others. We also produce and provide manufacturing services for micro electromechanical systems ("MEMS") and high-performance, high-reliability semiconductors including analog-to-digital and digital-to-analog converters. This segment also includes our sponsored and centralized research laboratories.

Our Digital Imaging segment represented approximately 32% of our sales for 2020.

Through this segment, we design, develop and manufacture image sensors and digital cameras for use in industrial, scientific, academic research and medical applications and hardware and software for image processing and automatic data collection in industrial, academic research and medical applications. We also develop high-resolution, low-dose X-Ray sensors for medical, dental and industrial applications.

We provide research and engineering capabilities primarily in the areas of electronics, materials, optical systems, and information science to military, aerospace and industrial customers, as well as to various businesses throughout Teledyne. We receive funding from the Defense Advanced Research Products Agency and various other U.S. Department of Defense funding agencies, and we collaborate with researchers at universities and national laboratories to stay at the forefront of emerging technologies. Through our 2019 acquisition of the scientific imaging businesses of Roper Technologies, Inc., we manufacture state-of-the-art cameras, spectrographs and optics for advanced research in physical sciences, life sciences research and spectroscopy imaging for applications and markets that include materials analysis, quantum technology and cell biology imaging using fluorescence and chemiluminescence.

Aerospace and Defense Electronics Segment

Our Aerospace and Defense Electronics segment provides sophisticated electronic components and subsystems, data acquisition and communications components and equipment, harsh environment interconnects, general aviation batteries and other components for a variety of commercial and defense applications that require high performance and high reliability. Such applications include aircraft, radar, electronic warfare, weapon systems, space, wireless and satellite communications and terminals and test equipment.

Our Aerospace and Defense Electronics segment represented approximately 19% of our sales for 2020.

We provide onboard avionics systems and ground-based applications that allow civil and military aircraft software operators to access, manage and utilize their data more efficiently. Our products include aircraft data and connectivity solutions, hardware systems, and software applications used by commercial airlines and the U.S. military, and we provide services related to our products.

Engineered Systems Segment

Our Engineered Systems segment provides innovative systems engineering, integration and advanced technology development, and complex manufacturing solutions for defense, space, environmental and energy applications. This segment also designs and manufactures electrochemical energy systems and manufactures specialty electronics for demanding military applications.

Our Engineered Systems segment represented approximately 14% of our sales for 2020.

Our core business base, includes NASA, the U.S. Department of Defense, the U.S. Department of Energy, foreign militaries and commercial customers.

Customers

We have a large number of customers in the various industries we serve. No commercial customer in 2020 or 2019 accounted for more than 3.0% of total net sales or more than 10% of any segments net sales.

Sales to international customers accounted for approximately 45% of total sales in 2020 compared with 44% in 2019. In both 2020 and 2019, we sold products to customers in over 100 foreign countries. Approximately 90% of our sales to international customers during 2020 were made to customers in 22 foreign countries. In 2020, the top five countries for sales to international customers, ranked by sales, volume were China, the United Kingdom, Germany, Japan and France and represented approximately 20% of our total net sales.

Approximately 26% and 24% of our total net sales for 2020 and 2019, respectively, were derived from contracts with agencies of, and prime contractors to, the U.S. Government. Information on our sales to the U.S. Government, including direct sales as a prime contractor and indirect sales as a subcontractor, is as follows (in millions):

U.S. Government sales by segment:	2020	2019	2018
Instrumentation	**$ 80.6**	$ 80.4	$ 68.3
Digital Imaging	**120.9**	107.4	90.5
Aerospace and Defense Electronics	**229.9**	225.3	177.2
Engineered Systems	**386.8**	346.7	319.3
Total U.S. Government sales	**$818.2**	$759.8	$655.3

Our principal U.S. Government customer is the U.S. Department of Defense, which totaled approximately $578.4 million and $545.5 million of our total net sales for 2020 and 2019, respectively. In 2020 and 2019, our largest program with the U.S. Government was the Mission Operations and Integration contract with the NASA Marshall Space Flight Center, which represented 1.5% and 1.4% of our total net sales, respectively.

As described in greater detail under Item 1A. Risk Factors of this Form 10-K, there are risks associated with doing business with the U.S. Government. In 2020, approximately 67% of our U.S. Government prime contracts and subcontracts were fixed-price type contracts, compared to 64% in 2019. Under these types of contracts, we bear the inherent risk that actual performance cost may exceed the fixed contract price. Such contracts are typically not subject to renegotiation of profits if we fail to anticipate technical problems, estimate costs accurately or control costs during performance. Additionally, U.S. Government contracts are subject to termination by the U.S. Government at its convenience, without identification of any default. When contracts are terminated for convenience, we recover costs incurred or committed, settlement expenses and profit on work completed prior to termination. We had no U.S. Government contracts terminated for convenience in 2020, compared with three in 2019.

Many of our government contracts are awarded after a competitive bidding process in which we seek to emphasize our ability to provide superior products and technical solutions in addition to competitive pricing.

Our total backlog of confirmed and funded orders was approximately $1,700.2 million at January 3, 2021, compared with $1,699.3 million at December 29, 2019. We expect to fulfill more than 77% of such backlog of confirmed orders during 2021.

Raw Materials and Suppliers

Generally, our businesses have experienced minimal fluctuations in the supply of raw materials, but not without some price volatility. While some of our businesses provide services, for those businesses that sell hardware and product, a portion of the value that we provide is labor-oriented, such as design, engineering, assembly and test activities. In manufacturing our products, we use our own production capabilities and third-party suppliers and subcontractors, including international sources. Some of the items we use for the manufacture of our products, including certain components for particular marine navigation applications, certain magnets and helix wire for our traveling wave tubes, certain infrared detectors substrates and certain ceramics and molding compounds used in our sonar systems, as well as certain scintillator materials used in the production of our X-Ray detectors, are purchased from limited or single sources, including international sources, due to technical capability, price and other factors. At times we have experienced difficulty in procuring raw materials, components, sub-assemblies and other supplies required in our manufacturing processes due to shortages and supplier-imposed allocation of components. We did not experience significant difficulty in obtaining raw materials and/or other supplies during 2020.

Marketing

Our sales and marketing approach varies by segment and by products within our segments. A shared fundamental tenet is the commitment to work closely with our customers to understand their needs, with an aim to secure preferred supplier and longer-term relationships. Given the technical nature of our products, we conduct our domestic and international marketing activities through a direct internal sales force, as well as third-party sales representatives and distributors, both in the United States and in other countries.

Competition

Because of the diversity of products sold and the number of markets we serve, we encounter a wide variety of competitors, none of which we believe offer the same product and service lines or serve all of the same markets as we do. Although we have certain advantages that we believe help us compete effectively in our markets, each of our markets is highly competitive. With regard to our defense businesses, it is common in the defense industry for work on programs to be shared among several companies, including competitors. Our businesses vigorously compete on quality, product performance and reliability, technical expertise, price and service. Many of our competitors have, and potential competitors could have, greater name recognition, a larger installed base of products, more extensive engineering, manufacturing, marketing and distribution capabilities and greater financial, technological and personnel resources than we do.

Intellectual Property

We own and control various intellectual property rights, including patents, trade secrets, confidential information, trademarks, trade names, and copyrights. We are licensed to use certain patents, technology and other intellectual property rights owned and controlled by others. Similarly, other companies are licensed to use certain patents, technology and other intellectual property rights owned and controlled by us. We do not consider any single patent or trademark, or any group of them, essential either to Teledyne's business as a whole or to any one of our reportable segments. The annual royalties received or paid under license agreements are not significant to any of our reportable segments or to Teledyne's overall operations.

Patents, patent applications and license agreements will expire or terminate over time by operation of law, in accordance with their terms or otherwise. We do not expect the expiration or termination of these patents, patent applications and license agreements to have a material adverse effect on our business, results of operations or financial condition.

Environment and Other Government Regulations

Information with respect to environmental matters is set forth under "Other Matters – Environmental" of "Item 7. Management's Discussion and Analysis of Results of Operation and Financial Condition" and Note 14 of the Notes to Consolidated Financial Statements in this Form 10-K. No material capital expenditures relating to environmental or other government regulatory compliance are presently anticipated.

Sustainability

Teledyne continues to focus on developing solutions to address sustainability and climate challenges facing humanity today. Many of our products directly support sustainability and climate challenges. We provide a broad range of precision measurement technologies for environmental monitoring and climate research. Our sensors and instruments are deployed everywhere, from pole to pole, in space, on aircraft and drones, on land, on the sea surface, in the water column, and on the seafloor. They operate around the clock, measuring greenhouse gases from space, precisely monitoring air and water quality throughout the world, and continuously profiling all of Earth's oceans. Applications of our instruments provide scientists information that spans time from the origin of the universe to providing real-time data regarding air pollution and dangerous storms, such as time-critical warning of hurricanes and tsunamis.

Board Oversight

Pursuant to the mandate in their respective charters, the Audit Committee of our Board of Directors (the "Board") regularly reviews matters related to compliance with environmental laws and the health and safety of employees, and the Nominating and Governance Committee of our Board reviews and evaluates our policies and practices and monitors our efforts in areas of legal and social responsibility, diversity and sustainability.

Human Capital

We consider our relations with our employees to be good. At January 3, 2021, our total workforce consisted of approximately 10,670 employees in more than 25 countries. Workforce demographics for various regions are provided below:

				Gender		
	Percent to Total Employees	Average Age	Average Years of Service	Male	Female	Not Specified
Americas	72%	49.1	11.4	59%	34%	7%
Europe, the Middle East and Africa	26%	44.9	11.3	56%	22%	22%
Asia-Pacific Region	2%	42.4	7.6	42%	20%	38%

Employees are vital to the success of our innovation-driven growth strategy. We are focused on effective attraction, development, and retention of employees through competitive compensation and benefits, workforce and management development, diversity and inclusion initiatives, succession planning, corporate culture and leadership quality.

We have a stable and long-tenured workforce. In 2020, our average voluntary employee turnover (excluding reductions in force) was approximately 9%. As of January 3, 2021, the average years of service of our employees was approximately 11 years.

We are committed to identifying and developing the talents of our next generation of leaders. On an annual basis, we conduct an organization and leadership review with our Executive Chairman and President and Chief Executive Officer for all segment, business unit, and function leaders, focusing on our high performing and high potential talent, diversity and succession for our most critical roles. From this review, individualized development and retention programs are implemented or revised as needed.

With the oversight of our Senior Vice President, General Counsel, Chief Compliance Officer, and Secretary and our Vice President of Human Resources, our Equality, Diversity and Inclusion Committee has piloted an anonymized resume review process to evaluate the potential for name bias when reviewing potential candidates, expanded recruitment sources, and enhanced diversity training and awareness.

Available Information

Teledyne's website is www.teledyne.com. We make available on our website, free of charge, annual reports on Form 10-K, quarterly reports on Form 10-Q, and current reports on Form 8-K pursuant to Section 13(a) or Section 15(d) of the Securities Exchange Act of 1934, as amended (the "Exchange Act") as soon as reasonably practicable after we electronically file or furnish such material to the U.S. Securities and Exchange Commission (the "SEC") at www.sec.gov. We will provide, free of charge, a paper copy of any report we file with the SEC (without exhibits) upon written request to Melanie S. Cibik, Senior Vice President, General Counsel, Chief Compliance Officer and Secretary, at Teledyne Technologies Incorporated, 1049 Camino Dos Rios, Thousand Oaks, California 91360-2362.

Item 1A. Risk Factors

Risk Factors; Cautionary Statement as to Forward-Looking Statements

The following discussion sets forth the material risk factors that could affect Teledyne's financial condition and operations. You should not consider any descriptions of these factors to be a complete set of all potential risks that could affect Teledyne. Any of the risk factors discussed below could by itself, or combined with other factors, materially and adversely affect our business, results of operations, financial condition, competitive position or reputation, including materially increasing expenses or decreasing revenues, which could result in material losses or a decrease in earnings.

Risks related to the pending acquisition of FLIR

On January 4, 2021, we announced our proposed acquisition of FLIR in a cash and stock transaction valued at approximately $8.0 billion (including net debt), which would make the acquisition our largest to date. FLIR designs, develops, manufactures, markets, and distributes technologies that enhance perception and awareness. FLIR provides innovative sensing solutions through thermal imaging, visible-light imaging, video analytics, measurement and diagnostic, and advanced threat detection systems. FLIR offers a diversified portfolio that serves a number of applications in government and defense, industrial, and commercial markets. FLIR, headquartered in Wilsonville, Oregon, will be part of the Digital Imaging segment.

While many of the products made and markets served by FLIR are complementary to Teledyne, the acquisition of FLIR would expand the size of our Digital Imaging segment relative to our other segments. Continued innovation and research and development efforts will be required to maintain FLIR's leadership position in imaging products. There are numerous risk and uncertainties associated with the acquisition, including:

- Completion of the acquisition is subject to a number of conditions, some of which are outside of our control, and if any of these conditions are not satisfied or waived, the acquisition will not be completed. Among these conditions are the approval by FLIR's stockholders of the acquisition, the approval by our stockholders of the issuance of Teledyne stock in the acquisition and the receipt of certain regulatory approvals, including the expiration or termination of any applicable waiting period (and any extension thereof) under the HSR Act and under the antitrust laws of certain non-U.S. jurisdictions.
- Teledyne's and FLIR's existing business relationships with third parties may be disrupted due to uncertainty associated with the acquisition, which could have an adverse effect on the results of operations, cash flows and financial position of the combined company.
- Failure to complete the acquisition could negatively impact our stock price and our future business and financial results.
- The merger agreement between Teledyne and FLIR subjects us to restrictions on our activities, such as certain equity issuances during the period while the acquisition is pending.
- After the acquisition, as a result of the issuance of Teledyne stock in the acquisition to the holders of FLIR stock, Teledyne stockholders will have lower ownership and voting interests in Teledyne than they currently have and will exercise less influence over management.
- Litigation challenging the acquisition may increase costs and prevent the acquisition from being completed within the expected timeframe, or from being completed at all.
- Both we and FLIR will incur significant transaction costs in connection with the acquisition.
- Unplanned future events and conditions could reduce or delay the accretion to earnings that is currently projected by us in connection with the acquisition.
- Pursuant to the merger agreement we may be required, under certain circumstances related to the termination of the merger agreement, to pay a termination fee to FLIR of $250.0 million, which, if paid, may materially and adversely affect our financial results.
- We intend to pay the cash portion of the consideration for the acquisition, refinance certain existing indebtedness of us and FLIR, and pay other fees and expenses required to be paid in connection with the acquisition from cash on hand and borrowings. There can be no assurance that we will be able to secure the funds necessary to pay the cash portion of the merger consideration in connection with the acquisition and refinance certain existing indebtedness on acceptable terms, in a timely manner or at all.
- The COVID-19 pandemic may delay or prevent the completion of the acquisition.
- After completion of the acquisition, we may fail to realize the anticipated benefits and cost savings of the transaction, which could adversely affect the value of our common stock.
- The future results of the combined company may be adversely impacted if we do not effectively manage our expanded operations following completion of the acquisition.
- Both Teledyne and FLIR may have difficulty retaining, motivating, and attracting executives and other employees in light of the pending acquisition, including those experienced with post-acquisition integration, and failure to do so could seriously harm the combined company.
- The effects of the COVID-19 pandemic could adversely affect the business, results of operations and financial condition of Teledyne, FLIR and the combined company following the completion of the acquisition.
- The market price of our common stock may decline as a result of the acquisition if, among other things, the combined company does not achieve the perceived benefits of the acquisition as rapidly or to the extent anticipated by financial or industry analysts, or if the effect of the acquisition on the combined company's financial results is not consistent with the expectations of financial or industry analysts.

Risks related to the indebtedness expected to be incurred in connection with the FLIR acquisition

The incurrence by us of substantial indebtedness in connection with the financing of the acquisition, along with the planned assumption of FLIR's existing senior notes may have an adverse impact on our liquidity, limit our flexibility in responding to other business opportunities and increase our vulnerability to adverse economic and industry conditions.

Teledyne expects to incur a significant amount of indebtedness in connection with the financing of the FLIR acquisition, which we expect will be funded using borrowings along with cash on hand. We may also incur additional indebtedness through the planned assumption of FLIR's existing senior notes. The use of indebtedness to finance the acquisition will reduce our liquidity and could cause us to place more reliance on cash generated from operations to pay principal and interest on our debt, thereby reducing the availability of our cash flow for working capital and capital expenditure needs or to pursue other potential strategic plans. We expect that the agreements we will enter into with respect to the indebtedness we will incur to finance the acquisition or in connection with the planned assumption of FLIR's existing senior notes will contain negative covenants, that, subject to certain exceptions, will include limitations on indebtedness, liens, dispositions, investments and mergers and other fundamental changes. Our ability to comply with these negative covenants can be affected by events beyond our control. The indebtedness and these negative covenants will also have the effect, among other things, of limiting our ability to obtain additional financing, if needed, limiting our flexibility in the conduct of our business and making us more vulnerable to economic downturns and adverse competitive and industry conditions. In addition, a breach of the negative covenants could result in an event of default with respect to the indebtedness, which, if not cured or waived, could result in the indebtedness becoming immediately due and payable and could have a material adverse effect on our business, financial condition or operating results.

Following completion of the acquisition, the credit rating of the combined company could be downgraded and/or the combined company may fail to obtain an investment grade rating, which may increase borrowing costs or could trigger an obligation to make an offer to purchase FLIR's $500 million senior notes.

By reason of the debt incurred to finance the cash portion of the consideration for the acquisition, the combined company will have a considerably higher level of indebtedness than we and FLIR currently have in the aggregate, and there can be no assurance that the credit ratings of the existing FLIR debt will not be subject to a downgrade below investment grade. If a ratings downgrade were to occur or if the combined company fails to obtain an investment grade rating, the combined company could experience higher borrowing costs in the future and more restrictive debt covenants, which would reduce profitability and diminish operational flexibility. Specifically, in the event that FLIR's existing senior notes are downgraded below investment grade as a result of the acquisition, the terms of these notes will require the combined company to commence a change of control offer after the closing of the acquisition.

Because of higher debt levels, we may not be able to service our debt obligations in accordance with the terms contained in the agreements.

Our ability to meet our expense and debt service obligations contained in the agreements we expect to enter into with respect to the indebtedness we will incur to finance the acquisition will depend on our available cash and its future performance, which will be affected by financial, business, economic and other factors, including potential changes in laws or regulations, industry conditions, industry supply and demand balance, customer preferences, the success of our products and pressure from competitors. If we are unable to meet our debt service obligations after the acquisition or should we fail to comply with our financial and other negative covenants contained in the agreements governing our indebtedness, we may be required to refinance all or part of our debt, sell important strategic assets at unfavorable prices, incur additional indebtedness or issue common stock or other equity securities. We may not be able to, at any given time, refinance our debt, sell assets, incur additional indebtedness or issue equity securities on terms acceptable to us, in amounts sufficient to meet our needs. If we are able to raise additional funds through the issuance of equity securities, such issuance would also result in dilution to our stockholders. Our inability to service our obligations or refinance our debt could have a material and adverse effect on our business, financial condition or operating results after the acquisition. In addition, our debt obligations may limit our ability to make required investments in capacity, technology or other areas of our business, which could have a material adverse effect on our business, financial condition or operating results.

<u>Risks Related to Our Business and Industry</u>

Acquisitions involve inherent risks that may adversely affect our operating results and financial condition.

Our growth strategy includes acquisitions. In 2020 and 2019, we expended $29.0 million and $484.0 million in cash, respectively, relating to acquisitions and other investments. Acquisitions involve various inherent risks, such as:

- our ability to assess accurately the value, strengths, weaknesses, internal controls, contingent and other liabilities and potential profitability of acquisition candidates;
- difficulties in integrating acquired businesses, including the potential loss of key personnel from an acquired business, our potential inability to achieve identified financial, operating and other synergies anticipated to result from an acquisition, and integration issues associated with internal controls of acquired businesses;
- the diversion of management's attention from our existing businesses;
- the potential impairment of assets;
- potential unknown liabilities associated with a business that we acquire or in which we invest, including environmental liabilities; and
- production delays associated with consolidating acquired facilities and manufacturing operations.

While we conduct financial and other due diligence in connection with our acquisitions and generally seek some form of protection, such as indemnification from the seller, insurance coverage, and sometimes placing a portion of the purchase price in escrow to cover potential liabilities, such acquired companies may have weaknesses or liabilities that are not accurately assessed or brought to our attention at the time of the acquisition. Further, indemnities, insurance or escrow arrangements may not fully cover such matters.

In connection with our acquisitions, including those acquisitions that we do not complete, we may incur significant transaction costs. We are required to expense, as incurred, such transaction costs, which may have a material adverse impact on our financial results.

Our indebtedness, and any failure to comply with our covenants that apply to our indebtedness, could materially and adversely affect our business.

As of January 3, 2021, we had $778.5 million total outstanding indebtedness, including $195.0 million in senior unsecured fixed rate notes, $305.3 million in Euro denominated fixed rate notes, $150.0 million in term loans and $125.0 million outstanding under our $750.0 million floating rate credit facility. Our indebtedness or a failure to comply with our covenants that apply to our indebtedness could harm our business by, among other things, reducing the funds available to make acquisitions, capital expenditures, or reducing our flexibility in planning for or reacting to changes in our business or market conditions. Our indebtedness exposes us to interest rate risk since a portion of our debt obligations are at variable rates. Our indebtedness or a failure to comply with our covenants that apply to our indebtedness could also have a material adverse effect on our business by increasing our vulnerability to general adverse economic and industry conditions or a downturn in our business. General adverse economic and industry conditions or a downturn in our business could result in our inability to repay this indebtedness in a timely manner.

Further, the Financial Conduct Authority (the authority that regulates the London Interbank Offered Rate, or LIBOR) has announced that it intends to stop compelling banks to submit rates for the calculation of LIBOR after 2021. The Alternative Reference Rates Committee (“ARRC”) has proposed that the Secured Overnight Financing Rate (“SOFR”) is the rate that represents best practice as the alternative to USD-LIBOR for use in debt instruments, derivatives and other financial contracts that are currently indexed to USD-LIBOR. ARRC has proposed a paced market transition plan to SOFR from USD-LIBOR and organizations are currently working on industry wide and company specific transition plans as it relates to derivatives, debt and cash markets exposed to USD-LIBOR. It is unclear as to what the new method of calculating LIBOR that may evolve and this new method could adversely affect the Company’s interest rates on the Company’s indebtedness. The Company is monitoring the ARRC transition plan and is evaluating potential related risks. As of January 3, 2021, approximately 35.3% of the Company’s long-term debt is variable and can be indexed to USD-LIBOR. Our $750.0 million credit facility includes a procedure to switch to LIBOR alternative replacement rates in the future.

Escalating global trade tensions and the adoption or expansion of tariffs and trade restrictions could negatively impact us.

The Company has operations in China, which represented one of the top five countries for our international sales in 2020 and 2019. Any tariffs or other trade restrictions affecting the import of products from China or any retaliatory trade measures taken by China in response to existing or future tariffs could have a material adverse effect on our results of operations.

Starting in 2018, the U.S. Government imposed tariffs on a wide range of goods imported from China and China has retaliated by placing tariffs on various U.S. origin goods. While both countries signed a preliminary trade agreement in January 2020 halting further tariffs and increasing sales of U.S. goods to China, the agreement leaves in place most tariffs on Chinese goods. The final outcome of the negotiations and agreements is not possible to predict. Further escalation of the “trade war” between the U.S. and China, or the countries’ inability to reach further trade agreements, could result in continued or increased tariffs. High tariffs generally increase the cost of materials for our products, which could result in our products becoming less competitive or generating lower margins. With high tariffs imposed on our products, we may also need to find new suppliers and components for our products, which could result in production delays. To the extent our products are the subject of retaliatory tariffs, customers in some countries or regions, such as China, may begin to seek domestic or non-U.S. sources for products that we sell, or be pressured or incentivized by foreign governments not to purchase U.S.-origin goods, which could harm our future sales in these markets. Additionally, if China bolsters laws or regulations requiring the use of local China suppliers, it could have a negative impact on Teledyne’s revenues.

Additionally, a number of well-established customers and suppliers have become listed on Government restricted party lists without much warning. In particular, U.S. export enforcement agencies have placed several Chinese and Russian companies and many of their international subsidiaries on such lists, prohibiting the export of most commercial and dual-use items subject to the Export Administration Regulations. Multiple Teledyne companies had large pending orders with some of those companies that had to be either cancelled or for which Teledyne has submitted export license applications that have a low probability of approval. For example, Huawei Technologies, Co., Ltd. (“Huawei”), and its non-U.S. affiliates have been added to the U.S. Department of Commerce Bureau of Industry and Security Entity list. Huawei was a customer of our test and measurement business, and pending export license applications have not yet been approved. The U.S. Government has also made efforts to increase restrictions on some of the listed entities, including proposals to expand U.S. export jurisdiction over foreign made products containing certain U.S.-origin materials. In 2020, the U.S. Government applied restrictions to products sold to Huawei where there was no U.S. content in the products, but certain equipment used to manufacture the products had U.S. origins. Additionally, we face the risk that Airbus, a customer to our commercial aerospace business, will demonstrate a preference for non-U.S. sources due to the complications and uncertainties of trade compliance. While we will continue to work to mitigate the impact of tariffs and trade restrictions, they could result in revenue reduction, price increases on material used in our products or production delays, which could adversely affect our business, financial condition, operational results and cash flows.

A material amount of our total revenues is derived from companies in the oil and gas industry, especially the offshore oil and gas industry, a historically cyclical industry with levels of activity that are significantly affected by the levels and volatility of oil and gas prices.

A material amount of our total revenues is derived from companies in or connected to oil and gas exploration, development and production, especially the offshore oil and gas industry. The oil and gas industry has historically been cyclical and characterized by significant changes in the levels of exploration and development activities. Oil and gas prices, and market expectations of potential changes in those prices, significantly affect the levels of those activities. Any prolonged reduction in the overall level of offshore oil and gas exploration and development activities, whether resulting from changes in oil and gas prices or otherwise, could materially and adversely affect our financial condition and the results of our businesses within our Instrumentation segment.

Some factors that have affected and are likely to continue affecting oil and gas prices and the level of demand for our products and services include the following:

- worldwide demand for oil and gas;
- general economic and business conditions and industry trends;
- the ability of the Organization of Petroleum Exporting Countries (“OPEC”), to set and maintain production levels;
- the level of production by non-OPEC countries;
- the ability of oil and gas companies to generate or raise funds for capital expenditures;
- domestic and foreign tax policy;
- laws and governmental regulations that restrict exploration and development of oil and gas in various offshore jurisdictions;
- laws and governmental regulation that restrict the use of hydraulic fracturing;
- technological changes;
- the political environment of oil-producing regions;
- the price and availability of alternative fuels; and
- climate change regulations that provide incentives to conserve energy or use alternative energy sources.

Teledyne manufactures seismic energy sources, interconnects and data acquisition products that are used in offshore energy exploration. When crude oil and natural gas prices are low, the level of marine seismic exploration activity typically decreases, potentially resulting in reduced demand for our products used in offshore energy exploration. In addition, a decline in the level of capital spending by oil and natural gas companies may result in a reduced rate of development of new energy reserves, which could adversely affect demand for our products related to energy production, and, in certain instances, result in the cancellation, modification or rescheduling of existing orders and a reduction in customer-funded research and development related to next generation products.

Recession, financial and credit market disruptions, or an economic downturn in China, may adversely affect us.

If another global recession emerges, if economic uncertainty in Europe continues or worsens, or if economic growth in China slows, we may experience declines in revenues, profitability and cash flows from reduced orders, payment delays, collection difficulties, increased price pressures for our products, increased risk of excess and obsolete inventories or other factors caused by the economic problems of our customers. Our sales to China-based customers represented approximately 6.0% and 6.6% of total revenues in 2020 and 2019, respectively. Economic growth in China had slowed due to the COVID-19 pandemic. Continued growth in many of our businesses, including those in our Environmental Instrumentation group, could be negatively impacted if another economic downturn occurs in China. The COVID-19 pandemic has increased volatility and pricing in the capital markets. If negative conditions in the global credit markets prevent our customers from having access to credit or render them insolvent, orders for our products may decrease, which would result in lower revenue. Likewise, if our suppliers face challenges in obtaining credit, in selling their products, or otherwise in operating their businesses or remaining solvent, they may become unable to offer the materials we use to manufacture our products. An economic or credit crisis could also impact our ability to raise capital when needed. These events could adversely impact our ability to manufacture affected products and could also result in reductions in our revenue, increased price competition, and increased operating costs, which could adversely affect our business, financial condition, operational results, and cash flows.

We develop and manufacture products for customers in the energy exploration and production markets, domestic and international commercial aerospace markets, the semiconductor industry, and the consumer electronics, telecommunications and automotive industries; each of which has been cyclical, exhibited rapid changes and suffered from fluctuating market demands. A cyclical downturn in these markets may materially affect future operating results. Due to declines in air travel, we face risk that our addressable market for retrofit products will shrink further as airlines retire significant number of aircraft.

In addition, we sell products and services to customers in industries that are sensitive to the level of general economic activity and consumer spending habits and to customers in more mature industries that are sensitive to capacity constraints. Adverse economic conditions affecting these industries may reduce demand for our products and services, which may reduce our revenues, profits or production levels. Some of our businesses serve industries such as power generation and petrochemical refining, which may be negatively impacted in the event of future reductions in global capital expenditures and manufacturing capacity.

We are subject to the risks associated with international sales and international operations, which could harm our business or results of operations.

During 2020, sales to international customers accounted for approximately 45% of our total revenues, compared with 44% in 2019. In 2020, we sold products to customers in over 100 countries. In 2020, the top five countries for international sales were China, Germany, the United Kingdom, Japan and France, constituting approximately 20% of our total sales. We anticipate that future sales to international customers will continue to account for a significant and increasing percentage of our revenues, particularly since business and growth plans for many Teledyne businesses focus on sales outside of the United States to emerging markets such as China, India, Brazil and West Africa.

Risks associated with international sales and operations include, but are not limited to:

- political and economic instability;
- international terrorism;
- export controls, including U.S. export controls related to China, sanctions related to Russia, and increased scrutiny of exports of marine instruments, digital imaging and other products;
- failure to comply with anti-bribery legislation, including the U.S. Foreign Corrupt Practices Act;
- changes in legal and regulatory requirements;
- U.S. and foreign government policy changes affecting the markets for our products;
- changes in tax laws and tariffs;
- changes in U.S. - China and U.S. - Russia relations;
- difficulties in protection and enforcement of intellectual property rights;
- failure to comply with the foreign data protection laws, including the EU General Data Protection Regulation ("GDPR") in the European Union;
- inadvertent transfers of export-controlled information due to increased cross-border technology transfers and the use of offshore computer servers;
- transportation, including piracy in international waters;
- currency exchange rate fluctuations; and
- challenges relating to managing a global workforce with diverse cultures and backgrounds.

Any of these factors could have a material adverse effect on our business, results of operations and financial condition. Exchange rate fluctuations may increase the cost of our products to international customers and therefore reduce our competitive position.

In June 2016, the United Kingdom ("U.K.") held a referendum in which voters approved an exit from the European Union ("E.U."), commonly referred to as "Brexit." The U.K. formally left the E.U. on January 31, 2020 and entered a transition period until December 31, 2020 during which the U.K. remained in both the E.U. customs union and single market. That transition period has now ended and the E.U. and U.K. have entered into a Trade and Cooperation Agreement ("TCA"). The TCA ensures tariff-free and quota-free trade in goods between the E.U and the U.K. but also introduces certain non-tariff barriers to trade. In the medium- to long-term, the withdrawal of the U.K. from the E.U. may create further global economic uncertainty, which may adversely impact the economies of the U.K., the E.U. countries and other nations, may cause our current and future customers to reduce their spending on our products and services, and may cause certain E.U.-based customers to source products from businesses based outside of the U.K. For example, Brexit-related uncertainty could lead to a reconsideration by Airbus as to future investment and spending in the U.K., which could reduce sales for our U.K.-based businesses that supply Airbus. Potential Brexit-related risks for our U.K.-based businesses also include increased import duties, loss of customers in the E.U., delays in the movement of goods between the U.K. and the E.U. and loss of access to the E.U. labor pool. Given our several U.K.-based businesses, volatility in the value of the British pound relative to the U.S. dollar, or other foreign currencies, could increase the cost of raw materials and components for our U.K.-based businesses and could otherwise adversely affect the business, operations and the financial condition of our U.K.-based businesses.

Higher tax rates may harm our results of operations and cash flow.

As Teledyne expands globally, increases in the United States of the taxation of foreign income and expenses may harm our results of operations and cash flow. The relative amount of income we earn in other jurisdictions could reduce our net income and increase our cash payments. Additionally, the new U.S. Presidential administration proposed a higher corporate tax rate of 28% compared to 21%. Such increased tax rate in the U.S. or in other jurisdictions could also reduce our net income and increase our cash payments.

Changes in future business conditions could cause business investments, goodwill and other long-lived assets to become impaired, resulting in significant losses and write-downs that would reduce our operating income.

On January 3, 2021, Teledyne's goodwill was $2,150.0 million and net acquired intangible assets were $409.7 million. Under current accounting guidance, we are required to test annually both acquired goodwill and other indefinite-lived intangible assets for impairment based upon a fair value approach, rather than amortizing the value over time. We have chosen to perform our annual impairment reviews of goodwill and other indefinite-lived intangible assets during the fourth quarter of each fiscal year. We are also required to test goodwill for impairment between annual tests if events occur or circumstances change that would more likely than not reduce our enterprise fair value below its book value. These events or circumstances could include a significant change in the business climate, including a significant sustained decline in an entity's market value, legal factors, operating performance indicators, competition, sale or disposition of a significant portion of the business, or other factors. If the fair market value is less than the carrying value, including goodwill, we could be required to record an impairment charge. The valuation of reporting units requires judgment in estimating future cash flows, discount rates and estimated product life cycles. In making these judgments, we evaluate the financial health of the business, including such factors as industry performance, changes in technology and operating cash flows. As we have grown through acquisitions, the amount of goodwill and net acquired intangible assets is a significant portion of our total assets. As a result, the amount of any annual or interim impairment could be significant and could have a material adverse effect on our reported financial results for the period in which the charge is taken. We also may be required to record an earnings charge or incur unanticipated expenses if, as a result of a change in strategy or other reason, we were to determine the value of other assets had been impaired.

For additional discussion of business investments, goodwill and other long-lived assets, see the discussion under "Item 7. Management's Discussion and Analysis of Operations and Financial Condition" and Note 3 of the Notes to Consolidated Financial Statements.

Our revenue from U.S. Government contracts depends on the continued availability of funding from the U.S. Government, and, accordingly, we have the risk that funding for our existing contracts may be canceled or diverted to other uses or delayed or that funding for new programs will not be available.

We perform work on a number of contracts with the U.S. Department of Defense and other agencies and departments of the U.S. Government including subcontracts with government prime contractors. Sales under contracts with the U.S. Government, including sales under contracts with the U.S. Department of Defense, as prime contractor or subcontractor, represented approximately 26% of our total revenue in 2020, compared with 24% in 2019. Performance under government contracts has inherent risks that could have a material effect on our business, results of operations, and financial condition.

Government contracts are conditioned upon the continuing availability of Congressional appropriations and the failure of Congress to appropriate funds for programs in which we participate could negatively affect our results of operations. U.S. Government shutdowns have resulted in delays in anticipated contract awards and delayed payments of invoices for several of our businesses and any new shutdown could have similar or worse effects. The failure by Congress to approve future budgets on a timely basis could delay procurement of our products and services and cause us to lose future revenues. Any renewed emphasis on Federal deficit and debt reduction could lead to a further decrease in overall defense spending. Budgetary concerns could result in future contracts being awarded more on price than on other competitive factors, and smaller defense budgets could result in government in-sourcing of programs and more intense competition on programs that are not in-sourced, which could result in lower revenues and profits.

Also, defense spending does not necessarily correlate to continued business for us, because not all of the programs in which we participate or have current capabilities may be provided with continued funding. Changes in policy and budget priorities by the new U.S. Presidential Administration for various defense and National Aeronautics and Space Administration ("NASA") programs could impact our Engineered Systems, Aerospace and Defense Electronics and Digital Imaging segments. Our Aerospace and Defense Electronics segment may be impacted by volume or price reductions in connection with the F-35 Joint Strike Fighter program, to the extent they are imposed. The timing of program cycles can affect our results of operations for a quarter or year, and cancellations of significant programs such as the Space Launch System ("SLS"), Launch Vehicle Stage Adapter ("LVSA"), International Space Station ("ISS"), Mission Operations and Integration ("MO&I"), or the Shallow Water Combat Submersible ("SWCS") would affect our results.

In 2020 and 2019, our largest contract with the U.S. Government was the MO&I contract, which represented 1.5% and 1.4% of our total net sales, respectively. In June 2020, Teledyne Brown Engineering, Inc. was notified that NASA had awarded to another contractor the Marshall Operations, Systems, Services, and Integration ("MOSSI") contract, which represented a combination of the Huntsville Operations Support Center contract and the MO&I contract. Subsequently, Teledyne Brown Engineering, Inc. filed a protest challenging such award, which protest was sustained and which sustainment triggered the cancelation of the MOSSI request for proposal and requiring a new acquisition, free of involvement of individuals with a conflict of interest, to begin. While the MO&I contract continues through September 2021, and NASA has several options to further extend it through March 2023, there is no guarantee it will be further extended. NASA anticipates release of the new acquisition, the Marshall Operations, Systems, Services, and Integration II, draft solicitation in April 2021 with the award expected in late 2022. There is no guarantee that Teledyne Brown Engineering will be awarded this new contract.

It is also not uncommon for the U.S. Department of Defense to delay the timing of awards or change orders for major programs for six to twelve months. Reductions and delays in research and development funding by the U.S. Government could impact our revenues. Uncertainty over budgets or priorities with the new U.S. Presidential Administration could result in delays in funding and the timing of awards, and changes in funded programs that could have a material impact on our revenues. A significant shift in U.S. Government priorities related to programs and acquisition strategies could have a material impact to our financial results.

Further, most of our U.S. Government contracts are subject to termination by the U.S. Government either at its convenience or upon the default of the contractor. Termination for convenience provisions provides only for the recovery of costs incurred or committed, settlement expenses, and profit on work completed prior to termination. Termination for default clauses imposes liability on the contractor for excess costs incurred by the U.S. Government in re-procuring undelivered items from another source. We had no U.S. Government contracts terminated for convenience in 2020, compared with three in 2019. No contracts were terminated for default during such two-year period.

Our U.S. Government contracting business is subject to government contracting regulations, including increasingly complex regulations on cybersecurity, and our failure to comply with such laws and regulations could harm our operating results and prospects.

Our U.S. Government contracting businesses, like other government contractors, are subject to various audits, reviews and investigations (including private party "whistleblower" lawsuits) relating to our compliance with applicable federal and state laws and regulations. More routinely, the U.S. Government may audit the costs we incur on our U.S. Government contracts, including allocated indirect costs. Such audits could result in adjustments to our contract costs. Any costs found to be improperly allocated to a specific contract will not be reimbursed, and such costs already reimbursed would need to be refunded. We have recorded contract revenues based upon costs we expect to realize after final audit. In a worst case scenario, should a business or division be charged with wrongdoing, or should the U.S. Government determine that the business or division is not a "presently responsible contractor," that business or division, and conceivably our Company as a whole, could be temporarily suspended or, in the event of a conviction, could be debarred for up to three years from receiving new government contracts or government-approved subcontracts. In addition, we could expend substantial amounts defending against such charges and in damages, fines and penalties if such charges were proven or were to result in negotiated settlements. Routine audits by U.S. Government agencies of Teledyne's various procurement and accounting systems have the potential to result in disapproval of the audited systems by the administrative contracting officer. Disapproval could significantly impact cash flow, as up to 10% may be withheld from payments.

The Department of Defense as well as other U.S. Government contracting agencies have adopted rules and regulations requiring contractors to implement a set of cyber security measures to attain the safeguarding of contractor systems that process, store, or transmit certain information. Implementation and compliance with these cyber security requirements is complex and costly, and could result in unforeseen expenses, lower profitability and, in the case of non-compliance, penalties and damages, all of which could have an adverse effect on our business. The cyber security requirements also impact our supply base which could impact cost, schedule and performance on programs if suppliers do not meet the requirements and therefore, do not qualify to support the programs.

We may not have sufficient resources to fund all future research and development and capital expenditures or possible acquisitions.

In order to remain competitive, we must make substantial investments in research and development of new or enhanced products and continuously upgrade our process technology and manufacturing capabilities. Our research and development efforts primarily involve engineering and design related to improving existing products and developing new products and technologies in the same or similar fields. Our Teledyne Scientific Company subsidiary, which serves as our primary research center, has been actively promoting and funding joint research and development projects with other Teledyne businesses, including Teledyne Oil & Gas, Teledyne Defense Electronics, Teledyne Digital Imaging and our Test and Measurement businesses. The business of Teledyne e2v, for which the design and development of specialized technology for high performance systems and equipment is integral, also requires substantial investments in research and development. Additionally, some of our businesses have sought or are actively pursuing governmental support and funding for some of their research and development initiatives, including funding in 2019 for DALSA's semiconductor foundry in Bromont, Quebec. Nonetheless, we may be unable to fund all of our research and development and capital investment needs or possible strategic acquisitions of businesses or product lines. Our ability to raise additional capital will depend on a variety of factors, some of which will not be within our control, including the existence of bank and capital markets, investor perceptions of us, our businesses and the industries in which we operate, and general economic conditions. Failure to successfully raise needed capital or generate cash flow on a timely or cost-effective basis could have a material adverse effect on our business, results of operations and financial condition. In addition, if we fail to accurately predict future customer needs and preferences or fail to produce viable technologies, we may invest heavily in research and development of products that do not lead to significant revenue, which would adversely affect our profitability.

Limitations in customer funding for applied research and development and limitations in government support for research and development expenditures may reduce our ability to apply our ongoing investments in some market areas.

We may be unable to successfully introduce new and enhanced products in a timely and cost-effective manner or increase our participation in new markets, which could harm our profitability and prospects.

Our operating results depend in part on our ability to introduce new and enhanced products on a timely basis. We have major development activities at some of our businesses, for which a failure to execute in a timely manner could negatively impact those businesses. In order to improve our product development capabilities, we purchased the research center that is now Teledyne Scientific Company in 2006 and in 2011 we purchased DALSA to gain access to a well-equipped MEMS research and development center. In 2013, we opened a 52,000-square-foot technology development center in Daytona Beach, Florida primarily to serve the offshore oil and gas production and exploration industries. We are currently upgrading infrastructure at Teledyne e2v's facility in Chelmsford, U.K. and have expanded Teledyne DALSA's MEMS foundry in Bromont, Quebec, as well as acquired a second MEMS foundry in Edmonton, Alberta as part of the Micralyne acquisition. Successful product development and introduction depend on numerous factors, including our ability to anticipate customer and market requirements, changes in technology and industry standards, our ability to differentiate our product offerings from the product offerings of our competitors, and market acceptance. We may not be able to develop and introduce new or enhanced products in a timely and cost-effective manner or to develop and introduce products that satisfy customer requirements.

We also have the risk that our defense businesses may not be able to replace revenue related to legacy platforms with products for new platform applications. We face the risk that changes in systems architectures will obviate the need for our products. For example, electronically steered radar arrays do not need certain high voltage interconnects like mechanically steered radar arrays do and unmanned aircraft will not need ejection seat sequencers.

Our new products also may not achieve market acceptance or correctly address new industry standards and technological changes. We may also lose any technological advantage to competitors if we fail to develop new products in a timely manner.

Additionally, new products may trigger increased warranty costs as information on such products is augmented by actual usage. Accelerated entry of new products to meet heightened market demand and competitive pressures may cause additional warranty costs as development and testing time periods might be accelerated or condensed.

We intend to both adapt our existing technologies and develop new products to expand into new market segments. We may be unsuccessful in accessing these and other new markets if our products do not meet our customers' requirements, as a result of changes in either technology and industry standards or because of actions taken by our competitors.

We may not be able to reduce the costs of our products to satisfy customers' cost reduction mandates, which could harm our sales or margins.

Cost conscious customers may seek price reductions of our products. While we continually work to reduce our manufacturing and other costs of our products, without affecting product quality and reliability, there is no assurance that we will be able to do so or to do so in a timely manner to satisfy the pricing pressures of our customers. Prices of raw materials and other components used in our products may be beyond our control depending on market conditions. As a result, customers may seek lower cost products from China or other developing countries where manufacturing costs are lower.

The airline industry is heavily regulated, and if we fail to comply with applicable requirements, our results of operations could suffer.

The Federal Aviation Administration ("FAA") and equivalent regulatory agencies have increasingly focused on the need to assure that airline industry products are designed with sufficient cybersecurity controls to protect against unauthorized access or other unwanted compromise. A failure to meet these evolving expectations could negatively impact sales into the industry and expose us to legal or contractual liability.

Governmental agencies throughout the world, including the FAA, prescribe standards and qualification requirements for aircraft components, including virtually all commercial airline and general aviation products. Specific regulations vary from country to country, although compliance with FAA requirements generally satisfies regulatory requirements in other countries. If any material authorization or approval qualifying us to supply our products is revoked or suspended, then sale of the product would be prohibited by law, which would have an adverse effect on our business, financial condition and results of operations.

From time to time, the FAA or equivalent regulatory agencies in other countries propose new regulations or changes to existing regulations, which often are more stringent than existing regulations. If such proposals are adopted and enacted, we may incur significant additional costs to achieve compliance, which could have a material adverse effect on our business, financial condition and results of operations. Recent trends by China's aviation authority to relax restrictions on airspace may be reversed, and anticipated new regulations loosening airspace restrictions may not materialize, which could impact sales prospects in China for our commercial aerospace businesses.

The FAA and the U.S. Department of Justice's Fraud Section, among other agencies and countries, have been investigating two Boeing 737 Max 8 aircraft crashes that occurred in October 2018 and March 2019, which resulted in the groundings of such aircraft across the world. Subsequently, Boeing announced in December 2019 that it was temporarily suspending production of the 737 Max starting in January 2020. While Boeing has started to resume minimal production in May 2020 and governmental groundings have been lifted, production is not expected to reach historic levels for the immediate future. While resumption of some production of the 737 Max has been factored into our business plans, there is a risk that airlines and air travelers may respond negatively to the 737 Max aircraft due to historic and continuing perceived safety concerns. These factors may further negatively impact our Teledyne Controls' business.

Increasing competition could reduce the demand for our products and services.

Each of our markets is highly competitive. Many of our competitors have, and potential competitors could have, greater name recognition, a larger installed base of products, more extensive engineering, manufacturing, marketing and distribution capabilities and greater financial, technological and personnel resources. New or existing competitors may also develop new technologies that could adversely affect the demand for our products and services. We have been experiencing increased competition for some of our key products. Furthermore, some of our patents have or are expiring, which could open up further competition. For example, our U.S. patent related to our Wireless GroundLink product expired in 2018, allowing several competitors to enter the market. Additionally, some of our customers have been developing competing products or electing to vertically integrate and replace our products with their own. For example, Airbus is providing a wireless product, FOMAX, which now competes directly with Teledyne Controls hardware and services. Furthermore, Boeing has announced a vertical integration program, which includes avionics. Specifically, Boeing has expressed its intention to replace certain Teledyne wireless products on both the 737 Max and 787 aircraft with its own wireless products. Lastly, some of our products face increasing competition from alternative technologies. For example, the lead acid batteries that Teledyne Battery Products sells face competition from lithium ion batteries, among other competing technologies. The hydrogen generation systems that Teledyne Energy Systems sells also face increasing competition from new entrants to the on-site electrolysis of water market.

Industry acquisition and consolidation trends, particularly among aerospace and defense contractors, have adversely impacted demand for our aerospace and defense related engineering services as large prime contractors elect to in-source major acquisition programs and expand small business participation to meet Government contracting goals. Such consolidations can also cause delays in business as the newly consolidated organization undergoes integration.

Low-cost competition from China and other developing countries could also result in decreased demand for our products. Increasing competition could reduce the volume of our sales or the prices we may charge, which would negatively impact our revenues. Smaller defense budgets both in the United States and Europe could result in additional competition for new and existing defense programs.

Product liability claims, product recalls and field service actions could have a material adverse effect on our reputation, business, results of operations and financial condition and we may have difficulty obtaining product liability and other insurance coverage.

As a manufacturer and distributor of a wide variety of products, including monitoring instruments, products used in offshore oil and gas production, products used in transportation and commercial aviation and products used in medical devices (including X-Ray detectors), our results of operations are susceptible to adverse publicity regarding the quality or safety of our products. In part, product liability claims challenging the safety of our products may result in a decline in sales for a product, which could adversely affect our results of operations. This could be the case even if the claims themselves are proven to be untrue or settled for immaterial amounts.

While we have general liability and other insurance policies concerning product liabilities and errors and omissions, we have self-insured retentions or deductibles under such policies with respect to a portion of these liabilities. Awarded damages could be more than our accruals. We could incur losses above the aggregate annual policy limit as well. We cannot ensure that, for 2021 and in future years, insurance carriers will be willing to renew coverage or provide new coverage for product liability.

Product recalls can be expensive and tarnish our reputation and have a material adverse effect on the sales of our products. We cannot assure that we will not have additional product liability claims or that we will not recall any products.

We have been joined, among a number of defendants (often over 100), in lawsuits alleging injury or death as a result of exposure to asbestos. In addition, because of the prominent “Teledyne” name, we may continue to be mistakenly joined in lawsuits involving a company or business that was not assumed by us as part of our 1999 spin-off. To date, we have not incurred material liabilities in connection with these lawsuits. However, our historic insurance coverage, including that of our predecessors, may not fully cover such claims and the defense of such matters. Coverage typically depends on the year of purported exposure and other factors. Nonetheless, we intend to vigorously defend our position against these claims.

Teledyne Brown Engineering, Inc. and other Teledyne companies manufacture components for customers in the nuclear power market, including utilities and certain governmental entities. Certain liabilities associated with such products are covered by the Price-Anderson Nuclear Industries Indemnity Act and other statutory and common law defenses, and we have received indemnities from some of our customers. However, there is no assurance we will not face product liability claims related to such products or that our exposure will not exceed the amounts for which we have liability coverage or protection.

Our business and financial results could be adversely affected by conditions and other factors associated with our suppliers, and subcontractors.

Some items we purchase for the manufacture of our products are purchased from limited or single sources of supply due to technical capability, price and other factors. For example, Teledyne Digital Imaging has an internal single source of supply for CCD semiconductor wafers used to assemble image sensors and an external single source of supply for CMOS semiconductor wafers used to assemble X-ray panel products. Furthermore, sole source supply is more common among our businesses that are heavily involved in research and development because there can be few suppliers in the world capable of producing the products or providing the services with the right highly specialized technology. Teledyne LeCroy continues to outsource a portion of its research and development activities to third-party engineering firms in Malaysia and India where it may be more difficult for us to enforce our intellectual property rights. We have also outsourced from time to time the manufacturing of certain parts, components, subsystems and even finished products to single or limited sources, including international sources. Disruption of these sources or supplier-imposed rationing of scarce components could cause delays or reductions in shipments of our products or increases in our costs, which could have an adverse effect on our financial condition or operations. We could experience global supply chain disruptions if the COVID-19 pandemic health crisis continues and new strains of the virus emerge. International sources possess additional risks, some of which are similar to those described above regarding international sales. With any continuing disruption in the global economy and financial markets, some of our suppliers may also continue to face issues gaining access to sufficient credit and materials to maintain their businesses, which could reduce the availability of some components and, to the extent such suppliers are single source suppliers, could adversely affect our ability to continue to manufacture and sell our products. Some companies engage subcontractors to perform a portion of the services we provide to our customers. To provide these services, the subcontractor must be financially viable, company with applicable laws, regulations and contract terms. Non-performance by a subcontractor could result in misalignment between subcontractor performance and our contractual obligations to our customers. Lastly, our Teledyne Hi-Rel business screens, tests, packages, performs various services and resells products of a third party, and faces the risk that such third party may end its relationship due to economic conditions and other factors.

We face risks related to sales through distributors and other third parties which could harm our business.

We sell a portion of our products through third parties such as distributors, value-added resellers and OEMs (collectively, “distributors”). Using third parties for distribution exposes Teledyne to many risks, including concentration, credit risk and legal risk because under certain circumstances we may be held responsible for the actions of those third-party sales channels. We may rely on one or more key distributors for a product, and the loss of these distributors could reduce our revenue. Distributors may face financial difficulties, including bankruptcy, which could harm our collection of accounts receivables and financial results. Violations of the Foreign Corrupt Practices Act (“FCPA”) or similar anti-bribery laws by distributors or other third-party intermediaries could have a material impact on our business. Competitors could also block our access to key distributors. Failing to manage risks related to our use of distributors may reduce sales, increase expenses, and weaken our competitive position, and could result in sanctions against us.

Compliance with increasing environmental and climate change regulations, as well as the effects of potential environmental liabilities, could have a material adverse financial effect on us.

We, like other industry participants, are subject to various federal, state, local and international environmental laws and regulations. We may be subject to increasingly stringent environmental standards in the future, particularly as greenhouse gas emissions and climate change regulations and initiatives increase. Future developments, administrative actions or liabilities relating to environmental and climate change matters could have a material adverse effect on our business, results of operations or financial condition. Environmental regulations on hydraulic fracturing and the use of seismic energy sources for offshore energy exploration could adversely affect some product lines of our Instrumentation segment.

Our manufacturing operations, including former operations, could expose us to material environmental liabilities. Additionally, companies that we acquire may have environmental liabilities that might not be accurately assessed or brought to our attention at the time of the acquisition.

The U.S. Environmental Protection Agency (“EPA”) has focused on greenhouse gases (“GHGs”), maintaining GHGs threaten the public health and welfare of the American people. The EPA also maintains that GHG emissions from on-road vehicles contribute to that threat. The EPA’s endangerment finding covers emissions of six greenhouse gases. The EPA’s continuing efforts to limit GHG emissions could adversely affect our U.S. manufacturing operations, increase prices for energy, fuel and transportation, require us to accommodate changes in parameters, such as the way parts are manufactured, and may, in some cases, require us to redesign certain of our products. This, or other federal or state regulations, could lead to increased costs, which we may not be able to recover from customers, delays in product shipments and loss of market share to competitors. For example, Teledyne Battery Products unit makes lead acid batteries in California and is subject to a variety of environmental regulations and inspections, which have increased over time. Also, some of our sites conduct electroplating, metal finishing and other operations that utilize hazardous materials that are subject to similar regulations. Regulatory changes or failure to meet applicable requirements could disrupt that business or force a closure or relocation of the business.

Our products are subject to various regulations that prohibit or restrict the use of certain hazardous substances. For example, our products placed on the European market are subject to the Registration, Evaluation, Authorization and Restriction of Chemicals (“REACH”) and the restriction of the use of certain hazardous substances in electrical and electronic equipment

("ROHS") Directives. Future hazardous substance restrictions or prohibitions may limit our ability to market some products in certain countries.

For additional discussion of environmental matters, see the discussion under the caption "Other Matters – Environmental" of "Item 7. Management's Discussion and Analysis of Results of Operation and Financial Condition" and Note 14 of the Notes to Consolidated Financial Statements. For a discussion of our products that contribute to the environment, sustainability and climate science, see "Item 1. Business – Environment and Sustainability."

Our inability to attract and retain key personnel could have a material adverse effect on our future success.

Our future success depends to a significant extent upon the continued service of our executive officers and other key management and technical personnel and on our ability to continue to attract, retain and motivate qualified personnel. We also have a maturing workforce. Some of our businesses, including our businesses in traveling wave tube and integrated microwave module design and development, draw from a pool of specialized engineering talent that is small and currently shrinking. Some of our businesses have a need for employees with a certain level of security clearance, and competition for such employees has increased. While we have engaged in succession planning, the loss of the services of one or more of our key employees or our failure to attract, retain and motivate qualified personnel could have a material adverse effect on our business, financial condition and results of operations.

We may not be able to sell or reconfigure businesses, facilities or product lines that we determine no longer meet with our growth strategy or that should be consolidated.

Consistent with our strategy to emphasize growth in our core markets, we continually evaluate our businesses to ensure that they are aligned with our strategy and objectives. Over the years we have also consolidated some of our business units and facilities, in some cases to respond to downturns in the defense or oil and gas industries, among other reasons. During 2020, we relocated our Teledyne Paradise Datacom operation in State College, Pennsylvania to our Teledyne Microwave Solutions facility in Rancho Cordova, California. We may not be able to realize efficiencies and cost savings from our consolidation activities. There is no assurance that our efforts will be successful. If we do not successfully manage our current consolidation activities, or any other similar activities that we may undertake in the future, expected efficiencies and benefits might be delayed or not realized, and our operations and business could be disrupted. Our ability to dispose of, exit or reconfigure businesses that may no longer be aligned with our growth strategy will depend on many factors, including the terms and conditions of any asset purchase and sale agreement or lease agreement, as well as industry, business and economic conditions. We cannot provide any assurance that we will be able to sell non-strategic businesses on terms that are acceptable to us, or at all. In addition, if the sale of any non-strategic business cannot be consummated or is not practical, alternative courses of action, including relocation of product lines or closure, may not be available to us or may be more costly than anticipated.

Natural and man-made disasters could adversely affect our business, results of operations and financial condition.

Several of our facilities, as a result of their locations, could be subject to a catastrophic loss caused by earthquakes, hurricanes, tornados, floods, ice storms or other natural disasters. Many of our production facilities and our headquarters are located in California and thus are in areas with above average seismic activity and may also be at risk of damage due to wildfire. In November 2018, wildfires impacted areas near our headquarters and principal research and development center in Thousand Oaks, California, resulting in temporary disruptions and evacuations of employees who lived nearby. Local utilities may impose blackouts during high fire risk weather conditions, which could result in disruptions to our businesses located in California, including our headquarters. In the event of a major earthquake, tornado, hurricane or catastrophic event such as fire, power loss, telecommunications failure, vandalism, cyber-attack, war, terrorist attack or health epidemic (including COVID-19), we may be unable to continue our operations and may endure system interruptions, reputational harm, delays in our application development, lengthy interruptions in our products, breaches of data security and loss of critical data, all of which could harm our business, results of operations and financial condition. Teledyne DALSA's semiconductor facilities in Quebec, Canada have been impacted by loss of electrical power caused by severe ice storms. In addition, we have manufacturing facilities in the southeastern United States and Texas that have been threatened or struck by major hurricanes. In 2017, our businesses located in Houston, Texas were impacted by Hurricane Harvey and our business in Florida was threatened by Hurricanes Irma and Matthew. Our facilities in Alabama, Florida, Nebraska, Tennessee and Virginia have also been threatened by tornados. If any of our California facilities, including our California headquarters, were to experience a catastrophic earthquake or wildfire loss or if any of our Alabama, Florida, Nebraska, Tennessee or Texas facilities were to experience a catastrophic hurricane, storm, tornado or other natural disaster, or if DALSA's facilities in Quebec experience long-term loss of electrical power, such event could disrupt our operations, delay production, shipments and revenue, and result in large expenses to repair or replace the facility or facilities. In addition, the insurance we maintain may be insufficient to cover our losses resulting from disasters, cyber-attacks or other business interruptions, and any incidents may result in loss of, or increased costs of, such insurance. In addition, our existing disaster recovery and business continuity plans (including those relating to our information technology systems) may not be fully responsive to, or minimize losses associated with, catastrophic events.

Disasters also have an indirect adverse impact on our business. For example, in 2018, a fire at a Netherlands-based facility of a key supplier of printed circuit boards resulted in delivery disruptions to the electronics industry, including to businesses in our Digital Imaging segment.

Teledyne Brown Engineering, Inc. has developed, built, and launched a multiuser system for earth sensing that is affixed to the International Space Station ("ISS"). For the program to continue to be financially successful, the 21-year-old ISS must continue to fly in a safe and human tended condition. While certain spaceflight risks, such as a high-velocity debris impact to the station causing significant structural damage or necessitating the evacuation of the ISS, have been regarded as small, if such event were to occur, the ISS program continuation could be threatened, jeopardizing our investment and potential revenue generation from ISS-based Earth imaging.

We may not be able to enforce or protect our intellectual property rights, or third parties may claim we infringe their intellectual rights, each which may harm our ability to compete and thus harm our business.

Our ability to enforce and protect our patents, copyrights, software licenses, trade secrets, know-how, and other intellectual property rights is subject to general litigation risks, as well as uncertainty as to the enforceability of our intellectual property rights in various countries. When we seek to enforce our rights, we have found that various claims may be asserted against us, including claims that our intellectual property right is invalid, is otherwise not enforceable or is licensed to the party against whom we are asserting a claim. In addition, we may be the target of aggressive and opportunistic enforcement of patents by third parties. If we are not ultimately successful in defending ourselves against these claims in litigation, we may not be able to sell a product or family of products due to an injunction, or we may have to pay damages that could, in turn, harm our results of operations. Our inability to enforce our intellectual property rights under these circumstances may harm our competitive position and our business.

Our business and operations could suffer in the event of cyber security breaches.

Attempts by others to gain unauthorized access to our information technology systems have become more sophisticated and are sometimes successful. These attempts, which might be related to industrial or foreign government espionage, crime, activism, or other motivations, include covertly introducing malware into our computers and computer networks, performing reconnaissance, impersonating authorized users, extortion, and stealing, corrupting or restricting our access to data, among other activities. We continue to train our personnel and update our infrastructure, security tools and processes to protect against security incidents, including both external and internal threats, and to prevent their recurrence. Company personnel and third parties have been tasked to detect, respond to, and investigate such incidents, but it is possible that we might not prevent or be aware of or be able to react to an incident or its magnitude and effects. The theft, corruption, unauthorized use or publication of our intellectual property or confidential business information could harm our competitive position, reduce the value of our investment in research and development and other strategic initiatives or otherwise adversely affect our business. We are subject to U.S. Department of Defense regulations applicable to certain types of data residing on or transiting through our information systems, and these regulations have been and will continue to be incorporated into certain U.S. Department of Defense contracts that we hold. To the extent that any security breach results in inappropriate disclosure of confidential or controlled information of employees, third parties or the U.S. Government, or any of the deployed security controls are deemed insufficient, we may incur liability or the loss of contracts or security clearances. As a result, we expect to continue to devote additional resources to the security of our information technology systems. More resources may be required in the defense arena to the extent the U.S. Government increases its cyber security mandates. Unauthorized access to or control of our products, devices or systems could impact the safety of our customers and other third parties which could result in legal claims against us. Security breaches also could result in a violation of applicable U.S. and international privacy and other laws, including GDPR, Health Insurance Portability and Accountability Act, Payment Card Industry Data Security Standard, and California Consumer Privacy Act and subject us to private consumer or securities litigation and governmental investigations and proceedings, any of which could result in our exposure to material civil or criminal liability. Lastly, we are not immune from cyber security and privacy breaches of our customers and suppliers.

Provisions of our governing documents, applicable law, and our Change in Control Severance Agreements could make an acquisition of Teledyne more difficult.

Our Restated Certificate of Incorporation, our Amended and Restated Bylaws and the General Corporation Law of the State of Delaware contain several provisions, such as our classified Board, that could make the acquisition of control of Teledyne, in a transaction not approved by our Board, more difficult. We have also entered into Change in Control Severance Agreements with ten members of our current management, which could have an anti-takeover effect. These provisions may prevent or discourage attempts to acquire our Company.

Our Amended and Restated Bylaws ("Bylaws") designate the Court of Chancery of the State of Delaware as the sole and exclusive forum for certain lawsuits between us and our stockholders, which could limit our stockholders' ability to obtain a judicial forum that it finds favorable for such lawsuits and make it more costly for our stockholders to bring such lawsuits, which may have the effect of discouraging such lawsuits.

Our Bylaws provide that, unless we consent in writing to the selection of an alternative forum, the Court of Chancery of the State of Delaware will be, to the fullest extent permitted by law, the sole and exclusive forum for any (i) derivative action or proceeding brought on our behalf, (ii) action asserting a claim of breach of a fiduciary duty owed by any of our directors, officers, employees or agents to us or our stockholders, (iii) action asserting a claim arising pursuant to any provision of the General Corporation Law of the State of Delaware, Restated Certificate of Incorporation or Bylaws, (iv) any action to interpret, apply, enforce or determine the validity of the Restated Certificate of Incorporation or Bylaws or (v) action asserting a claim governed by the internal affairs doctrine. Our Bylaws also provide that any person or entity purchasing or otherwise acquiring or holding any interest in shares of our capital stock will be deemed to have notice of and consented to this forum selection provision.

However, this forum selection provision is not intended to apply to any actions brought under the Securities Act of 1933 (the "Securities Act"), as amended, or the Exchange Act. Section 27 of the Exchange Act creates exclusive federal jurisdiction over all suits brought to enforce any duty or liability created by the Exchange Act or the rules and regulations thereunder and Section 22 of the Securities Act creates concurrent jurisdiction for federal and state courts over all suits brought to enforce any duty or liability created by the Securities Act or the rules and regulations thereunder. Accordingly, the forum selection provision in our Bylaws will not relieve us of our duties to comply with the federal securities laws and the rules and regulations thereunder, and our stockholders will not be deemed to have waived our compliance with these laws, rules and regulations.

Nevertheless, this forum selection provision in our Bylaws may limit a stockholder's ability to bring a claim in a judicial forum that it finds favorable for disputes with us or any of our directors, officers and other employees, which may discourage lawsuits with respect to such claims, although our stockholders will not be deemed to have waived our compliance with federal securities laws and the rules and regulations thereunder. In addition, stockholders who do bring a claim in the Court of Chancery in the State of Delaware could face additional litigation costs in pursuing any such claim, particularly if they do not reside in or near Delaware. While we believe the risk of a court declining to enforce the forum selection provision contained in our Bylaws is low, if a court were to find the provision inapplicable to, or unenforceable in respect of, one or more of the specified types of actions or proceedings, we may incur additional costs associated with resolving such action in other jurisdictions, which could harm our business, operating results and financial condition.

Risks Related to Our Securities

An investment in Teledyne's Common Stock and other securities involve risks, many of which are beyond our control.

Stock markets in general, including the New York Stock Exchange on which our Common Stock is listed, have experienced a high degree of price and volume fluctuations that are not necessarily related to operating performance of the listed companies. In addition to general economic, political and market conditions, such volatility may be related to: (i) changes from analysts' expectations in revenues, earnings and other financial results; (ii) strategic actions by other competitors; (iii) changes to budgets or policies of the U.S. and other governments; and (iv) other risks described in this report. We cannot provide assurances as to our Common Stock price, which during fiscal 2020 has ranged from a low of $195.34 to a high of $398.99.

Item 1B. Unresolved Staff Comments

None.

Item 2. Properties

The Company has 68 principal operating facilities in 17 states and six foreign countries. The Company's executive offices are located in Thousand Oaks, California. Our principal research and development center is also located in Thousand Oaks, California. The Instrumentation segment has principal operations in the United States, the United Kingdom and Denmark, the Digital Imaging segment has principal operations in the United States, Canada, France, the Netherlands and the United Kingdom, the Aerospace and Defense Electronics segment with principal operations in the United States and the United Kingdom and the Engineered Systems segment has principal operations in the United States. We maintain our facilities in good operating condition, and we believe they are suitable and adequate for the purposes for which they are intended and overall have sufficient capacity to conduct business as currently conducted.

Item 3. Legal Proceedings

From time to time, we become involved in various lawsuits, claims and proceedings arising out of, or incident to, our ordinary course of business including lawsuits, claims or proceedings pertaining to product liability, patent infringement, commercial contracts, employment and employee benefits. While we cannot predict the outcome of any lawsuit, claim or proceeding, our management does not believe that the disposition of any pending matters is likely to have a material adverse effect on our business, financial condition or liquidity.

Item 4. Mine Safety Disclosures

No information is required in response to this item.

Item 5. Market for Registrant's Common Equity, Related Stockholder Matters, and Issuer Purchases of Equity Securities

Our Common Stock is listed on the New York Stock Exchange and traded under the symbol "TDY".

As of February 22, 2021, there were 2,646 holders of record of the Common Stock. Because many of our shares of common stock are held by brokers and institutions on behalf of stockholders, we are unable to estimate the total number of beneficial owners of our stock represented by these stockholders of record.

We intend to use future earnings to fund the development and growth of our businesses, including through potential acquisitions. Therefore, we do not anticipate paying any cash dividends in the foreseeable future.

We have stock repurchase programs authorized by our Board of Directors to repurchase up to approximately three million shares. No repurchases were made since 2015. Although we have no current plans to repurchase stock, up to approximately three million shares may be repurchased under the stock repurchase program. See Note 8 of the Notes to Consolidated Financial Statements for additional information about our stock repurchase program.

Item 6. Selected Financial Data

The following table presents our summary consolidated financial data. We derived the following historical selected financial data from our audited consolidated financial statements. Our fiscal year is determined based on a 52- or 53-week convention ending on the Sunday nearest to December 31. Each fiscal year presented below contained 52 weeks. The five-year summary of selected financial data should be read in conjunction with the discussion under "Item 7-Management's Discussion and Analysis of Financial Condition and Results of Operation" and the Notes to Consolidated Financial Statements.

Five-Year Summary of Selected Financial Data

	2020	2019	2018	2017	2016
		(In millions, except per-share amounts)			
Net sales	**$ 3,086.2**	$ 3,163.6	$ 2,901.8	$ 2,603.8	$ 2,149.9
Net income	**$ 401.9**	$ 402.3	$ 333.8	$ 227.2	$ 190.9
Basic earnings per common share	**$ 10.95**	$ 11.08	$ 9.32	$ 6.45	$ 5.52
Diluted earnings per common share	**$ 10.62**	$ 10.73	$ 9.01	$ 6.26	$ 5.37
Weighted average diluted common shares outstanding	**37.9**	37.5	37.0	36.3	35.5
Total assets	**$ 5,084.8**	$ 4,579.8	$ 3,809.3	$ 3,846.4	$ 2,774.4
Long-term debt, less current portion	**$ 680.9**	$ 750.0	$ 610.1	$ 1,063.9	$ 509.7
Total stockholders' equity	**$ 3,228.6**	$ 2,714.7	$ 2,229.7	$ 1,947.3	$ 1,554.4

Each fiscal year includes the impact of the acquisitions. See Note 3 to our Consolidated Financial Statements for additional information about recent acquisitions.

Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operations

Teledyne Technologies Incorporated provides enabling technologies for industrial growth markets that require advanced technology and high reliability. These markets include aerospace and defense, factory automation, air and water quality environmental monitoring, electronics design and development, oceanographic research, deepwater oil and gas exploration and production, medical imaging and pharmaceutical research. We differentiate ourselves from many of our direct competitors by having a customer and Company-sponsored applied research center that augments our product development expertise. We believe that technological capabilities and innovation and the ability to invest in the development of new and enhanced products are critical to obtaining and maintaining leadership in our markets and the industries in which we compete.

Strategy/Overview

Our strategy continues to emphasize growth in our core markets of instrumentation, digital imaging, aerospace and defense electronics and engineered systems. Our core markets are characterized by high barriers to entry and include specialized products and services not likely to be commoditized. We intend to strengthen and expand our core businesses with targeted acquisitions and through product development. We continue to focus on balanced and disciplined capital deployment among capital expenditures, acquisitions and product development. We aggressively pursue operational excellence to continually improve our margins and earnings by emphasizing cost containment and cost reductions in all aspects of our business. At Teledyne, operational excellence includes the rapid integration of the businesses we acquire. Using complementary technology across our businesses and internal research and development, we seek to create new products to grow our company and expand our addressable markets. We continue to evaluate our businesses to ensure that they are aligned with our strategy.

Consistent with this strategy, we made one acquisition in 2020 and three acquisitions in 2019. See the Recent and Pending Acquisitions section for additional information.

COVID-19 and Other Matters

We concluded 2020 with the best operating margin and cash flow in the Company's history. With regard to the COVID-19 pandemic, our first priority remains the health and safety of our employees and their families. Our manufacturing sites are deemed essential businesses and remain operational, and we are practicing social distancing, enhanced cleaning protocols, usage of personal protective equipment and other preventative measures.

While no company is immune to global economic challenges, Teledyne's business portfolio is well-balanced across end markets and geographies, and includes a high degree of businesses serving critical infrastructure sectors such as the defense industrial base, water and wastewater, and healthcare and public health. However, given the continuing dynamic nature of this situation, the Company may not fully estimate the impacts of COVID-19 on its financial condition, results of operations or cash flows.

As part of a continuing effort to reduce costs and improve operating performance, as well as to respond to the impact of COVID-19, in 2020 the Company took actions to reduce headcount by 9.8% across various businesses, reducing our exposure to weak end markets, such as commercial aerospace. At January 3, 2021, $2.1 million remains to be paid related to these actions.

The following pre-tax charges were incurred related to severance and facility consolidations (in millions):

	2020	2019	2018
Instrumentation	**$ 5.9**	$ 1.5	$ 5.6
Digital Imaging	**2.9**	1.1	0.7
Aerospace and Defense Electronics	**11.1**	0.5	1.3
Engineered Systems	**0.5**	0.1	0.2
Corporate	**0.4**	—	—
Total	**$ 20.8**	$ 3.2	$ 7.8

	2020	2019	2018
Severance	**$ 16.0**	$ 3.5	$ 5.6
Facility consolidations (a)	**4.8**	(0.3)	2.2
Total	**$ 20.8**	$ 3.2	$ 7.8

(a) 2019 includes the reversal of certain amounts recorded in 2018 no longer needed.

	2020	2019	2018
Cost of sales	**$ 10.3**	$ 0.8	$ 4.9
Selling, general and administrative expenses	**10.5**	2.4	2.9
Total	**$ 20.8**	$ 3.2	$ 7.8

Recent and Pending Acquisitions

The Company spent $29.0 million, $484.0 million and $3.1 million on acquisitions and other investments, net of cash acquired in 2020, 2019 and 2018, respectively.

Pending 2021 Acquisition

On January 4, 2021, the first day of our 2021 fiscal year, Teledyne and FLIR Systems, Inc. (“FLIR”) entered into a definitive agreement under which Teledyne will acquire FLIR in a cash and stock transaction valued at approximately $8.0 billion. Under the terms of the agreement, FLIR stockholders will receive $28.00 per share in cash and 0.0718 shares of Teledyne common stock for each FLIR share, which implies a total purchase price of $56.00 per FLIR share based on Teledyne’s 5-day volume weighted average price as of December 31, 2020. The transaction is expected to close in the middle of 2021 subject to the receipt of required regulatory approvals, including expiration or termination of the applicable waiting period under the Hart-Scott-Rodino Antitrust Improvements Act, approvals of Teledyne and FLIR stockholders and other customary closing conditions.

FLIR designs, develops, manufactures, markets, and distributes technologies that enhance perception and awareness. FLIR provides innovative sensing solutions through thermal imaging, visible-light imaging, video analytics, measurement and diagnostic, and advanced threat detection systems. FLIR offers a diversified portfolio that serves a number of applications in government and defense, industrial, and commercial markets. FLIR, headquartered in Wilsonville, Oregon, will be part of the Digital Imaging segment.

2020 Acquisition

On January 5, 2020, we acquired OakGate Technology, Inc. (“OakGate”) for $28.5 million in cash, net of cash acquired. Based in Loomis, California, OakGate provides software and hardware designed to test electronic data storage devices from development through manufacturing and end-use applications. The acquired business is part of the Test and Measurement product line within the Instrumentation segment.

2019 Acquisitions

On February 5, 2019, we acquired the scientific imaging businesses of Roper Technologies, Inc. for $224.8 million in cash. The acquired businesses include Princeton Instruments, Photometrics and Lumenera. The acquired businesses provide a range of imaging solutions, primarily for life sciences, academic research and customized OEM industrial imaging solutions. Princeton Instruments and Photometrics manufacture state-of-the-art cameras, spectrographs and optics for advanced research in physical sciences, life sciences research and spectroscopy imaging. Applications and markets include materials analysis, quantum technology and cell biology imaging using fluorescence and chemiluminescence. Lumenera primarily provides rugged USB-based customized cameras for markets such as traffic management, as well as life sciences applications. Principally located in the United States and Canada, the acquired businesses are part of the Digital Imaging segment.

On August 1, 2019, we acquired the gas and flame detection businesses of 3M Company for $233.5 million in cash. The gas and flame detection businesses includes Oldham, Simtronics, Gas Measurement Instruments, Detcon and select Scott Safety products. The gas and flame detection businesses provides a portfolio of fixed and portable industrial gas and flame detection instruments used in a variety of industries including petrochemical, power generation, oil and gas, food and beverage, mining and waste water treatment. Principally located in France, the United Kingdom and the United States, the acquired businesses are part of the Environmental Instrumentation product line of the Instrumentation segment.

On August 30, 2019, we acquired Micralyne Inc. ("Micralyne") for $25.7 million in cash. Micralyne provides micro electromechanical systems ("MEMS") devices. In particular, Micralyne possesses unique microfluidic technology for biotech applications, as well as capabilities in non-silicon-based MEMS (e.g. gold, polymers) often required for human body compatibility. Based in Edmonton, Alberta, Canada, the acquired business is part of the Digital Imaging segment.

See Note 3 of the Notes to Consolidated Financial Statements for additional information about our recent acquisitions and Note 15 of the Notes to Consolidated Financial Statements for additional information about a pending acquisition.

Consolidated Operating Results

Our fiscal year is determined based on a 52- or 53-week convention ending on the Sunday nearest to December 31. Fiscal year 2020 contained 53 weeks while fiscal years 2019 and 2018 each contained 52 weeks. The following are selected financial highlights for 2020, 2019 and 2018 (in millions, except per-share amounts):

	2020	2019	2018
Net sales	**$ 3,086.2**	$ 3,163.6	$ 2,901.8
Costs and expenses			
Cost of sales	**1,905.3**	1,920.3	1,791.0
Selling, general and administrative expenses	**700.8**	751.6	694.2
Total costs and expenses	**2,606.1**	2,671.9	2,485.2
Operating income	**480.1**	491.7	416.6
Interest and debt expense, net	**(15.3)**	(21.0)	(25.5)
Non-service retirement benefit income	**12.1**	8.0	13.5
Other expense, net	**(7.2)**	(5.0)	(10.7)
Income before income taxes	**469.7**	473.7	393.9
Provision for income taxes	**67.8**	71.4	60.1
Net income	**$ 401.9**	$ 402.3	$ 333.8
Basic earnings per common share	**$ 10.95**	$ 11.08	$ 9.32
Diluted earnings per common share	**$ 10.62**	$ 10.73	$ 9.01

Our businesses are aligned in four business segments: Instrumentation, Digital Imaging, Aerospace and Defense Electronics and Engineered Systems. Our four business segments and their respective percentage contributions to our total sales in 2020, 2019 and 2018 are summarized in the following table:

	Percentage of Total Net Sales		
Segment contribution to total net sales:	**2020**	**2019**	**2018**
Instrumentation	**35 %**	35 %	35 %
Digital Imaging	**32 %**	31 %	30 %
Aerospace and Defense Electronics	**19 %**	22 %	22 %
Engineered Systems	**14 %**	12 %	13 %
	100 %	100 %	100 %

Results of Operations

2020 compared with 2019

Net sales (dollars in millions)	2020	2019	% Change
Instrumentation	**$ 1,094.5**	$1,105.1	(1.0)%
Digital Imaging	**986.0**	992.9	(0.7)%
Aerospace and Defense Electronics	**589.4**	690.1	(14.6)%
Engineered Systems	**416.3**	375.5	10.9 %
Total net sales	**$ 3,086.2**	$3,163.6	(2.4)%

Results of operations (dollars in millions)	2020	2019	% Change
Instrumentation	**$ 213.2**	$ 200.4	6.4 %
Digital Imaging	**192.8**	176.5	9.2 %
Aerospace and Defense Electronics	**80.8**	143.4	(43.7)%
Engineered Systems	**50.1**	36.5	37.3 %
Corporate expense	**(56.8)**	(65.1)	(12.7)%
Operating income	**480.1**	491.7	(2.4)%
Interest and debt expense, net	**(15.3)**	(21.0)	(27.1)%
Non-service retirement benefit income	**12.1**	8.0	51.3 %
Other expense, net	**(7.2)**	(5.0)	44.0 %
Income before income taxes	**469.7**	473.7	(0.8)%
Provision for income taxes	**67.8**	71.4	(5.0)%
Net income	**$ 401.9**	$ 402.3	(0.1)%

Sales and cost of sales by segment and total company (dollars in millions):

	2020	2019	Change
Instrumentation			
Net sales	**$ 1,094.5**	$ 1,105.1	$ (10.6)
Cost of sales	**$ 603.4**	$ 612.8	$ (9.4)
Cost of sales % of net sales	**55.1 %**	55.5 %	
Digital Imaging			
Net sales	**$ 986.0**	$ 992.9	$ (6.9)
Cost of sales	**$ 569.2**	$ 580.6	$ (11.4)
Cost of sales % of net sales	**57.7 %**	58.5 %	
Aerospace and Defense Electronics			
Net sales	**$ 589.4**	$ 690.1	$ (100.7)
Cost of sales	**$ 395.1**	$ 414.7	$ (19.6)
Cost of sales % of net sales	**67.0 %**	60.1 %	
Engineered Systems			
Net sales	**$ 416.3**	$ 375.5	$ 40.8
Cost of sales	**$ 337.6**	$ 312.2	$ 25.4
Cost of sales % of net sales	**81.1 %**	83.1 %	
Total Company			
Net sales	**$ 3,086.2**	$ 3,163.6	$ (77.4)
Cost of sales	**$ 1,905.3**	$ 1,920.3	$ (15.0)
Cost of sales % of net sales	**61.7 %**	60.7 %	

We reported net sales of $3,086.2 million in 2020, compared with net sales of $3,163.6 million for 2019, a decrease of 2.4%. Net income was $401.9 million ($10.62 per diluted share) in 2020, compared with net income of $402.3 million ($10.73 per diluted share) in 2019, a decrease of 0.1%.

Total year 2020 and 2019 reflected pretax charges totaling $33.3 million and $8.8 million, respectively, primarily in severance, facility consolidation, acquisition and certain changes in contract cost estimates. Net income for 2020 and 2019 also included net discrete tax benefits of $34.6 million and $26.1 million, respectively.

Net sales

The decrease in net sales in 2020, compared with 2019, reflected lower net sales in each segment except the Engineered Systems segment. Net sales in 2020 included $68.9 million in incremental net sales from recent acquisitions.

Sales under contracts with the U.S. Government were approximately 26% of net sales in 2020 and 24% of net sales in 2019. Sales to international customers represented approximately 45% of net sales in 2020 and 44% of net sales in 2019.

Cost of Sales

Cost of sales decreased by $15.0 million in 2020, compared with 2019, which primarily reflected the impact of lower net sales, partially offset by higher severance and facility consolidation expense. Cost of sales as a percentage of net sales for 2020 was 61.7%, compared with 60.7% for 2019.

Selling, general and administrative expenses

Selling, general and administrative expenses, including research and development expense, were lower in 2020, compared with 2019. The decrease primarily reflected the impact of lower net sales. Corporate administrative expense in 2020 was $56.8 million, compared with $65.1 million in 2019. The lower 2020 amount primarily reflected lower compensation expense. For 2020, we recorded a total of $24.7 million in stock option expense, of which $7.2 million was recorded within corporate expense and $17.5 million was recorded in the operating segment results. For 2019, we recorded a total of $26.1 million in stock option expense, of which $9.7 million was recorded within corporate expense and $16.4 million was recorded in the operating segment results. Selling, general and administrative expenses as a percentage of sales was 22.7% for 2020, compared with 23.8% for 2019.

Pension Service Expense

Pension service expense is included in both cost of sales and selling, general and administrative expense. Pension service expense in 2020 was $10.4 million compared with $9.4 million in 2019.

Operating Income

Operating income for 2020 was $480.1 million, compared with $491.7 million for 2019, a decrease of 2.4%. The decrease in operating income primarily reflected lower operating income in the Aerospace and Defense Electronics segment, partially offset by higher operating income in our other three segments. Operating income in 2020 and 2019 included charges of $33.3 million and $8.8 million, respectively, primarily related to severance, facility consolidation and acquisition expense and certain changes in contract cost estimates. Of these amounts, severance and facility consolidation expense totaled $20.8 million in 2020 and $3.2 million in 2019. The incremental operating income included in the results for 2020 from recent acquisitions was $4.1 million.

Interest Expense, Interest Income, Non-Service Retirement Benefit Income and Other Expense

Interest expense, including credit facility fees and other bank charges, was $15.8 million in 2020 compared with $22.0 million in 2019 and reflected the impact of lower average debt levels in 2020. Interest income was $0.5 million in 2020 and $1.0 million in 2019. Non-service retirement benefit income was $12.1 million in 2020, compared with $8.0 million in 2019. Other expense was $7.2 million for 2020, compared with expense of $5.0 million in 2019 and reflected higher foreign currency expense.

Income Taxes

The Company's effective tax rate for 2020 was 14.4%, compared with 15.1% for 2019. For 2020 net discrete income tax benefits were $34.6 million, which included a $20.9 million income tax benefit related to share-based accounting, $9.8 million primarily related to U.S. export sales, U.S. research credits and other items. For 2019 net discrete income tax benefits were $26.1 million, which included a $15.4 million income tax benefit related to share-based accounting, $13.1 million in income tax benefit as a result of the remeasurement of uncertain tax positions due to expiration of statute of limitations, a favorable tax settlement and a tax benefit related to U.S. export sales. Excluding the net discrete income tax benefits in both years, the effective tax rates would have been 21.8% for 2020 and 20.6% for 2019.

2019 compared with 2018

Sales (dollars in millions)	2019	2018	% Change
Instrumentation	**$ 1,105.1**	$ 1,021.2	8.2 %
Digital Imaging	**992.9**	875.3	13.4 %
Aerospace and Defense Electronics	**690.1**	640.2	7.8 %
Engineered Systems	**375.5**	365.1	2.8 %
Total sales	**$ 3,163.6**	$ 2,901.8	9.0 %

Results of operations (dollars in millions)	2019	2018	% Change
Instrumentation	**$ 200.4**	$ 147.4	36.0 %
Digital Imaging	**176.5**	155.5	13.5 %
Aerospace and Defense Electronics	**143.4**	131.8	8.8 %
Engineered Systems	**36.5**	37.9	(3.7)%
Corporate expense	**(65.1)**	(56.0)	16.3 %
Operating income	**491.7**	416.6	18.0 %
Interest and debt expense, net	**(21.0)**	(25.5)	(17.6)%
Non-service retirement benefit income	**8.0**	13.5	(40.7)%
Other expense, net	**(5.0)**	(10.7)	(53.3)%
Income before income taxes	**473.7**	393.9	20.3 %
Provision for income taxes	**71.4**	60.1	18.8 %
Net income	**$ 402.3**	$ 333.8	20.5 %

Sales and cost of sales by segment and total company (dollars in millions):

	2019	2018	Change
Instrumentation			
Net sales	**$1,105.1**	$ 1,021.2	$ 83.9
Cost of sales	**$ 612.8**	$ 575.2	$ 37.6
Cost of sales % of net sales	**55.5 %**	56.3 %	
Digital Imaging			
Net sales	**$ 992.9**	$ 875.3	$ 117.6
Cost of sales	**$ 580.6**	$ 529.4	$ 51.2
Cost of sales % of net sales	**58.5 %**	60.5 %	
Aerospace and Defense Electronics			
Net sales	**$ 690.1**	$ 640.2	$ 49.9
Cost of sales	**$ 414.7**	$ 385.9	$ 28.8
Cost of sales % of net sales	**60.1 %**	60.3 %	
Engineered Systems			
Net sales	**$ 375.5**	$ 365.1	$ 10.4
Cost of sales	**$ 312.2**	$ 300.5	$ 11.7
Cost of sales % of net sales	**83.1 %**	82.3 %	
Total Company			
Net sales	**$3,163.6**	$ 2,901.8	$ 261.8
Cost of sales	**$1,920.3**	$ 1,791.0	$ 129.3
Cost of sales % of net sales	**60.7 %**	61.7 %	

We reported net sales of $3,163.6 million in 2019, compared with net sales of $2,901.8 million for 2018, an increase of 9.0%. Net income was $402.3 million ($10.73 per diluted share) in 2019, compared with net income of $333.8 million ($9.01 per diluted share) in 2018, an increase of 20.5%.

Total year 2019 and 2018 reflected pretax charges totaling $3.2 million and $7.8 million, respectively, for severance and facility consolidation charges. Net income for 2019 and 2018 also included net discrete tax benefits of $26.1 million and $23.8 million, respectively.

Net sales

The increase in net sales in 2019, compared with 2018, reflected higher net sales in each segment. Net sales in 2019 included revenue growth of $128.7 million plus $133.1 million in incremental net sales from recent acquisitions.

Sales under contracts with the U.S. Government were approximately 24% of net sales in 2019 and 23% of net sales in 2018. Sales to international customers represented approximately 44% of net sales in 2019 and 47% of net sales in 2018.

Cost of Sales

Cost of sales increased by $129.3 million in 2019, compared with 2018, which primarily reflected the impact of higher net sales. Cost of sales as a percentage of sales for 2019 was 60.7%, compared with 61.7% for 2018.

Selling, general and administrative expenses

Selling, general and administrative expenses, including research and development expense, were higher in 2019, compared with 2018. The increase primarily reflected the impact of higher sales and higher research and development expense. Corporate administrative expense in 2019 was $65.1 million, compared with $56.0 million in 2018. The higher 2019 amount reflected higher compensation expense including higher stock option expense. For 2019, we recorded a total of $26.1 million in stock option expense, of which $9.7 million was recorded within corporate expense and $16.4 million was recorded in the operating segment results. For 2018, we recorded a total of $19.8 million in stock option expense, of which $6.3 million was recorded within corporate expense and $13.5 million was recorded in the operating segment results. Selling, general and administrative expenses as a percentage of sales was 23.8% for 2019, compared with 23.9% for 2018.

Pension Service Expense

Pension service expense is included in both cost of sales and selling, general and administrative expense. Pension service expense in 2019 was $9.4 million compared with pension service expense of $10.7 million in 2018.

Operating Income

Operating income for 2019 was $491.7 million, compared with $416.6 million for 2018, an increase of 18.0%. The increase in operating income primarily reflected higher operating income in each segment, except the Engineered Systems segment. Operating income in 2019 and 2018 reflected $3.2 million and $7.8 million in severance and facility consolidation costs, respectively. The incremental operating income included in the results for 2019 from recent acquisitions was $16.2 million.

Interest Expense, Interest Income, Non-Service Retirement Benefit Income and Other Expense

Interest expense, including credit facility fees and other bank charges, was $22.0 million in 2019 compared with $29.2 million in 2018 and reflected the impact of lower average debt levels in 2019. Interest income was $1.0 million in 2019 and $3.7 million in 2018. Non-service retirement benefit income was $8.0 million in 2019, compared with $13.5 million in 2018. Other expense was $5.0 million for 2019, compared with expense of $10.7 million in 2018 and reflected lower foreign currency expense in 2019.

Income Taxes

The Company’s effective tax rate for 2019 was 15.1%, compared with 15.3% for 2018. For 2019 net discrete income tax benefits were $26.1 million, which included a $15.4 million income tax benefit related to share-based accounting, $13.1 million in income tax benefit as a result of the remeasurement of uncertain tax positions due to expiration of statute of limitations, a favorable tax settlement and a tax benefit related to U.S. export sales. For 2018 net discrete income tax benefits were $23.8 million, which included a $12.9 million income tax benefit related to share-based accounting, $5.1 million in income tax benefit as a result of the remeasurement of uncertain tax positions due to expiration of statute of limitations and a $4.8 million income tax benefit related to the release of a valuation allowance for which the deferred tax assets are now determined more-likely-than-not to be realizable. Excluding the net discrete income tax benefits in both years, the effective tax rates would have been 20.6% for 2019 and 21.3% for 2018.

Segments

The following discussion of our four segments should be read in conjunction with Note 12 of the Notes to Consolidated Financial Statements.

Instrumentation

(Dollars in millions)	**2020**	**2019**	**2018**
Net sales	**$1,094.5**	$1,105.1	$1,021.2
Cost of sales	**$ 603.4**	$ 612.8	$ 575.2
Selling, general and administrative expenses	**$ 277.9**	$ 291.9	$ 298.6
Operating income	**$ 213.2**	$ 200.4	$ 147.4
Cost of sales % of net sales	**55.1 %**	55.5 %	56.3 %
Selling, general and administrative expenses % of net sales	**25.4 %**	26.4 %	29.3 %
Operating income % of net sales	**19.5 %**	18.1 %	14.4 %
International sales % of net sales	**57.0 %**	54.8 %	51.0 %
U.S. Government sales % of net sales	**7.4 %**	7.3 %	6.7 %

Our Instrumentation segment provides monitoring and control instruments for marine, environmental, industrial and other applications, as well as electronic test and measurement equipment. We also provide power and communications connectivity devices for distributed instrumentation systems and sensor networks deployed in mission critical, harsh environments.

2020 compared with 2019

Our Instrumentation segment net sales for 2020 decreased 1.0%, compared with 2019. Operating income for 2020 increased 6.4%, compared with 2019.

The 2020 net sales decrease primarily resulted from lower sales of marine instrumentation and test and measurement instrumentation, partially offset by higher sales of environmental instrumentation. Sales of environmental instrumentation increased $19.9 million and included $51.8 million in incremental sales from the gas and flame detection business acquisition. Sales of marine instrumentation decreased by $23.9 million. Sales of test and measurement instrumentation decreased $6.6 million and included $14.8 million in incremental sales from the acquisition of OakGate. The increase in operating income reflected the impact of improved product line margins and lower severance, facility consolidation and acquisition expense. The incremental operating income included in the results for 2020 from recent acquisitions was $4.1 million, including $3.4 million in incremental intangible asset amortization expense. Operating income in 2020 included $7.6 million in severance, facility consolidation and acquisition expense compared with $2.9 million in similar costs for 2019.

Cost of sales decreased by $9.4 million in 2020, compared with 2019, and primarily reflected the impact of lower net sales. The cost of sales percentage decreased slightly to 55.1% in 2020 from 55.5% in 2019. Selling, general and administrative expenses, including research and development expense, in 2020, decreased by $14.0 million, compared with 2019, and reflected the impact of lower sales, $3.0 million in lower research and development expense, partially offset by higher severance, facility consolidation and acquisition expense. Selling, general and administrative expenses for 2020, as a percentage of sales, decreased to 25.4%, compared with 26.4% for 2019, and reflected the impact of $3.0 million in lower research and development expense, partially offset by the impact of higher severance and facility consolidation and acquisition expense.

2019 compared with 2018

Our Instrumentation segment net sales for 2019 increased 8.2%, compared with 2018. Operating income increased 36.0%, compared with 2018.

The 2019 net sales increase primarily resulted from higher sales of environmental instrumentation, marine instrumentation and test and measurement instrumentation, as well as the contribution from the gas and flame detection business acquisition. Sales of environmental instrumentation increased $51.8 million and included $45.3 million in incremental sales from the gas and flame detection business acquisition. Sales of marine instrumentation increased by $17.2 million. Sales of test and measurement instrumentation increased $14.9 million. The increase in operating income reflected the impact of higher sales and higher margins across most product lines. The incremental operating income included in the results for 2019 from the gas and flame detection business acquisition was $4.1 million. Operating income in 2019 included $1.5 million in severance and facility consolidation costs compared with $5.6 million in severance and facility consolidation costs for 2018.

Cost of sales increased by $37.6 million in 2019, compared with 2018, and primarily reflected the impact of higher net sales. The cost of sales percentage decreased slightly to 55.5% in 2019 from 56.3% in 2018. Selling, general and administrative expenses, including research and development expense, in 2019, decreased by $6.7 million, compared with 2018, and reflected the impact of cost control efforts, lower severance and facility consolidation costs and lower research and development expense of $3.2 million. Selling, general and administrative expenses for 2019, as a percentage of sales, decreased to 26.4%, compared with 29.3% for 2018, and reflected the impact of cost control efforts, lower severance and facility consolidation costs and lower research and development expense.

Digital Imaging

(Dollars in millions)	2020	2019	2018
Net sales	**$986.0**	$ 992.9	$ 875.3
Cost of sales	**$569.2**	$ 580.6	$ 529.4
Selling, general and administrative expenses	**$224.0**	$ 235.8	$ 190.4
Operating income	**$192.8**	$ 176.5	$ 155.5
Cost of sales % of net sales	**57.7 %**	58.5 %	60.5 %
Selling, general and administrative expenses % of net sales	**22.7 %**	23.7 %	21.7 %
Operating income % of net sales	**19.6 %**	17.8 %	17.8 %
International sales % of net sales	**60.8 %**	59.7 %	66.0 %
U.S. Government sales % of net sales	**12.3 %**	10.8 %	10.3 %

Our Digital Imaging segment includes high-performance sensors, cameras and systems, within the visible, infrared and X-ray spectra for use in industrial, government and medical applications, as well as MEMS and high-performance, high-reliability semiconductors including analog-to-digital and digital-to-analog converters. It also includes our sponsored and centralized research laboratories which benefit government programs and commercial businesses.

2020 compared with 2019

Our Digital Imaging segment net sales for 2020 decreased 0.7%, compared with 2019. Operating income for 2020 increased 9.2%, compared with 2019.

Total year 2020 net sales primarily reflected lower sales of X-ray products for dental and medical applications, due in part to deferred patient treatments, partially offset by greater sales of infrared detectors for defense and space applications, MEMS products, and $2.3 million in incremental sales from recent acquisitions. The increase in operating income for 2020 reflected the impact of favorable product mix.

Cost of sales for 2020 decreased by $11.4 million, compared with 2019, and reflected the impact of lower net sales. The cost of sales percentage in 2020 decreased to 57.7% compared with 58.5% in 2019. Selling, general and administrative expenses for 2020 decreased to $224.0 million, compared with $235.8 million in 2019 and reflected the impact of lower net sales and lower research and development expense. The selling, general and administrative expense percentage decreased to 22.7% in 2020 from 23.7% in 2019 and reflected the impact of lower selling and research and development expense.

2019 compared with 2018

Our Digital Imaging segment net sales for 2019 increased 13.4%, compared with 2018. Operating income for 2019 increased 13.5%, compared with 2018.

Total year 2019 net sales primarily reflected higher sales of X-ray detectors for life sciences applications and aerospace, defense and MEMS products, as well as $87.8 million in sales from recent acquisitions, partially offset by lower sales of industrial machine vision products. The increase in operating income for 2019 reflected the impact of higher sales and incremental operating profit from recent acquisitions. The incremental operating income reflected in the results for 2019 from recent acquisitions was $12.1 million which included $4.7 million in additional intangible asset amortization expense.

Cost of sales for 2019 increased by $51.2 million, compared with 2018, and reflected the impact of higher net sales. The cost of sales percentage in 2019 decreased to 58.5% compared with 60.5% in 2018 and reflected product mix differences. Selling, general and administrative expenses for 2019 increased to $235.8 million, compared with $190.4 million in 2018 and reflected the impact of higher net sales, higher research and development expense and intangible amortization expense from recent acquisitions. The selling, general and administrative expense percentage increased to 23.7% in 2019 from 21.7% in 2018 and reflected the impact of higher research and development expense and intangible amortization expense from recent acquisitions.

Aerospace and Defense Electronics

(Dollars in millions)	2020	2019	2018
Net sales	**$589.4**	$ 690.1	$ 640.2
Cost of sales	**$395.1**	$ 414.7	$ 385.9
Selling, general and administrative expenses	**$113.5**	$ 132.0	$ 122.5
Operating income	**$ 80.8**	$ 143.4	$ 131.8
Cost of sales % of net sales	**67.0 %**	60.1 %	60.3 %
Selling, general and administrative expenses % of net sales	**19.3 %**	19.1 %	19.1 %
Operating income % of net sales	**13.7 %**	20.8 %	20.6 %
International sales % of net sales	**27.1 %**	27.4 %	34.1 %
U.S. Government sales % of net sales	**39.0 %**	32.6 %	27.7 %

Our Aerospace and Defense Electronics segment provides sophisticated electronic components and subsystems and communications products, including defense electronics, harsh environment interconnects, data acquisition and communications equipment for aircraft, and components and subsystems for wireless and satellite communications, as well as general aviation batteries.

2020 compared with 2019

Our Aerospace and Defense Electronics segment net sales for 2020 decreased 14.6%, compared with 2019. Operating income for 2020 decreased 43.7%, compared with 2019.

The 2020 net sales decrease reflected $94.8 million of lower sales of aerospace electronics and lower sales of $5.9 million of defense electronics. The continued weakness in the commercial aerospace industry, due to COVID-19, has negatively affected sales of aerospace electronics. The decrease in operating income in 2020 primarily reflected the impact of lower sales and $18.3 million of higher severance, facility consolidation expense and certain unfavorable changes in contract cost estimates.

Cost of sales for 2020 decreased by $19.6 million, compared with 2019, and reflected the impact of lower net sales. Cost of sales as a percentage of net sales for 2020 increased to 67.0% from 60.1% in 2019 and reflected the impact of higher severance, facility consolidation expense and certain unfavorable changes in contract cost estimates. Selling, general and administrative expenses, including research and development expense, decreased to $113.5 million in 2020, from $132.0 million in 2019 and reflected the impact of lower net sales, partially offset by higher severance and facility consolidation expense. The selling, general and administrative expense percentage was 19.3% in 2020 compared to 19.1% in 2019.

2019 compared with 2018

Our Aerospace and Defense Electronics segment net sales for 2019 increased 7.8%, compared with 2018. Operating income for 2019 increased 8.8%, compared with 2018.

The 2019 net sales increase reflected $57.9 million of higher sales of defense electronics, partially offset by $8.0 million of lower sales of aerospace electronics. The higher sales of defense electronics reflected greater sales in most product categories. Operating income in 2019 reflected the impact of higher net sales.

Cost of sales for 2019 increased by $28.8 million, compared with 2018, and reflected the impact of higher net sales. Cost of sales as a percentage of net sales for 2019 decreased slightly to 60.1% from 60.3% in 2018. Selling, general and administrative expenses, including research and development expense, increased to $132.0 million in 2019, from $122.5 million in 2018 and reflected higher research and development expense of $10.5 million. The selling, general and administrative expense percentage was 19.1% for both 2019 and 2018.

Engineered Systems

(Dollars in millions)	2020	2019	2018
Net sales	**$416.3**	$ 375.5	$ 365.1
Cost of sales	**$337.6**	$ 312.2	$ 300.5
Selling, general and administrative expenses	**$ 28.6**	$ 26.8	$ 26.7
Operating income	**$ 50.1**	$ 36.5	$ 37.9
Cost of sales % of net sales	**81.1 %**	83.1 %	82.3 %
Selling, general and administrative expenses % of net sales	**6.9 %**	7.2 %	7.3 %
Operating income % of net sales	**12.0 %**	9.7 %	10.4 %
International sales % of net sales	**0.7 %**	1.1 %	2.9 %
U.S. Government sales % of net sales	**92.9 %**	92.3 %	87.5 %

Our Engineered Systems segment provides innovative systems engineering and integration, advanced technology development, and manufacturing solutions for defense, space, environmental and energy applications. This segment also designs and manufactures electrochemical energy systems and small turbine engines.

2020 compared with 2019

Our Engineered Systems segment net sales for 2020 increased 10.9%, compared with 2019. Operating income for 2020 increased 37.3%, compared with 2019.

The 2020 sales increase reflected higher sales of $35.2 million of engineered products and services and $8.4 million of turbine engines, partially offset by lower sales of $2.8 million of energy systems products. The higher sales of engineered products and services primarily reflected increased sales from marine, space, nuclear and other manufacturing programs, as well as electronic manufacturing services products, partially offset by lower sales related to missile defense. The higher sales of turbine engines reflected increased sales for the Harpoon missile program. Operating income in 2020 reflected the impact of higher sales and a greater mix of higher margin fixed-price manufacturing programs.

Cost of sales for 2020 increased by $25.4 million, compared with 2019, and primarily reflected the impact of higher net sales. Cost of sales as a percentage of net sales for 2020 decreased to 81.1%, compared with 83.1% in 2019. Selling, general and administrative expenses, including research and development and bid and proposal expense, increased to $28.6 million in 2020, compared with $26.8 million in 2019. The selling, general and administrative expense percentage decreased slightly to 6.9% for 2020, compared with 7.2% in 2019.

2019 compared with 2018

Our Engineered Systems segment net sales for 2019 increased 2.8%, compared with 2018. Operating income for 2019 decreased 3.7%, compared with 2018.

The 2019 sales increase of $10.4 million reflected higher sales of $14.3 million of engineered products and services, partially offset by lower sales of $2.6 million of energy systems products and $1.3 million of turbine engines. The higher sales of engineered products and services primarily reflected increased sales for nuclear manufacturing and space programs. Operating income in 2019 decreased due to product mix differences.

Cost of sales for 2019 increased by $11.7 million, compared with 2018, and primarily reflected the impact of higher net sales. Cost of sales as a percentage of net sales for 2019 increased slightly 83.1%, compared with 82.3% in 2018. Selling, general and administrative expenses, including research and development and bid and proposal expense, increased slightly to $26.8 million in 2019, compared with $26.7 million in 2018. The selling, general and administrative expense percentage decreased slightly to 7.2% for 2019, compared with 7.3% in 2018.

Financial Condition, Liquidity and Capital Resources

Principal Cash and Capital Requirements

Our principal cash and capital requirements are to fund working capital needs, capital expenditures, income tax payments and debt service requirements, as well as acquisitions. It is anticipated that operating cash flow, together with available borrowings under the credit facility and the debt financing arrangement described below will be sufficient to meet these requirements and to fund the FLIR acquisition. To support acquisitions, we may need to raise additional capital. Our liquidity is not dependent upon the use of off-balance sheet financial arrangements. We have no off-balance sheet financing arrangements that incorporate the use of special purpose or unconsolidated entities.

As part of the pending acquisition of FLIR, Teledyne has arranged a $4.5 billion 364-day credit commitment to support funding of the transaction. Teledyne expects to fund the acquisition with a combination of equity, cash on hand and permanent debt financing, including a combination of senior notes and bank term loans.

Credit Facility, Senior Notes and Term Loan

Long-term debt (dollars in millions):	January 3, 2021	December 29, 2019
$750.0 million credit facility, due March 2024, weighted average rate of 1.05% at January 3, 2021 and 2.80% at December 29, 2019	$ 125.0	$ 125.0
Term loan due October 2024, variable rate of 1.15% at January 3, 2021 and 2.702% at December 29, 2019, swapped to a Euro fixed rate of 0.612%	150.0	150.0
5.30% Fixed Rate Senior Notes repaid September 2020	—	75.0
2.81% Fixed Rate Senior Notes repaid November 2020	—	25.0
3.09% Fixed Rate Senior Notes due December 2021	95.0	95.0
3.28% Fixed Rate Senior Notes due November 2022	100.0	100.0
0.70% €50 Million Fixed Rate Senior Notes due April 2022	61.1	56.0
0.92% €100 Million Fixed Rate Senior Notes due April 2023	122.1	111.9
1.09% €100 Million Fixed Rate Senior Notes due April 2024	122.1	111.9
Other debt	4.0	2.0
Debt issuance costs	(0.8)	(1.2)
Total long-term debt	778.5	850.6
Current portion of long-term debt	(97.6)	(100.6)
Total long-term debt, net of current portion	$ 680.9	$ 750.0

At January 3, 2021, we had $27.7 million in outstanding letters of credit.

Our credit facility, senior notes and term loan agreement require the Company to comply with various financial and operating covenants, including maintaining certain consolidated leverage and interest coverage ratios, as well as minimum net worth levels and limits on acquired debt. At January 3, 2021, the Company was in compliance with these covenants and we had a significant amount of margin between required financial covenant ratios and our actual ratios. Currently, we do not believe our ability to undertake additional debt financing, if needed, is reasonably likely to be materially impacted by debt restrictions under our credit agreements subject to our complying with required financial covenants listed in the table below.

Financial covenant ratios and the actual ratios at January 3, 2021:

$750.0 million Credit Facility expires March 2024 and $150.0 million term loan due October 2024 (issued October 2019)

Financial Covenant	Requirement	Actual Measure
Consolidated Leverage Ratio (Net Debt/EBITDA) (a)	No more than 3.25 to 1	1.338 to 1
Consolidated Interest Coverage Ratio (EBITDA/Interest) (b)	No less than 3.0 to 1	40.1 to 1

$500.3 million Private Placement Senior Notes due from 2021 to 2024

Financial Covenant	Requirement	Actual Measure
Consolidated Leverage Ratio (Net Debt/EBITDA) (a)	No more than 3.25 to 1	1.338 to 1
Consolidated Interest Coverage Ratio (EBITDA/Interest) (b)	No less than 3.0 to 1	40.1 to 1

(a) The Consolidated Leverage Ratio is equal to Net Debt/EBITDA as defined in our private placement note purchase agreement and our $750.0 million credit agreement.

(b) The Consolidated Interest Coverage Ratio is equal to EBITDA/Interest as defined in our private placement note purchase agreement and our $750.0 million credit agreement.

In the event of an acquisition, our credit agreements permit us, at our option, to exceed the Consolidated Leverage Ratio of 3.25 to 1 for up to four quarters following the fiscal quarter in which the acquisition event occurs, provided that the Consolidated Leverage Ratio does not exceed 3.5 to 1.

Available borrowing capacity under the $750.0 million credit facility, which is reduced by borrowings and outstanding letters of credit, was $615.5 million at January 3, 2021. See Note 9, Long-Term Debt to these Consolidated Financial Statements for additional information regarding our credit facility and term loan.

Contractual Obligations

The following table summarizes our expected cash outflows resulting from financial contracts and commitments at January 3, 2021:

Contractual obligations (in millions):	2021	2022	2023	2024	2025	After 2025	Total
Debt obligations	$ 97.1	$ 161.1	$ 122.1	$397.1	$ 0.8	$ 1.1	$ 779.3
Interest expense(a)	12.9	9.2	5.6	2.2	—	—	29.9
Operating lease obligations (b)	23.8	22.4	19.2	17.0	15.5	66.0	163.9
Purchase obligations (c)	203.7	11.8	1.9	2.7	1.0	0.7	221.8
Total	$337.5	$ 204.5	$ 148.8	$419.0	$ 17.3	$ 67.8	$ 1,194.9

(a) Interest expense related to the credit facility, including facility fees, is assumed to accrue at the rates in effect at year-end 2020 and is assumed to be paid at the end of each quarter with the final payment in March 2024 when the credit facility expires.

(b) Includes imputed interest and the short-term portion of lease obligations.

(c) Purchase obligations generally include contractual obligations for the purchase of goods and services and capital commitments that are enforceable and legally binding on us and that specifies all significant terms, including: fixed or minimum quantities to be purchased; fixed, minimum, or variable price provisions; and the approximate timing of the transaction.

Unrecognized tax benefits of $32.3 million are not included in the table above because $14.7 million is offset by deferred tax assets, and the remainder cannot be reasonably estimated to be settled in cash due to a lack of prior settlement history and offsetting credits.

At January 3, 2021, we were not required, and accordingly are not planning, to make any cash contributions to the domestic qualified pension plans for 2021. Our minimum funding requirements after 2020 as set forth by ERISA, are dependent on several factors as discussed under "Accounting for Pension Plans" in the Critical Accounting Policies section of this Management's Discussion and Analysis of Financial Condition and Results of Operation. Estimates beyond 2021 have not been provided due to the significant uncertainty of these amounts, which are subject to change until the Company's pension assumptions can be updated at the appropriate times. In addition, certain pension contributions are eligible for future recovery through the pricing of products and services to the U.S. government under certain government contracts, therefore, future cash contributions are not necessarily indicative of the impact these contributions may have on our liquidity. We also have payments due under our other postretirement benefit plans. These plans are not required to be funded in advance, but are pay as you go. See further discussion in Note 11 of the Notes to Consolidated Financial Statements. Teledyne intends to continue to monitor and manage its defined benefit pension plans obligation and may take additional actions to manage risk in the future.

Operating Activities

In 2020, net cash provided by operating activities was $618.9 million, compared with $482.1 million in 2019 and $446.9 million in 2018. The higher cash provided by operating activities in 2020, compared with 2019, was driven by timing of accounts receivable collections, cash flow from recent acquisitions and $35.6 million of lower income tax payments. The higher cash provided by operating activities in 2019, compared with 2018, was driven by higher operating income, partially offset by $45.4 million of higher income tax payments.

Free cash flow (cash provided by operating activities less capital expenditures) was $547.5 million in 2020, compared with $393.7 million in 2019 and $360.1 million in 2018.

Free Cash Flow(a) (in millions, brackets indicate use of funds)	**2020**	**2019**	**2018**
Cash provided by operating activities	**$618.9**	$482.1	$446.9
Capital expenditures for property, plant and equipment	**(71.4)**	(88.4)	(86.8)
Free cash flow	**$547.5**	$393.7	$360.1

a) We define free cash flow as cash provided by operating activities (a measure prescribed by generally accepted accounting principles) less capital expenditures for property, plant and equipment. We believe that this supplemental non-GAAP information is useful to assist management and the investment community in analyzing our ability to generate cash flow.

Investing Activities

Net cash used in investing activities was $99.4 million, $571.9 million and $88.6 million for 2020, 2019 and 2018, respectively. Cash flows relating to investing activities consists primarily of cash used for acquisitions and other investments and capital expenditures.

Capital expenditures (in millions):	**2020**	**2019**	**2018**
Instrumentation	**$ 18.0**	$ 18.9	$ 14.8
Digital Imaging	**33.4**	45.2	35.8
Aerospace and Defense Electronics	**10.4**	19.0	18.7
Engineered Systems	**7.5**	3.6	13.6
Corporate	**2.1**	1.7	3.9
	$ 71.4	$ 88.4	$ 86.8

During 2021, we plan to invest approximately $80.0 million in capital expenditures, principally to upgrade facilities and manufacturing equipment.

Acquisitions

Investing activities used cash for acquisitions and other investments of $29.0 million, $484.0 million and $3.1 million, in 2020, 2019 and 2018, respectively (see "Recent Acquisitions"). Teledyne funded the acquisitions primarily from borrowings under its credit facilities, issuance of senior notes and term loans and cash on hand. On January 5, 2020, we acquired OakGate Technology, Inc. for $28.5 million in cash.

For all acquisitions, the results of operations and cash flows are included in our consolidated financial statements from the date of each respective acquisition.

The following table shows the purchase price (net of cash acquired), goodwill acquired and intangible assets acquired for the acquisitions and other investments made in 2020 and 2019 (in millions):

	2020			
Acquisition	**Acquisition date**	**Cash Paid (a)**	**Goodwill Acquired**	**Acquired Intangible Assets**
OakGate Technology, Inc.	January 5, 2020	**$ 28.5**	**$ 16.9**	**$ 7.0**
Purchase price adjustment - Micralyne Inc.		**0.5**	**—**	**—**
Total		**$ 29.0**	**$ 16.9**	**$ 7.0**

(a) Net of cash acquired .

Goodwill resulting from the OakGate acquisition will not be deductible for tax purposes.

	2019			
Acquisition	**Acquisition date**	**Cash Paid (a)**	**Goodwill Acquired**	**Acquired Intangible Assets**
Scientific imaging business	February 5, 2019	$ 224.8	$ 149.9	$ 52.4
Gas and flame detection business	August 1, 2019	233.5	147.7	69.0
Micralyne Inc.	August 30, 2019	25.7	7.3	0.9
Total		$ 484.0	$ 304.9	$ 122.3

(a) Net of any cash acquired and any purchase price adjustments.

The majority of the goodwill resulting from the acquisition of the scientific imaging businesses will be deductible for tax purposes. Goodwill resulting from the acquisition of the gas and flame detection business and Micralyne will not be deductible for tax purposes.

See Note 15, Subsequent Events, to these Consolidated Financial Statements for information about the pending acquisition of FLIR.

Financing Activities

Financing activities for 2020 reflected net payments on debt of $98.1 million, compared with net proceeds from debt of $108.8 million in 2019 and net payments on debt of $306.5 million for 2018. Fiscal years 2020, 2019 and 2018 reflect proceeds from the exercise of stock options of $36.3 million, $34.6 million and $37.2 million, respectively.

Other Matters

Pension Plans

Effective January 1, 2020, Teledyne restructured its domestic qualified defined benefit pension plan. The restructuring involved dividing our domestic qualified defined pension plan into two separate plans, one comprised primarily of inactive participants (the "inactive plan") and the other comprised primarily of active participants (the "active plan"). The reorganization was made to facilitate a targeted investment strategy over time and to provide additional flexibility in evaluating opportunities to reduce risk and volatility. Actuarial gains and losses associated with the active plan will continue to be amortized over the average remaining service period of the active participants, which is approximately nine years, while the actuarial gains and losses associated with the inactive plan will be amortized over the average remaining life expectancy of the inactive participants, which is approximately 17 years. These plans cover substantially all U.S. employees hired before January 1, 2004, or approximately 10% of Teledyne's active employees as of January 3, 2021. As of January 1, 2004, new U.S. hires participate in a domestic defined contribution plan. In 2020, 2019 and 2018, Teledyne was not required, and did not make any cash contributions to the domestic pension plans. For the Company's qualified defined benefit pension plans, the discount rate for 2021 will decrease to an average of 2.64% from 3.41% in 2020. The Company also has several small non-qualified domestic and foreign-based defined benefit pension plans.

Income Taxes

Our income tax expense, deferred tax assets and liabilities, and reserves for unrecognized tax benefits reflect management's best assessment of estimated current and future taxes to be paid. We are subject to income taxes in both the United States and numerous foreign jurisdictions. Significant judgments and estimates are required in determining the consolidated income tax expense.

We intend to reinvest indefinitely the earnings of our material foreign subsidiaries in our operations outside of the United States. The cash that the Company's foreign subsidiaries hold for indefinite reinvestment is generally used to finance foreign operations and investments, including foreign acquisitions. We estimate that future domestic cash generation will be sufficient to meet future domestic cash requirements. Due to the Tax Act, U.S. federal and applicable state income taxes have been accrued for the deemed repatriation. At January 3, 2021, the amount of undistributed foreign earnings was $326.8 million, for which we have not recorded a deferred tax liability of approximately $1.4 million for corporate income taxes which would be due if reinvested foreign earnings were repatriated. Should we decide to repatriate the foreign earnings, we would need to adjust our income tax provision in the period we determined that we would no longer indefinitely reinvest the earnings outside the United States.

Deferred income taxes arise from temporary differences between the tax basis of assets and liabilities and their reported amount in the financial statements, which will result in taxable or deductible amounts in the future. In evaluating our ability to recover our deferred tax assets within the jurisdiction from which they arise, we consider all available positive and negative evidence, including scheduled reversals of deferred tax liabilities, projected future taxable income, tax-planning strategies, and results of recent operations. In projecting future taxable income, we begin with historical results adjusted for the results of discontinued operations and incorporate assumptions about the amount of future state, federal and foreign pretax operating income adjusted for items that do not have tax consequences. The assumptions about future taxable income require significant judgment and are consistent with the plans and estimates we are using to manage the underlying businesses. In evaluating the objective evidence that historical results provide, we consider three years of cumulative operating income. Based on the Company's history of operating earnings, expectations of future operating earnings and potential tax planning strategies, management believes that it is possible that some portion of deferred taxes will not be realized as a future tax benefit and therefore has recorded a valuation allowance.

We file income tax returns in the United States federal jurisdiction and in various states and foreign jurisdictions. The Company has substantially concluded on all U.S. federal income tax matters for all years through 2016, United Kingdom income tax matters for all years through 2019, France income tax matters for all years through 2016 and Canadian income tax matters for all years through 2012.

Costs and Pricing

Inflationary trends in recent years have been moderate. Current inventory costs, the increasing costs of equipment and other costs are considered in establishing sales pricing policies. The Company emphasizes cost containment and cost reductions in all aspects of its business.

Hedging Activities and Market Risk Disclosures

Teledyne transacts business in various foreign currencies and has international sales and expenses denominated in foreign currencies, subjecting the Company to foreign currency risk. The Company's primary objective is to protect the United States dollar value of future cash flows and minimize the volatility of reported earnings. The Company utilizes foreign currency forward contracts to reduce the volatility of cash flows primarily related to forecasted revenue and expenses denominated in Canadian dollars for our Canadian companies, and in British pounds for our U.K. companies. These contracts are designated and qualify as cash flow hedges. The Company has converted U.S. dollar denominated, variable rate and fixed rate debt obligations of a European subsidiary, into euro fixed rate obligations using a receive float, pay fixed cross currency swap, and a received fixed pay, fixed cross currency swap. These cross currency swaps are designated as cash flow hedges. In addition, the Company has converted domestic U.S. variable rate debt to fixed rate debt using a receive variable, pay fixed interest rate swap. The interest rate swap is also designated as a cash flow hedge.

The effectiveness of the cash flow hedge forward contracts, the cross currency swap hedges, and the interest rate swap cash flow hedge is assessed prospectively and retrospectively on a monthly basis using regression analysis, as well as using other timing and probability criteria. To receive hedge accounting treatment, all hedging relationships are formally documented at the inception of the hedges and must be highly effective in offsetting changes to future cash flows on hedged transactions. The effective portion of the cash flow hedge forward contracts' gains or losses resulting from changes in the fair value of these hedges is initially reported, net of tax, as a component of accumulated other comprehensive income/(loss) ("AOCI") in stockholders' equity until the underlying hedged item is reflected in our consolidated statements of income, at which time the effective amount in AOCI is reclassified to revenue in our consolidated statements of income. For the cross currency swap and interest rate cash flow hedges, effective amounts are recorded in AOCI, and reclassified into interest expense in the consolidated statements of income. In addition, for the cross currency swaps an amount is reclassified from AOCI to other income and expense each reporting period, to offset the earnings impact of the remeasurement of the hedged liabilities. Net deferred gains recorded in AOCI, net of tax, for forward contracts that will mature in the next 12 months total $5.4 million. These gains are expected to be offset by anticipated losses in the value of the forecasted underlying hedged item. Amounts related to the cross currency swaps and interest rate swap expected to be reclassified from AOCI into income in the coming 12 months total $1.2 million.

In the event that the underlying forecasted transactions do not occur, or it becomes remote that they will occur, within the defined hedge period, the gains or losses on the related cash flow hedges will be reclassified from AOCI to other income and expense. During the current reporting period, all forecasted transactions occurred and, therefore, there were no such gains or losses reclassified to other income and expense, due to missed forecasts.

As of January 3, 2021, Teledyne had foreign currency forward contracts designated as cash flow hedges to buy Canadian dollars and to sell U.S. dollars totaling $127.5 million. These foreign currency forward contracts have maturities ranging from March 2020 to February 2021.

The cross currency swaps have notional amounts of €113.0 million and $125.0 million, and €135.0 million and $150.0 million, and mature in March 2023 and October 2024, respectively. The interest rate swap has a notional amount of $125.0 million and matures in March 2023.

In addition, the Company utilizes foreign currency forward contracts to mitigate foreign exchange rate risk associated with foreign currency denominated monetary assets and liabilities, including intercompany receivables and payables. As of January 3, 2021, Teledyne primarily had foreign currency contracts of this type in the following currency pairs (in millions):

Contracts to Buy			Contracts to Sell		
Currency	Amount		Currency	Amount	
Canadian Dollars	$	78.0	U.S. Dollars	US$	59.7
Euros	€	36.2	U.S. Dollars	US$	43.3
Great Britain Pounds	£	88.9	U.S. Dollars	US$	119.1
Canadian Dollars	$	22.3	Euros	€	14.4
Danish Krone	Kr.	302.3	U.S. Dollars	US$	49.0

These contracts had a positive fair value of $5.6 million at January 3, 2021. The gains and losses on these derivatives which are not designated as hedging instruments, are intended to, at a minimum, partially offset the transaction gains and losses recognized in earnings.

All derivatives are recorded on the balance sheet at fair value. As discussed below, the accounting for gains and losses resulting from changes in fair value depends on the use of the derivative and whether it is designated and qualifies for hedge accounting. Teledyne does not use foreign currency forward contracts for speculative or trading purposes.

Notwithstanding our efforts to mitigate portions of our foreign currency exchange rate risks, there can be no assurance that our hedging activities will adequately protect us against the risks associated with foreign currency fluctuations. A hypothetical 10 percent price change of the U.S. dollar from its value at January 3, 2021, would result in a decrease or increase in the fair value of our foreign currency forward contracts designated as cash flow hedges to buy Canadian dollars and to sell U.S. dollars by approximately $12.7 million. A hypothetical 10 percent price change in the U.S. dollar from its value at January 3, 2021 would result in a decrease or increase in the fair value of our Euro/U.S. Dollar cross currency swaps designated as cash flow hedges by approximately $31.3 million. A hypothetical 100 basis point increase in U.S. interest rates at January 3, 2021 would result in an increase in the fair value of our U.S. Dollar interest rate swap designated as a cash flow hedge by approximately $2.6 million, while a 100 basis point decrease would result in a decrease in its fair value of $0.5 million.

Borrowings under our credit facility are at fixed rates that vary with the term and timing of each loan under the facility. Loans under the facility typically have terms of one, two, three or six months and the interest rate for each such loan is subject to change if the loan is continued or converted following the applicable maturity date. Interest rates are also subject to change based on our debt to earnings before interest, taxes, depreciation and amortization ratio. As of January 3, 2021, we had $125.0 million outstanding under our $750.0 million credit facility. Any borrowings under the Company's credit facility are based on a fluctuating market interest rate and, consequently, the fair value of any outstanding debt should not be affected materially by changes in market interest rates.

Our primary exposure to market risk relates to changes in interest rates and foreign currency exchange rates. We periodically evaluate these risks and have taken measures to mitigate these risks. We own assets and operate facilities in countries that have been politically stable.

Environmental

We are subject to various federal, state, local and international environmental laws and regulations which require that we investigate and remediate the effects of the release or disposal of materials at sites associated with past and present operations. These include sites at which Teledyne has been identified as a potentially responsible party under the Comprehensive Environmental Response, Compensation and Liability Act, commonly known as Superfund, and comparable state laws. We are currently involved in the investigation and remediation of a number of sites. Reserves for environmental investigation and remediation totaled $6.5 million and $6.0 million as of January 3, 2021 and December 29, 2019, respectively. As investigation and remediation of these sites proceed and new information is received, the Company will adjust accruals to reflect new information. Based on current information, we do not believe that future environmental costs, in excess of those already accrued, will materially and adversely affect our financial condition or liquidity. See also our environmental risk factor disclosure beginning on page 15 and Notes 2 and 14 of the Notes to Consolidated Financial Statements.

Government Contracts

We perform work on a number of contracts with the U.S. Department of Defense and other agencies and departments of the U.S. Government including sub-contracts with government prime contractors. Sales under these contracts with the U.S. Government, which included contracts with the U.S. Department of Defense, were approximately 26% of total net sales in 2020, 24% of total net sales in 2019 and 23% of total sales in 2018. For a summary of sales to the U.S. Government by segment, see Note 12 of the Notes to Consolidated Financial Statements. Sales to the U.S. Department of Defense represented approximately 19%, 17% and 17% of total net sales for 2020, 2019 and 2018, respectively.

Performance under government contracts has certain inherent risks that could have a material adverse effect on the Company's business, results of operations and financial condition. Government contracts are conditioned upon the continuing availability of Congressional appropriations, which usually occurs on a fiscal year basis even though contract performance may take more than one year. See also our government contracts risks factor disclosure beginning on page 11.

For information on accounts receivable from the U.S. Government, see Note 5 of the Notes to Consolidated Financial Statements.

Estimates and Reserves

Our discussion and analysis of financial condition and results of operations are based upon our consolidated financial statements, which have been prepared in accordance with accounting principles generally accepted in the United States. The preparation of these financial statements requires us to make estimates and judgments that affect the reported amounts of assets, liabilities, revenues and expenses, and related disclosure of contingent liabilities. On an ongoing basis, we evaluate our estimates, including those related to product returns and replacements, allowance for doubtful accounts, inventories, intangible assets, income taxes, warranty obligations, pension and other postretirement benefits, long-term contracts, environmental, workers' compensation and general liability, employee benefits and other contingencies and litigation. We base our estimates on historical experience and on various other assumptions that are believed to be reasonable under the circumstances at the time, the results of which form the basis for making our judgments. Actual results may differ materially from these estimates under different assumptions or conditions. In some cases, such differences may be material. See also Critical Accounting Policies.

The following table reflects significant reserves and valuation accounts, which are estimates and based on judgments as described above, at January 3, 2021, and December 29, 2019:

Reserves and Valuation Accounts (in millions): (a)	**2020**	2019
Allowance for doubtful accounts	**$ 12.3**	$ 10.2
Reduction to LIFO cost basis	**$ 6.7**	$ 7.8
Workers' compensation and general liability reserves (b)	**$ 6.2**	$ 6.5
Environmental reserves (b)	**$ 6.5**	$ 6.0
Other accrued liability reserves (b)	**$ 12.9**	$ 16.0

(a) This table should be read in conjunction with the Notes to Consolidated Financial Statements.
(b) Includes both long-term and short-term reserves.

Some of the Company's products are subject to standard warranties and the Company provides for the estimated cost of product warranties. We regularly assess the adequacy of our pre-existing warranty liabilities and adjust amounts as necessary based on a review of historic warranty experience with respect to the applicable business or products, as well as the length and actual terms of the warranties, which are typically one year. The product warranty reserve is included in current accrued liabilities and other long-term liabilities on the balance sheet.

Warranty Reserve (in millions):	**2020**	2019	2018
Balance at beginning of year	**$ 24.8**	$ 21.0	$ 21.1
Product warranty expense	**3.3**	13.1	10.0
Deductions	**(8.2)**	(14.2)	(10.1)
Acquisitions	**2.5**	4.9	—
Balance at year-end	**$ 22.4**	$ 24.8	$ 21.0

Critical Accounting Policies

The preparation of our consolidated financial statements in conformity with United States generally accepted accounting principles requires management to make estimates and assumptions that affect the amounts reported in the financial statements and the notes to the financial statements. Some of those judgments can be subjective and complex, and therefore, actual results could differ materially from those estimates under different assumptions or conditions. Our critical accounting policies are those that are reflective of significant judgment, complexity and uncertainty, and may potentially result in materially different results under different assumptions and conditions. We have identified the following as critical accounting policies: revenue recognition; accounting for pension plans; accounting for business combinations, goodwill and acquired intangible assets; and accounting for income taxes. For additional discussion of the application of these and other accounting policies, see Note 2 of the Notes to Consolidated Financial Statements.

Revenue Recognition

Approximately 40% of our revenue is recognized over time with the remaining 60% of our revenue recognized at a point in time.

Revenue recognized over time relates primarily to contracts to design, develop and/or manufacture highly engineered products used in both defense and commercial applications. The transaction price in these arrangements may include estimated amounts of variable consideration, including award fees, incentive fees, contract amounts not yet funded, or other provisions that can either increase or decrease the transaction price. We estimate variable consideration at the amount to which we expect to be entitled, and we include estimated amounts in the transaction price to the extent it is probable that a significant reversal of cumulative revenue recognized will not occur when the estimation uncertainty is resolved. The estimation of this variable consideration and determination of whether to include estimated amounts in the transaction price are based largely on an assessment of our anticipated performance and all information (historical, current and forecasted) that is reasonably available to us. As control transfers continuously over time on these contracts, revenue is recognized based on the extent of progress towards completion of the performance obligation. The selection of the method to measure progress towards completion requires judgment and is based on the nature of the products or services to be provided. We generally use the cost-to-cost measure of progress as this measure best depicts the transfer of control to the customer which occurs as we incur costs on our contracts. Under the cost-to-cost method, the extent of progress towards completion is measured based on the ratio of costs incurred to date to the total estimated costs at completion of the performance obligation.

For over time contracts using cost-to-cost, we have an Estimate at Completion ("EAC") process in which management reviews the progress and execution of our performance obligations. This EAC process requires management judgment relative to assessing risks, estimating contract revenue, determining reasonably dependable cost estimates, and making assumptions for schedule and technical issues. Since certain contracts extend over a longer period of time, the impact of revisions in cost and revenue estimates during the progress of work may adjust the current period earnings through a cumulative catch-up basis. This method recognizes, in the current period, the cumulative effect of the changes on current and prior quarters. Additionally, if the current contract estimate indicates a loss, a provision is made for the total anticipated loss in the period that it becomes evident. Contract cost and revenue estimates for significant contracts are generally reviewed and reassessed quarterly.

We do not believe that any discrete event or adjustment to an individual contract within the aggregate changes in contract estimates for 2020, 2019 or 2018 was material to the consolidated statements of income for such annual periods.

Revenue recognized at a point in time relates primarily to the sale of standard or minimally customized products, with control transferring to the customer generally upon the transfer of title. See Note 2 of the Notes to Consolidated Financial Statements for additional revenue recognition disclosures.

Pension Plans

The Company's accounting for its defined benefit pension plans requires that amounts recognized in financial statements be determined on an actuarial basis, rather than as contributions are made to the plan. In consultation with our actuaries, we determine the appropriate assumptions for use in determining the liability for future pension benefits. Net actuarial gains or losses are amortized to expense on a plan-by-plan basis when they exceed the accounting corridor. The accounting corridor is a defined range within which amortization of net gains and losses is not required and is equal to 10 percent of the greater of the market related value of assets or benefit obligations. Gains or losses outside of the corridor are subject to amortization. For our plan which covers mostly inactive participants, gains and losses subject to amortization are amortized over the average participants future life expectancy which is approximately 17 years. This plan represents the majority of the pension obligations. For our other plan, gains and losses subject to amortization are amortized over the average employee future service period which is approximately nine years. Significant assumptions used in determining the Company's pension income or expense is the expected long-term rate of return on plan assets, participant mortality estimates, expected rates of increase in future compensation levels, employee turnover, as well as the assumed discount rate on pension obligations.

Differences in the discount rate and expected long-term rate of return on assets within the indicated range would have had the following impact on 2020 pension expense (in millions):

	0.25 Percentage Point Increase	0.25 Percentage Point Decrease
Increase (decrease) to pension expense resulting from:		
Change in discount rate	$ (0.3)	$ 0.3
Change in long-term rate of return on plan assets	$ (2.1)	$ 2.1

See Note 11 of the Notes to Consolidated Financial Statements for additional pension disclosures.

Business Combinations, Goodwill and Acquired Intangible Assets

The results for all acquisitions are included in the Company's consolidated financial statements from the date of each respective acquisition. Business acquisitions are accounted for under the acquisition method by assigning the purchase price to tangible and intangible assets acquired and liabilities assumed. Assets acquired and liabilities assumed are recorded at their fair values and the excess of the purchase price over the amounts assigned is recorded as goodwill. We determine the fair value of such assets and liabilities, often in consultation with third-party valuation advisors. Acquired intangible assets with finite lives are amortized over their estimated useful lives. Adjustments to fair value assessments are recorded to goodwill over the purchase price allocation period.

Goodwill and acquired intangible assets with indefinite lives are not amortized. We review goodwill and acquired indefinite-lived intangible assets for impairment whenever events or changes in circumstances indicate that the carrying amount of these assets may not be recoverable. The Company also performs an annual impairment test in the fourth quarter of each year. We test goodwill and acquired indefinite-lived intangible assets for impairment between annual tests if events occur or circumstances change that would more likely than not reduce our enterprise fair value below its book value. These events or circumstances could include a significant change in the business climate, including a significant sustained decline in an entity's market value, legal factors, operating performance indicators, competition, sale or disposition of a significant portion of the business, or other factors.

We may use either a qualitative or quantitative approach when testing a reporting unit's goodwill for impairment. For selected reporting units where we use the qualitative approach, we perform a qualitative evaluation of events and circumstances impacting the reporting unit to determine the likelihood of goodwill impairment. Based on that qualitative evaluation, if we determine it is more likely than not that the fair value of a reporting unit exceeds its carrying amount, no further evaluation is necessary. Otherwise we perform a quantitative impairment test. We perform a quantitative test for each reporting unit at least once every three years.

For goodwill impairment testing using the quantitative approach, the Company estimates the fair value of the selected reporting units primarily through the use of a discounted cash flow model based on our best estimate of amounts and timing of future revenues and cash flows and our most recent business and strategic plans, and compares the estimated fair value to the carrying value of the reporting unit, including goodwill. The discounted cash flow model requires judgmental assumptions about projected revenue growth, future operating margins, discount rates and terminal values over a multi-year period. There are inherent uncertainties related to these assumptions and management's judgment in applying them to the analysis of goodwill impairment. While the Company believes it has made reasonable estimates and assumptions to calculate the fair value of its reporting units, it is possible a material change could occur. If actual results are not consistent with management's estimates and assumptions, goodwill may be overstated and a charge would need to be taken against net earnings.

Changes in our projections used in the discounted cash flow model could affect the estimated fair value of certain of the Company's reporting units and could result in a goodwill impairment charge in a future period. In order to evaluate the sensitivity of the fair value calculations used in the quantitative goodwill impairment test, the Company applied a hypothetical 10% decrease to the fair values of each reporting unit subject to a quantitative impairment test and compared those values to the reporting unit carrying values. Based on this sensitivity analysis, the Company did not identify any goodwill impairment. Due to the many variables inherent in the estimation of a reporting unit's fair value and the relative size of our recorded goodwill, differences in assumptions may have a material effect on the results of our impairment analysis.

As of January 3, 2021, the Company had nine reporting units for goodwill impairment testing. The carrying value of goodwill included in the Company's individual reporting units ranged from $20.4 million to $885.0 million on the quantitative test date. The Company's analysis in 2020 indicated that in all instances, the fair value of the Company's reporting units exceeded their carrying values and consequently did not result in an impairment charge. The excess of the estimated fair value over the carrying value (expressed as a percentage of carrying value of the respective reporting unit) for the Company's reporting units subject to a quantitative test as of the fourth quarter of 2020, the annual testing date, exceeded at least 116%.

Income Taxes

Income tax expense and deferred tax assets and liabilities reflect management's assessment of actual future taxes to be paid on items reflected in the financial statements. Significant judgment is required in evaluating our tax positions and determining our provision for income taxes. Uncertainty exists regarding tax positions taken in previously filed tax returns still under examination and positions expected to be taken in the current year and future returns. Deferred tax assets and liabilities arise due to differences between the consolidated financial statement carrying amounts of existing assets and liabilities and their respective tax bases and tax carryforwards. Although we believe our income tax expense and deferred tax assets and liabilities are reasonable, no assurance can be given that the final tax outcome will not be different from that which is reflected in our historical income tax provisions and accruals. To the extent that the final tax outcome is different than the amounts recorded, such differences will impact the provision for income taxes in the period in which such determination is made. The provision for income taxes includes the impact of uncertain tax benefits that are considered appropriate, as well as the related net interest.

Significant judgment is required in determining any valuation allowance recorded against deferred tax assets. In assessing the need for a valuation allowance, we consider all available evidence including past operating results, estimates of future taxable income and the feasibility of tax planning strategies. In the event that we change our determination as to the amount of deferred tax assets that can be realized, we will adjust our valuation allowance with a corresponding impact to the provision for income taxes in the period in which such determination is made.

An increase of 100 basis points in our nominal tax rate would have resulted in additional income tax provision for the fiscal year ended January 3, 2021, of $4.7 million. For a description of the Company's tax accounting policies, refer to Note 2 and Note 10 of the Notes to Consolidated Financial Statements.

Recent Accounting Standards

For a discussion of recent accounting standards see Note 2 of the Notes to Consolidated Financial Statements.

Safe Harbor Cautionary Statement Regarding Forward-Looking Information

This Management's Discussion and Analysis of Financial Condition and Results of Operation contains forward-looking statements, as defined in the Private Securities Litigation Reform Act of 1995, directly and indirectly relating to earnings, growth opportunities, acquisitions and divestitures, product sales, capital expenditures, pension matters, stock option compensation expense, the credit facility, interest expense, severance and relocation costs, environmental remediation cost, stock repurchases, taxes, exchange rate fluctuations and strategic plans. Forward-looking statements involve risks and uncertainties, are based on the current expectations of the management of Teledyne and are subject to uncertainty and changes in circumstances. The forward-looking statements contained herein may include statements about the expected effects on Teledyne of the proposed acquisition of FLIR, the anticipated timing and scope of the proposed transaction, anticipated earnings enhancements, estimated cost savings and other synergies related to the proposed transaction, costs to be incurred in achieving synergies, anticipated capital expenditures and product developments, and other strategic options. All statements made in this Management's Discussion and Analysis of Financial Condition and Results of Operation that are not historical in nature should be considered forward-looking. Actual results could differ materially from these forward-looking statements.

Many factors could change the anticipated results, including: ongoing challenges and uncertainties posed by the COVID-19 pandemic for businesses and governments around the world; the occurrence of any event, change or other circumstances that could give rise to the right of Teledyne or FLIR or both to terminate the merger agreement; the outcome of any legal proceedings that may be instituted against Teledyne or FLIR in connection with the merger agreement; the failure to obtain necessary regulatory approvals (and the risk that such approvals may result in the imposition of conditions that could adversely affect the combined company or the expected benefits of the transaction) or stockholder approvals or to satisfy any of the other conditions to the proposed transaction on a timely basis or at all; the failure to obtain the debt portion of the financing for the proposed transaction; the inability to complete the acquisition and integration of FLIR successfully, to retain customers and key employees and to achieve operating synergies, including the possibility that the anticipated benefits of the proposed transaction are not realized when expected or at all, including as a result of the impact of, or problems arising from, the integration of the two companies or as a result of the strength of the economy and competitive factors in the areas where Teledyne and FLIR do business; the possibility that the proposed transaction may be more expensive to complete than anticipated, including as a result of unexpected factors or events; the parties' ability to meet expectations regarding the timing, completion and accounting and tax treatments of the proposed transaction; changes in relevant tax and other laws; the inability to develop and market new competitive products; inherent uncertainties involved in the estimates and judgments used in the preparation of financial statements and the providing of estimates of financial measures, in accordance with U.S. GAAP and related standards; operating results of FLIR being lower than anticipated; disruptions in the global economy; the spread of the COVID-19 virus resulting in production, supply, contractual and other disruptions, including facility closures and furloughs and travel restrictions; customer and supplier bankruptcies; changes in demand for products sold to the defense electronics, instrumentation, digital imaging, energy exploration and production, commercial aviation, semiconductor and communications markets; funding, continuation and award of government programs; cuts to defense spending resulting from existing and future deficit reduction measures or changes to U.S. and foreign government spending and budget priorities triggered by the COVID-19 pandemic; impacts from the United Kingdom's exit from the European Union; uncertainties related to the policies of the new U.S. Presidential Administration; the imposition and expansion of, and responses to, trade sanctions and tariffs; escalating economic and diplomatic tension between China and the United States; and threats to the security of our confidential and proprietary information, including cyber security threats. Lower oil and natural gas prices, as well as instability in the Middle East or other oil producing regions, and new regulations or restrictions relating to energy production, including with respect to hydraulic fracturing, could further negatively affect our businesses that supply the oil and gas industry. Disruptions from the production delay of Boeing's 737 Max aircraft and continued weakness in the commercial aerospace industry will negatively affect the markets of our commercial aviation businesses. In addition, financial market fluctuations affect the value of the Company's pension assets.

Changes in the policies of U.S. and foreign governments, including economic sanctions, could result, over time, in reductions or realignment in defense or other government spending and further changes in programs in which the Company participates.

While Teledyne's growth strategy includes possible acquisitions, we cannot provide any assurance as to when, if or on what terms any acquisitions will be made. Acquisitions involve various inherent risks, such as, among others, our ability to integrate acquired businesses, retain customers and achieve identified financial and operating synergies. There are additional risks associated with acquiring, owning and operating businesses outside of the United States, including those arising from U.S. and foreign government policy changes or actions and exchange rate fluctuations.

We continue to take action to assure compliance with the internal controls, disclosure controls and other requirements of the Sarbanes-Oxley Act of 2002. While we believe our control systems are effective, there are inherent limitations in all control systems, and misstatements due to error or fraud may occur and may not be detected.

Additional information concerning factors that could cause actual results to differ materially from those projected in the forward-looking statements is contained beginning on page 5 of this Form 10-K under the caption "Risk Factors; Cautionary Statement as to Forward-Looking Statements." Forward-looking statements are generally accompanied by words such as "estimate", "project", "predict", "believes" or "expect", that convey the uncertainty of future events or outcomes. We assume no obligation to publicly update or revise any forward-looking statements, whether as a result of new information or otherwise.

Additional Information and Where to Find It

In connection with the proposed transaction between Teledyne and FLIR, Teledyne will file with the SEC a Registration Statement on Form S-4 that will include a joint proxy statement of Teledyne and FLIR and a prospectus of Teledyne, as well as other relevant documents concerning the proposed transaction. The proposed transaction involving Teledyne and FLIR will be submitted to Teledyne's stockholders and FLIR's stockholders for their consideration. Stockholders of Teledyne and stockholders of FLIR are urged to read the registration statement and the joint proxy statement/prospectus regarding the transaction when they become available and any other relevant documents filed with the SEC, as well as any amendments or supplements to those documents, because they will contain important information.

Stockholders will be able to obtain a free copy of the definitive joint proxy statement/prospectus, as well as other filings containing information about Teledyne and FLIR, without charge, at the SEC's website (http://www.sec.gov). Copies of the joint proxy statement/prospectus and the filings with the SEC that will be incorporated by reference in the joint proxy statement/prospectus can also be obtained, without charge, by directing a request to Teledyne, Attn: Investor Relations, 1049 Camino Dos Rios, Thousand Oaks, California 91360, or to FLIR, Attn: Corporate Secretary, 1201 S Joyce St, Arlington, Virginia 22202.

Participants in the Solicitation

Teledyne, FLIR and certain of their respective directors, executive officers and employees may be deemed to be participants in the solicitation of proxies in connection with the proposed transaction. Information regarding Teledyne's directors and executive officers will be available in its definitive proxy statement for its 2021 Annual Meeting, which is expected to be filed with the SEC on or about March 8, 2021, and this Annual Report on Form 10-K. Information regarding FLIR's directors and executive officers is available in its Annual Report on Form 10-K for the year ended December 31, 2020, which was filed on February 25, 2021. Other information regarding the participants in the proxy solicitation and a description of their direct and indirect interests, by security holdings or otherwise, will be contained in the joint proxy statement/prospectus and other relevant materials filed with the SEC. Free copies of this document may be obtained as described in the preceding paragraph.

No Offer or Solicitation

This communication shall not constitute an offer to sell or the solicitation of an offer to sell or an offer to buy any securities, nor shall there be any sale of securities in any jurisdiction in which such offer, solicitation or sale would be unlawful prior to registration or qualification under the securities laws of any such jurisdiction. No offer of securities shall be made except by means of a prospectus meeting the requirements of Section 10 of the Securities Act of 1933.

Item 7A. Quantitative and Qualitative Disclosures About Market Risk

The information required by this item is included in this Report on page 34 under the caption "Other Matters - Hedging Activities; Market Risk Disclosures" of "Item 7. Management's Discussion and Analysis of Financial Condition and Results of Operation."

Item 8. Financial Statements and Supplementary Data

The information required by this item is included in this Report on pages 44 through 86. See the "Index to Financial Statements and Related Information" on page 44.

Item 9. Changes in and Disagreements with Accountants on Accounting and Financial Disclosure

None.

Item 9A. Controls and Procedures

Disclosure Controls

Teledyne's disclosure controls and procedures are designed to ensure that information required to be disclosed in reports that it files or submits, under the Securities Exchange Act of 1934, was recorded, processed, summarized and reported within the time periods specified in the rules and forms of the Securities and Exchange Commission and to provide reasonable assurance that information required to be disclosed by us in such reports is accumulated and communicated to the Company's management, including its principal executive officer and principal financial officer, as appropriate to allow timely decisions regarding required disclosure. The Company's President and Chief Executive Officer and Senior Vice President and Chief Financial Officer, with the participation and assistance of other members of management, have evaluated the effectiveness, as of January 3, 2021, of the Company's "disclosure controls and procedures," as that term is defined in Rule 13a-15(e) under the Securities and Exchange Act of 1934, as amended ("the Exchange Act"). Based upon that evaluation, our Chief Executive Officer and our Chief Financial Officer concluded that the disclosure controls and procedures as of January 3, 2021, are effective.

Internal Controls

See Management Statement on page 45 for management's annual report on internal control over financial reporting. See Report of Independent Registered Public Accounting Firm on page 46 for Deloitte & Touche LLP's attestation report on the Report of Management on Teledyne Technologies Incorporated's Internal Control over Financial Reporting.

There was no change in the Company's "internal control over financial reporting" (as such term is defined in Rule 13a-15(f) under the Exchange Act) that occurred during the quarter ended January 3, 2021, that has materially affected, or is reasonably likely to materially affect, the Company's internal control over financial reporting. There also were no material weaknesses identified for which corrective action needed to be taken.

Sarbanes-Oxley Disclosure Committee

The Company's Sarbanes-Oxley Disclosure Committee includes the following members:

Carl W. Adams, Vice President, Business Risk Assurance
Cynthia Belak, Vice President and Controller
Stephen F. Blackwood, Senior Vice President, Strategic Sourcing, Tax and Treasurer
Melanie S. Cibik, Senior Vice President, General Counsel, Chief Compliance Officer and Secretary
Duncan Forsythe, Associate Vice President, Taxation
Michael C. Lee, Director, Global Income Tax Accounting
Brian A. Levan, Senior Director of Financial Reporting and Assistant Controller
Susan L. Main, Senior Vice President and Chief Financial Officer
S. Paul Sassalos, Associate Vice President, Associate General Counsel and Assistant Secretary
Jason VanWees, Executive Vice President
Tyler D. Vernon, Senior Director, SEC/GAAP Compliance and External Reporting

Among its tasks, the Sarbanes-Oxley Disclosure Committee discusses and reviews disclosure issues to help us fulfill our disclosure obligations on a timely basis in accordance with SEC rules and regulations and is intended to be used as an additional resource for employees to raise questions regarding accounting, auditing, internal controls and disclosure matters. Our toll-free Ethics Help Line (1-877-666-6968) continues to be an alternative means to communicate concerns to the Company's management.

Item 9B. Other Information

None.

PART III

Item 10. Directors, Executive Officers and Corporate Governance.

The information required by this item is set forth in the 2021 Proxy Statement under the captions "Executive Management", "Item 1 on Proxy Card - Election of Directors," "Board Composition and Practices," "Corporate Governance," "Committees of Our Board of Directors - Audit Committee" and "Report of the Audit Committee" and "Stock Ownership - Sections 16(a) Beneficial Ownership Reporting Compliance." This information is incorporated herein by reference.

Item 11. Executive Compensation.

The information required by this item is set forth in the 2021 Proxy Statement under the captions "Executive and Director Compensation" "Compensation Committee Interlocks and Insider Participation" and "Personnel and Compensation Committee Report." This information is incorporated herein by reference.

Item 12. Security Ownership of Certain Beneficial Owners and Management and Related Stockholder Matters.

The information required by this item is set forth in the 2021 Proxy Statement under the caption "Stock Ownership Information" and "Securities Authorized for Issuance Under Equity Compensation Plans" and is incorporated herein by reference.

Item 13. Certain Relationships and Related Transactions, and Director Independence.

The information required by this item is set forth in the 2021 Proxy Statement under the captions "Corporate Governance" and "Certain Transactions" and is incorporated herein by reference.

Item 14. Principal Accountant Fees and Services.

The information required by this item is set forth in the 2021 Proxy Statement under the captions "Fees Billed by Independent Registered Public Accounting Firm" and "Audit Committee Pre-Approval Policies" under "Item 2 on Proxy Card - Ratification of Appointment of Independent Registered Public Accounting Firm" and is incorporated herein by reference.

PART IV

Item 15. Exhibits and Financial Statement Schedules

(a) Exhibits and Financial Statement Schedules:

(1) Financial Statements

See the "Index to Financial Statements and Related Information" on page 44 of this Report, which is incorporated herein by reference.

(2) Financial Statement Schedules

See Schedule II captioned "Valuation and Qualifying Accounts" on page 86 of this Report, which is incorporated herein by reference.

(3) Exhibits

A list of exhibits filed with this Form 10-K or incorporated by reference is found in the Exhibit Index immediately following the certifications of this Report and incorporated herein by reference.

(b) Exhibits:

See Item 15(a)(3) above.

(c) Financial Schedules:

See Item 15(a)(2) above.

INDEX TO FINANCIAL STATEMENTS AND RELATED INFORMATION

MANAGEMENT STATEMENT

RESPONSIBILITY FOR PREPARATION OF THE FINANCIAL STATEMENTS AND ESTABLISHING AND MAINTAINING ADEQUATE INTERNAL CONTROL OVER FINANCIAL REPORTING

We are responsible for the preparation of the financial statements included in this Annual Report. The financial statements were prepared in accordance with accounting principles generally accepted in the United States of America and include amounts that are based on the best estimates and judgments of management. The other financial information contained in this Annual Report is consistent with the financial statements.

Our internal control system is designed to provide reasonable assurance concerning the reliability of the financial data used in the preparation of Teledyne financial statements, as well as to safeguard the Company's assets from unauthorized use or disposition.

All internal control systems, no matter how well designed, have inherent limitations. Therefore, even those systems determined to be effective can provide only reasonable assurance with respect to financial statement presentation.

REPORT OF MANAGEMENT ON TELEDYNE TECHNOLOGIES INCORPORATED'S INTERNAL CONTROL OVER FINANCIAL REPORTING

We are also responsible for establishing and maintaining adequate internal control over financial reporting. We conducted an evaluation of the effectiveness of the Company's internal control over financial reporting as of January 3, 2021. In making this evaluation, we used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission (2013 Framework) (the COSO criteria) in *Internal Control - Integrated Framework*. Our evaluation included reviewing the documentation of our controls, evaluating the design effectiveness of our controls and testing their operating effectiveness. Based on this evaluation we believe that, as of January 3, 2021, the Company's internal controls over financial reporting were effective.

Deloitte and Touche LLP, our independent registered public accounting firm, has issued its report on the effectiveness of Teledyne's internal control over financial reporting. Their report appears on page 46 of this Annual Report.

Date: February 25, 2021

/s/ ALDO PICHELLI
Aldo Pichelli
President and Chief Executive Officer

Date: February 25, 2021

/s/ SUSAN L. MAIN
Susan L. Main
Senior Vice President and Chief Financial Officer

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Directors and Stockholders of Teledyne Technologies Incorporated
Thousand Oaks, California

Opinion on Internal Control over Financial Reporting

We have audited the internal control over financial reporting of Teledyne Technologies Incorporated and subsidiaries (the "Company") as of January 3, 2021, based on criteria established in *Internal Control — Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission (COSO). In our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of January 3, 2021, based on criteria established in *Internal Control — Integrated Framework (2013)* issued by COSO.

We have also audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the consolidated financial statements as of and for the year ended January 3, 2021, of the Company and our report dated February 25, 2021, expressed an unqualified opinion on those financial statements and financial statement schedule.

Basis for Opinion

The Company's management is responsible for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying Report of Management on Teledyne Technologies Incorporated's Internal Control over Financial Reporting. Our responsibility is to express an opinion on the Company's internal control over financial reporting based on our audit. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audit in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether effective internal control over financial reporting was maintained in all material respects. Our audit included obtaining an understanding of internal control over financial reporting, assessing the risk that a material weakness exists, testing and evaluating the design and operating effectiveness of internal control based on the assessed risk, and performing such other procedures as we considered necessary in the circumstances. We believe that our audit provides a reasonable basis for our opinion.

Definition and Limitations of Internal Control over Financial Reporting

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (1) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (2) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (3) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

/s/ Deloitte & Touche LLP
Los Angeles, California
February 25, 2021

REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Board of Directors and Stockholders of Teledyne Technologies Incorporated
Thousand Oaks, California

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Teledyne Technologies Incorporated and subsidiaries (the "Company") as of January 3, 2021 and December 29, 2019, the related consolidated statements of income, comprehensive income, stockholder's equity, and cash flows, for each of the three years in the period ended January 3, 2021, and the related notes and the schedule listed in the Index at Item 15 (collectively referred to as the "financial statements"). In our opinion, the financial statements present fairly, in all material respects, the financial position of the Company as of January 3, 2021 and December 29, 2019, and the results of its operations and its cash flows for each of the three years in the period ended January 3, 2021, in conformity with accounting principles generally accepted in the United States of America.

We have also audited, in accordance with the standards of the Public Company Accounting Oversight Board (United States) (PCAOB), the Company's internal control over financial reporting as of January 3, 2021, based on criteria established in *Internal Control — Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission and our report dated February 25, 2021 expressed an unqualified opinion on the Company's internal control over financial reporting.

Change in Accounting Principle

Effective December 31, 2018, the Company adopted FASB ASC Topic 842, Leases, using the modified retrospective approach.

Basis for Opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the PCAOB and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

Critical Audit Matter

The critical audit matters communicated below are matters arising from the current-period audit of the financial statements that were communicated or required to be communicated to the audit committee and that (1) relate to accounts or disclosures that are material to the financial statements and (2) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the financial statements, taken as a whole, and we are not, by communicating the critical audit matters below, providing separate opinions on the critical audit matters or on the accounts or disclosures to which they relate.

Cost Estimates for Over time Contracts

Critical Audit Matter Description

The Company recognizes revenue over time for contracts where the customer controls the work in process as evidenced either by contractual termination clauses or by the right to payment for costs incurred to date plus a reasonable profit for products or services that do not have an alternative use. As control transfers continuously over time on these contracts, revenue is recognized based on the extent of progress towards completion of the performance obligation. For the year ended January 3, 2021, 40% of the Company’s revenue was recognized over time, from a combination of fixed price and cost type contracts. While fixed price and cost type contracts both require judgment in estimating total contract costs and revenue at completion, key inputs to the percentage of completion calculation; fixed price contracts have additional uncertainty as cost estimates may change while estimated revenue at completion remains constant. Changes to assumptions across the Company’s portfolio of contracts may have a significant impact on the estimated revenue and profit recorded during the period under audit.

We identified assumptions related to estimates and changes in estimates used to recognize revenue for overtime contracts to be a critical audit matter in the current year. This is due to the volume of contracts over multiple product lines, the complexity of judgments involved, and the impact that changes in these estimates can have on current period revenue and profit. Performing audit procedures and evaluating the results of the procedures over these estimates and changes in estimates required extensive audit effort and a high degree of auditor judgement.

How the Critical Audit Matter Was Addressed in the Audit

Our audit procedures related to aggregated estimates or judgments for overtime revenue included the following, among others: We tested the design and operating effectiveness of controls over (1) management's review of contract estimated revenue and costs at completion and (2) management's review of the cumulative effect of changes in estimates on contract adjustments.

We tested the accuracy and completeness of the revenue recognized on over time contracts through the following substantive testing procedures:

Examined the cumulative effect of changes in estimates on contract adjustments:

- Performed a retrospective review on the cumulative effect of changes in estimates on contract adjustments by comparing current year data to historical data, including the amounts of prior period adjustments, net favorable adjustment, and net unfavorable adjustments.
- Evaluated trends and fluctuations in changes in estimates on contract adjustments for potential bias at the company level, the segment level, and at individual business units.
- Evaluated the accuracy and timing of any potential cumulative adjustments that were individually material or were significant drivers of trends or fluctuations discussed above.

/s/ Deloitte & Touche LLP
Los Angeles, California
February 25, 2021

We have served as the Company's auditor since 2015.

TELEDYNE TECHNOLOGIES INCORPORATED
CONSOLIDATED STATEMENTS OF INCOME
(In millions, except per-share amounts)

	For the Fiscal Year		
	2020	**2019**	**2018**
Net Sales	**$ 3,086.2**	$ 3,163.6	$ 2,901.8
Costs and expenses			
Cost of sales	**1,905.3**	1,920.3	1,791.0
Selling, general and administrative expenses	**700.8**	751.6	694.2
Total costs and expenses	**2,606.1**	2,671.9	2,485.2
Operating income	**480.1**	491.7	416.6
Interest and debt expense, net	**(15.3)**	(21.0)	(25.5)
Non-service retirement benefit income	**12.1**	8.0	13.5
Other expense, net	**(7.2)**	(5.0)	(10.7)
Income before income taxes	**469.7**	473.7	393.9
Provision for income taxes	**67.8**	71.4	60.1
Net income	**$ 401.9**	$ 402.3	$ 333.8
Basic earnings per common share	**$ 10.95**	$ 11.08	$ 9.32
Weighted average common shares outstanding	**36.7**	36.3	35.8
Diluted earnings per common share	**$ 10.62**	$ 10.73	$ 9.01
Weighted average diluted common shares outstanding	**37.9**	37.5	37.0

The accompanying notes are an integral part of these financial statements.

TELEDYNE TECHNOLOGIES INCORPORATED
CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME
(In millions)

	For the Fiscal Year		
	2020	**2019**	**2018**
Net income	**$ 401.9**	$ 402.3	$ 333.8
Other comprehensive income (loss):			
Foreign exchange translation adjustment	**65.8**	31.1	(79.5)
Hedge activity, net of tax	**4.6**	2.6	(5.4)
Pension and postretirement benefit adjustments, net of tax	**(24.7)**	(16.3)	(31.4)
Other comprehensive income (loss)(a)	**45.7**	17.4	(116.3)
Comprehensive income	**$ 447.6**	$ 419.7	$ 217.5

(a) Net of income tax benefit of $9.8 million in 2020, income tax benefit of $6.6 million for 2019 and income tax benefit of $10.6 million for 2018.

The accompanying notes are an integral part of these financial statements.

TELEDYNE TECHNOLOGIES INCORPORATED
CONSOLIDATED BALANCE SHEETS
For the Fiscal Years Ended January 3, 2021 and December 29, 2019
(In millions, except share amounts)

	2020	2019
Assets		
Current Assets		
Cash and cash equivalents	**$ 673.1**	$ 199.5
Accounts receivable, net	**402.0**	460.4
Unbilled receivables, net	**222.1**	200.5
Inventories, net	**347.3**	393.4
Prepaid expenses and other current assets	**78.1**	59.9
Total Current Assets	**1,722.6**	1,313.7
Property, plant and equipment, net	**489.3**	487.9
Goodwill	**2,150.0**	2,050.5
Acquired intangible assets, net	**409.7**	430.8
Prepaid pension assets	**67.9**	71.8
Other assets, net	**245.3**	225.1
Total Assets	**$ 5,084.8**	$ 4,579.8
Liabilities and Stockholders' Equity		
Current Liabilities		
Accounts payable	**$ 229.1**	$ 271.1
Accrued liabilities	**434.2**	391.5
Current portion of long-term debt and other debt	**97.6**	100.6
Total Current Liabilities	**760.9**	763.2
Long-term debt	**680.9**	750.0
Other long-term liabilities	**414.4**	351.9
Total Liabilities	**1,856.2**	1,865.1
Commitments and Contingencies		
Stockholders' Equity		
Preferred stock, $0.01 par value; authorized 15,000,000 shares; outstanding shares-none	**—**	—
Common stock, $0.01 par value; authorized 125,000,000 shares; Issued shares: 37,697,865 at January 3, 2021, and December 29, 2019; outstanding shares: 36,951,607 at January 3, 2021, and 36,547,966 at December 29, 2019	**0.4**	0.4
Additional paid-in capital	**389.9**	360.5
Retained earnings	**3,327.9**	2,926.0
Treasury stock, 746,258 at January 3, 2021 and 1,149,899 at December 29, 2019	**(59.5)**	(96.4)
Accumulated other comprehensive loss	**(430.1)**	(475.8)
Total Stockholders' Equity	**3,228.6**	2,714.7
Total Liabilities and Stockholders' Equity	**$ 5,084.8**	$ 4,579.8

The accompanying notes are an integral part of these financial statements.

TELEDYNE TECHNOLOGIES INCORPORATED
CONSOLIDATED STATEMENTS OF STOCKHOLDERS' EQUITY
(In millions)

	Common Stock	Additional Paid-in Capital	Treasury Stock	Retained Earnings	Accumulated Other Comprehensive Income (Loss)	Total
Balance, December 31, 2017	$ 0.4	$ 337.3	$ (200.7)	$ 2,139.6	$ (329.3)	$ 1,947.3
Net income	—	—	—	333.8	—	333.8
Other comprehensive loss, net of tax	—	—	—	—	(116.3)	(116.3)
Treasury stock issued	—	(55.8)	55.8	—	—	—
Stock-based compensation	—	37.2	—	—	—	37.2
Exercise of stock options and other	—	25.0	—	(0.6)	—	24.4
Cumulative effect of new accounting standards	—	—	—	50.9	(47.6)	3.3
Balance, December 30, 2018	0.4	343.7	(144.9)	2,523.7	(493.2)	2,229.7
Net income	—	—	—	402.3	—	402.3
Other comprehensive income, net of tax	—	—	—	—	17.4	17.4
Treasury stock issued	—	(48.5)	48.5	—	—	—
Stock-based compensation	—	30.7	—	—	—	30.7
Exercise of stock options	—	34.6	—	—	—	34.6
Balance, December 29, 2019	**0.4**	**360.5**	**(96.4)**	**2,926.0**	**(475.8)**	**2,714.7**
Net income	**—**	**—**	**—**	**401.9**	**—**	**401.9**
Other comprehensive income, net of tax	—	**—**	**—**	**—**	**45.7**	**45.7**
Treasury stock issued	**—**	**(36.9)**	**36.9**	**—**	**—**	**—**
Stock-based compensation	**—**	**30.0**	**—**	**—**	**—**	**30.0**
Exercise of stock options	**—**	**36.3**	**—**	**—**	**—**	**36.3**
Balance, January 3, 2021	**$ 0.4**	**$ 389.9**	**$ (59.5)**	**$ 3,327.9**	**$ (430.1)**	**$ 3,228.6**

The accompanying notes are an integral part of these financial statements.

TELEDYNE TECHNOLOGIES INCORPORATED AND SUBSIDIARIES
CONSOLIDATED STATEMENTS OF CASH FLOWS
(In millions)

	For the Fiscal Year		
	2020	**2019**	**2018**
Operating Activities			
Net income	**$ 401.9**	$ 402.3	$ 333.8
Adjustments to reconcile net income to net cash provided by operating activities:			
Depreciation and amortization	**116.2**	111.9	113.0
Stock-based compensation	**30.0**	30.7	25.1
Changes in operating assets and liabilities, excluding the effect of businesses acquired:			
Accounts receivable and unbilled receivables	**47.8**	(58.8)	(66.7)
Inventories	**54.3**	12.2	(1.7)
Prepaid expenses and other assets	**(10.2)**	(5.3)	12.5
Accounts payable	**(46.3)**	29.6	39.9
Accrued expenses and other liabilities	**53.7**	17.8	4.1
Deferred and income taxes payable, net	**(28.8)**	(53.8)	(26.4)
Other, net	**0.3**	(4.5)	13.3
Net cash provided by operating activities	**618.9**	482.1	446.9
Investing Activities			
Purchases of property, plant and equipment	**(71.4)**	(88.4)	(86.8)
Purchase of businesses and other investments, net of cash acquired	**(29.0)**	(484.0)	(3.1)
Other, net	**1.0**	0.5	1.3
Net cash used in investing activities	**(99.4)**	(571.9)	(88.6)
Financing Activities			
Net proceeds (payments) on credit facility	**—**	96.0	(136.0)
Proceeds from other debt	**2.7**	—	11.5
Payments on other debt	**(100.8)**	(137.2)	(182.0)
Proceeds from issuance of term loans and senior notes	**—**	150.0	—
Proceeds from stock options exercised	**36.3**	34.6	37.2
Other, net	**—**	(1.7)	(2.0)
Net cash provided by (used in) financing activities	**(61.8)**	141.7	(271.3)
Effect of exchange rate changes on cash and cash equivalents	**15.9**	5.1	(15.4)
Change in cash and cash equivalents	**473.6**	57.0	71.6
Cash—beginning of period	**199.5**	142.5	70.9
Cash and cash equivalents—end of period	**$ 673.1**	$ 199.5	$ 142.5

The accompanying notes are an integral part of these financial statements.

Note 1. Description of Business

Teledyne Technologies Incorporated ("Teledyne" or the "Company") became an independent, public company effective November 29, 1999. Teledyne provides enabling technologies for industrial growth markets that require advanced technology and high reliability. These markets include aerospace and defense, factory automation, air and water quality environmental monitoring, electronics design and development, oceanographic research, deepwater oil and gas exploration and production, medical imaging and pharmaceutical research. The products include digital imaging sensors, cameras and systems within the visible, infrared and X-ray spectra, monitoring and control instrumentation for marine and environmental applications, harsh environment interconnects, electronic test and measurement equipment, aircraft information management systems, and defense electronics and satellite communication subsystems. Teledyne also supplies engineered systems for defense, space, environmental and energy applications. Teledyne differentiates itself from many of its direct competitors by having a customer and company-sponsored applied research center that augments our product development expertise.

Teledyne consists of the Instrumentation segment with principal operations in the United States, the United Kingdom and Denmark; the Digital Imaging segment with principal operations in the United States, Canada, France, the Netherlands and the United Kingdom: the Aerospace and Defense Electronics segment with principal operations in the United States and the United Kingdom; and the Engineered Systems segment with principal operations in the United States.

Note 2. Summary of Significant Accounting Policies

Principles of Consolidation

The consolidated financial statements include the accounts of Teledyne and its majority-owned subsidiaries. Intercompany accounts and transactions have been eliminated.

Fiscal Year

The Company operates on a 52- or 53-week fiscal year convention ending on the Sunday nearest to December 31. Fiscal year 2020 was a 53-week fiscal year and ended on January 3, 2021. Fiscal year 2019 was a 52-week fiscal year and ended on December 29, 2019. Fiscal year 2018 was a 52-week fiscal year and ended on December 30, 2018. References to the years 2020, 2019 and 2018 are intended to refer to the respective fiscal year unless otherwise noted.

Estimates

The preparation of financial statements in conformity with U.S. generally accepted accounting principles ("GAAP") requires management to make estimates and assumptions that affect reported amounts of assets, liabilities, revenues and expenses, and related disclosure of contingent liabilities. On an ongoing basis, the Company evaluates its estimates, including those related to sales returns and allowances, allowance for doubtful accounts, inventories, goodwill, intangible assets, asset valuations, income taxes, warranty obligations, pension and other postretirement benefits, long-term contracts, environmental, workers' compensation and general liability, employee benefits and other contingencies and litigation. The Company bases its estimates on historical experience and on various other assumptions that are believed to be reasonable under the circumstances at the time, the results of which form the basis for making its judgments. Actual results may differ materially from these estimates under different assumptions or conditions. Management believes that the estimates are reasonable.

Accumulated Other Comprehensive Income/(Loss)

The following table summarizes the changes in accumulated balances of other comprehensive income/(loss) ("AOCI") for the fiscal years ended January 3, 2021, and December 29, 2019 (in millions):

	Foreign Currency Translation	Cash Flow Hedges and other	Pension and Postretirement Benefits	Total
Balance as of December 30, 2018	$ (181.5)	$ (4.9)	$ (306.8)	$ (493.2)
Other comprehensive income before reclassifications	31.1	7.6	—	38.7
Amounts reclassified from AOCI	—	(5.0)	(16.3)	(21.3)
Net other comprehensive income (loss)	31.1	2.6	(16.3)	17.4
Balance as of December 29, 2019	**(150.4)**	**(2.3)**	**(323.1)**	**(475.8)**
Other comprehensive income (loss) before reclassifications	**65.8**	**(13.8)**	**—**	**52.0**
Amounts reclassified from AOCI	**—**	**18.4**	**(24.7)**	**(6.3)**
Net other comprehensive income (loss)	**65.8**	**4.6**	**(24.7)**	**45.7**
Balance as of January 3, 2021	**$ (84.6)**	**$ 2.3**	**$ (347.8)**	**$ (430.1)**

The reclassification out of AOCI for the fiscal years ended January 3, 2021, and December 29, 2019, are as follows (in millions):

	January 3, 2021	December 29, 2019	
	Amount reclassified from AOCI	Amount reclassified from AOCI	Financial Statement Presentation
Gain (loss) on cash flow hedges:			
Gain (loss) recognized in income on derivatives	**$ 24.8**	$ (6.9)	See Note 2
Income tax impact	**(6.4)**	1.9	Provision for income taxes
Total	**$ 18.4**	$ (5.0)	
Amortization of defined benefit pension and postretirement plan items:			
Amortization of prior service cost	**$ (6.0)**	$ (5.9)	See Note 11
Amortization of net actuarial loss	**22.8**	30.9	See Note 11
Pension adjustments	**(49.7)**	(47.1)	See Note 11
Total before tax	**(32.9)**	(22.1)	
Income tax impact	**8.2**	5.8	
Net of tax	**$ (24.7)**	$ (16.3)	

Revenue Recognition

We determine the appropriate method by which we recognize revenue by analyzing the nature of the products or services being provided as well as the terms and conditions of contracts or arrangements entered into with our customers. We account for a contract when it has approval and commitment from both parties, the rights of the parties are identified, payment terms are identified, the contract has commercial substance and collectability of consideration is probable. A contract's transaction price is allocated to each distinct good or service (i.e., performance obligation) identified in the contract, and each performance obligation is valued based on its estimated relative standalone selling price. For standard products or services, list prices generally represent the standalone selling price. For performance obligations where list price is not available, we typically use the expected cost plus a margin approach to estimate the standalone selling price for that performance obligation. Approximately 60% of our revenue is recognized at a point in time, with the remaining 40% recognized over time.

Revenue recognized at a point in time relates primarily to the sale of standard or minimally customized products, with control transferring to the customer generally upon the transfer of title. This type of revenue arrangement is typical for our commercial contracts within the Instrumentation, Digital Imaging, and Aerospace and Defense Electronics segments, and to a lesser extent for certain commercial contracts within the Engineered Systems segment relating to the sale of standard hydrogen/oxygen gas generators. In limited circumstances, customer specified acceptance criteria exist. If we cannot objectively demonstrate that the product meets those specifications prior to the shipment, the revenue is deferred until customer acceptance is obtained. The transaction price in these arrangements can include variable consideration, such as product returns and sales allowances. The estimation of this variable consideration and determination of whether to include estimated amounts as a reduction in the transaction price is based largely on an assessment of our anticipated performance and all information (historical, current and forecasted) that is reasonably available to us.

Revenue recognized over time relates primarily to contracts to design, develop and/or manufacture highly engineered products used in both defense and commercial applications. This type of revenue arrangement is typical of our U.S. government contracts and to a lesser extent for certain commercial contracts, with both contract types occurring across all segments. The customer typically controls the work in process as evidenced either by contractual termination clauses or by our right to payment for costs incurred to date plus a reasonable profit for products or services that do not have an alternative use. As control transfers continuously over time on these contracts, revenue is recognized based on the extent of progress towards completion of the performance obligation. The selection of the method to measure progress towards completion requires judgment and is based on the nature of the products or services to be provided. We generally use the cost-to-cost measure of progress as this measure best depicts the transfer of control to the customer which occurs as we incur costs on our contracts. Under the cost-to-cost method, the extent of progress towards completion is measured based on the ratio of costs incurred to date to the total estimated costs at completion of the performance obligation. The transaction price in these arrangements may include estimated amounts of variable consideration, including award fees, incentive fees, contract amounts not yet funded, or other provisions that can either increase or decrease the transaction price. We estimate variable consideration at the amount to which we expect to be entitled, and we include estimated amounts in the transaction price to the extent it is probable that a significant reversal of cumulative revenue recognized will not occur when the estimation uncertainty is resolved. The estimation of this variable consideration and determination of whether to include estimated amounts in the transaction price are based largely on an assessment of our anticipated performance and all information (historical, current and forecasted) that is reasonably available to us.

The majority of our over time contracts have a single performance obligation as the promise to transfer the individual goods or services is not separately identifiable from other promises in the contracts and, therefore, not distinct. Over time contracts are often modified to account for changes in contract specifications and requirements. We consider contract modifications to exist when the modification either creates new or changes the existing enforceable rights and obligations. Most of our contract modifications on over time contracts are for goods or services that are not distinct from the existing contract due to the significant integration service provided in the context of the contract and are accounted for as if they were part of that existing contract. The effect of a contract modification on the transaction price and our measure of progress for the performance obligation to which it relates, is recognized as an adjustment to revenue (either as an increase in or a reduction of revenue) on a cumulative catch-up basis.

For over time contracts using cost-to-cost, we have an Estimate at Completion ("EAC") process in which management reviews the progress and execution of our performance obligations. This EAC process requires management judgment relative to assessing risks, estimating contract revenue, determining reasonably dependable cost estimates, and making assumptions for schedule and technical issues. Since certain contracts extend over a longer period of time, the impact of revisions in cost and revenue estimates during the progress of work may adjust the current period earnings through a cumulative catch-up basis. This method recognizes, in the current period, the cumulative effect of the changes on current and prior quarters. Additionally, if the current contract estimate indicates a loss, a provision is made for the total anticipated loss in the period that it becomes evident. Contract cost and revenue estimates for significant contracts are generally reviewed and reassessed quarterly. The majority of revenue recognized over time uses an EAC process. The net aggregate effects of these changes in estimates on contracts accounted for under the cost-to-cost method in 2020 was approximately $14.6 million of favorable operating income, primarily within the Digital Imaging operating segment, related to favorable changes in estimates that impacted revenue, and, to a lesser degree, cost of sales. The net aggregate effects of these changes in estimates on contracts accounted for under the cost-to-cost method in 2019 was approximately $20.2 million of favorable operating income, primarily within the Digital Imaging operating segment, related to changes in estimates that favorably impacted revenue, and, to a lesser degree, cost of sales. None of the effects of changes in estimates on any individual contract were material to the consolidated statements of income for any period presented.

While extended or non-customary warranties do not represent a significant portion of our revenue, we recognize warranty services as a separate performance obligations when it is material to the contract. When extended or non-customary warranties represents a separate performance obligation, the revenue is deferred and recognized ratably over the extended warranty period.

Remaining performance obligations represent the transaction price of firm orders for which work has not been performed as of the period end date and excludes unexercised contract options and potential orders under ordering-type contracts (e.g., indefinite-delivery, indefinite-quantity). As of January 3, 2021, the aggregate amount of the transaction price allocated to remaining performance obligations was $1,839.0 million. The Company expects approximately 77% of remaining performance obligations to be recognized into revenue within the next twelve months, with the remaining 23% recognized thereafter.

Shipping and Handling

Shipping and handling fees reimbursed by customers are classified as revenue while shipping and handling costs incurred by Teledyne are classified as cost of sales in the accompanying consolidated statements of income.

Product Warranty Costs

Some of the Company's products are subject to standard warranties and the Company reserves for the estimated cost of product warranties on a product-specific basis. Facts and circumstances related to a product warranty matter and cost estimates to return, repair and/or replace the product are considered when establishing a product warranty reserve. The adequacy of the preexisting warranty liabilities is assessed regularly and the reserve is adjusted as necessary based on a review of historic warranty experience with respect to the applicable business or products, as well as the length and actual terms of the warranties, which are typically one year. The product warranty reserve is included in current accrued liabilities and long-term liabilities on the balance sheet.

Warranty Reserve (in millions):	**2020**	**2019**	**2018**
Balance at beginning of year	**$ 24.8**	$ 21.0	$ 21.1
Product warranty expense	**3.3**	13.1	10.0
Deductions	**(8.2)**	(14.2)	(10.1)
Acquisitions	**2.5**	4.9	—
Balance at end of year	**$ 22.4**	$ 24.8	$ 21.0

Research and Development and Bid and Proposal Costs

Selling, general and administrative expenses include Company-funded research and development and bid and proposal costs which are expensed as incurred and were $196.0 million in 2020, $209.6 million in 2019 and $185.6 million in 2018.

Income Taxes

We compute the provision for income taxes using the asset and liability method, under which deferred tax assets and liabilities are recognized for temporary differences between the tax basis of assets and liabilities and their reported amount in the financial statements, which will result in taxable or deductible amounts in the future. In evaluating our ability to recover our deferred tax assets within the jurisdiction from which they arise, we consider all available positive and negative evidence, including scheduled reversals of deferred tax liabilities, projected future taxable income, tax-planning strategies, and results of recent operations. In projecting future taxable income, we begin with historical results adjusted for the results of discontinued operations and incorporate assumptions about the amount of future state, federal and foreign pretax operating income adjusted for items that do not have tax consequences. The assumptions about future taxable income require significant judgment and are consistent with the plans and estimates we are using to manage the underlying businesses. In evaluating the objective evidence that historical results provide, we consider three years of cumulative operating income. A valuation allowance is recorded when it is more likely than not that some of the deferred tax assets will not be realized.

Income tax positions must meet a more-likely-than-not recognition in order to be recognized in the financial statements. We recognize potential accrued interest and penalties related to unrecognized tax benefits within operations as income tax expense. As new information becomes available, the assessment of the recognition threshold and the measurement of the associated tax benefit of uncertain tax positions may result in financial statement recognition or derecognition.

Net Income Per Common Share

Basic and diluted earnings per share were computed based on net income. The weighted average number of common shares outstanding during the period was used in the calculation of basic earnings per share. This number of shares was increased by contingent shares that could be issued under various compensation plans as well as by the dilutive effect of stock options based on the treasury stock method in the calculation of diluted earnings per share.

The following table sets forth the computations of basic and diluted earnings per share (amounts in millions, except per share data):

Net Income Per Common Share:	**2020**	2019	2018
Net income	**$ 401.9**	$ 402.3	$ 333.8
Basic earnings per common share:			
Weighted average common shares outstanding	**36.7**	36.3	35.8
Basic earnings per common share	**$ 10.95**	$ 11.08	$ 9.32
Diluted earnings per share:			
Weighted average common shares outstanding	**36.7**	36.3	35.8
Effect of diluted securities (primarily stock options)	**1.2**	1.2	1.2
Weighted average diluted common shares outstanding	**37.9**	37.5	37.0
Diluted earnings per common share	**$ 10.62**	$ 10.73	$ 9.01

For 2020, 239,422 stock options were excluded in the computation of diluted earnings per share because the effect of their inclusion would have been anti-dilutive. For each of 2019 and 2018, less than 3,000 stock options were excluded in the computation of diluted earnings per share because the effect of their inclusion would have been anti-dilutive.

For 2020, 2019 and 2018, stock options to purchase 1.6 million, 2.0 million and 2.1 million shares of common stock, respectively, had exercise prices that were less than the average market price of the Company's common stock during the respective periods and are included in the computation of diluted earnings per share.

For 2020, 497 shares under the restricted stock plan were excluded from fully diluted shares outstanding because they did not meet the applicable performance conditions for issuance. No contingent shares under the restricted stock plan were excluded from fully diluted shares outstanding for 2019 or 2018. No contingent shares under the performance share compensation plan were excluded from fully diluted shares outstanding for 2020, 2019 or 2018.

Cash and Cash Equivalents

Cash and cash equivalents totaled $673.1 million at January 3, 2021, of which $192.3 million was held by foreign subsidiaries. Cash equivalents consist of highly liquid money-market mutual funds and bank deposits with maturities of three months or less when purchased.

Accounts Receivable, Unbilled Receivables and Contract Liabilities

The timing of revenue recognition, billings and cash collections results in billed accounts receivable, unbilled receivables (contract assets), and customer advances and deposits (contract liabilities, which are included in accrued liabilities and other long-term liabilities) on the Consolidated Balance Sheet. Under the typical payment terms of our over time contracts, the customer pays us either performance-based payments or progress payments. Amounts billed and due from our customers are classified as receivables on the Consolidated Balance Sheet. We may receive interim payments as work progresses, although for some contracts, we may be entitled to receive an advance payment. We recognize a liability for these interim and advance payments in excess of revenue recognized and present it as a contract liability which is included within accrued liabilities and other long-term liabilities on the Consolidated Balance Sheet, which represented $160.1 million and $14.0 million as of January 3, 2021 and $126.8 million and $17.9 million as of December 29, 2019, respectively. Contract liabilities typically are not considered a significant financing component because these cash advances are used to meet working capital demands that can be higher in the early stages of a contract, and these cash advances protect us from the other party failing to adequately complete some or all of its obligations under the contract. When revenue recognized exceeds the amount billed to the customer, we record an unbilled receivable (contract asset) for the amount we are entitled to receive based on our enforceable right to payment. The unbilled receivable balance increased from the beginning of the year by $21.6 million, or 10.8%, primarily due to work performed ahead of billings on certain over time revenue contracts primarily in our Engineered Systems segment. Contract liabilities increased from the beginning of the year by $29.4 million, or 20.3% primarily due to an increase in customer advances in our Digital Imaging segment. The Company recognized revenue of $80.7 million during the year ended January 3, 2021 from contract liabilities that existed at the beginning of year. The Company recognizes the incremental costs of obtaining or fulfilling a contract as expense when incurred if the amortization period of the asset is one year or less. Incremental costs to obtain or fulfill contracts with an amortization period greater than one year were not material.

Accounts receivable is presented net of an allowance for doubtful accounts of $12.3 million at January 3, 2021, and $10.2 million at December 29, 2019. Expense recorded for the allowance for doubtful accounts was $4.1 million, $1.3 million and $0.6 million for 2020, 2019 and 2018, respectively. An allowance for doubtful accounts is established for losses expected to be incurred on accounts receivable balances. Judgment is required in the estimation of the allowance and we evaluate the collectability of our accounts receivable and contract assets based on a combination of factors. If we become aware of a customer's inability to meet its financial obligations, a specific allowance is recorded to reduce the net receivable to the amount reasonably believed to be collectible from the customer. For all other customers, we use an aging schedule and recognize allowances for doubtful accounts based on the creditworthiness of the debtor, the age and status of outstanding receivables, the current business environment and our historical collection experience adjusted for current expectations for the customers or industry. Accounts receivable are written off against the allowance for uncollectible accounts when we determine amounts are no longer collectible. Trade credit is extended based upon evaluations of each customer's ability to perform its obligations, which are updated periodically.

Inventories

Inventories are stated at the lower of cost or net realizable value. The majority of inventory values are valued on an average cost or first-in, first-out method, while the remainder are stated at cost based on the last-in, first-out method. Costs include direct material, direct labor, applicable manufacturing and engineering overhead, and other direct costs. Judgment is required when establishing reserves to reduce the carrying amount of inventory to market or net realizable value. Inventory reserves are recorded when inventory is considered to be excess or obsolete based upon an analysis of actual on-hand quantities on a part-level basis to forecasted product demand and historical usage.

Property, Plant and Equipment

Property, plant and equipment is capitalized at cost. Property, plant and equipment is stated at cost less accumulated depreciation and amortization. Depreciation and amortization are determined using a combination of accelerated and straight-line methods over the estimated useful lives of the various asset classes. Buildings and building improvements are depreciated over periods not exceeding 45 years, equipment over 5 to 18 years, computer hardware and software over 3 to 7 years and leasehold improvements over the shorter of the estimated remaining lives or lease terms. Significant improvements are capitalized while maintenance and repairs are charged to expense as incurred. Depreciation expense on property, plant and equipment was $76.6 million in 2020, $74.5 million in 2019 and $73.5 million in 2018.

Goodwill, Acquired Intangible Assets and Other Long-lived Assets

Business acquisitions are accounted for under the acquisition method by assigning the purchase price to tangible and intangible assets acquired and liabilities assumed. Assets acquired and liabilities assumed are recorded at their fair values and the excess of the purchase price over the amounts assigned is recorded as goodwill.

Goodwill and acquired intangible assets with indefinite lives are not amortized, but tested at least annually for impairment. The Company performs an annual impairment test for goodwill and other indefinite-lived intangible assets in the fourth quarter of each year, or more often as circumstances require. The Company uses qualitative and quantitative approaches when testing goodwill for impairment. For selected reporting units under the qualitative approach, the Company performs a qualitative evaluation of events and circumstances impacting the reporting unit to determine the likelihood of goodwill impairment. Based on that qualitative evaluation, if the Company determines it is more likely than not that the fair value of a reporting unit exceeds its carrying amount, no further evaluation is necessary. Otherwise the Company performs a quantitative impairment test. The Company performs quantitative tests for reporting units at least once every three years. However, for certain reporting units the Company may perform a quantitative impairment test every year. The Company performed a quantitative test for all reporting units in 2020.

The two-step quantitative impairment test is used to first identify potential goodwill impairment and then measure the amount of goodwill impairment loss, if any. When it is determined that an impairment has occurred, an appropriate charge to operations is recorded. The results of our annual impairment tests of goodwill indicated that no impairment existed in 2020, 2019 or 2018.

The Company reviews intangible and other long-lived assets subject to depreciation or amortization for impairment whenever events or circumstances indicate that the carrying value of the asset may not be recoverable. Acquired intangible assets with finite lives are amortized and reflected in the segment's operating income over their estimated useful lives. The Company assesses the recoverability of the carrying value of assets held for use based on a review of projected undiscounted cash flows. Impairment losses, where identified, are determined as the excess of the carrying value over the estimated fair value of the long-lived asset. Recorded impairment charges to intangible or other long-lived assets were not material in 2020, 2019 or 2018.

Deferred Compensation Plan

The Company has a non-qualified executive deferred compensation plan that provides supplemental retirement income benefits for a select group of management. This plan permits eligible employees to make salary and bonus deferrals that are 100% vested. We have an unsecured obligation to pay in the future the value of the deferred compensation adjusted to reflect the performance, whether positive or negative, of selected investment measurement options chosen by each participant during the deferral period. As of January 3, 2021 and December 29, 2019, $68.9 million and $63.0 million, respectively, is included in other long-term liabilities related to these deferred compensation liabilities. Additionally, the Company purchased life insurance policies on certain participants to potentially offset these unsecured obligations. These policies are recorded at their cash surrender value as determined by the insurance carrier. The cash surrender value of these policies was $72.6 million and $65.6 million, as of January 3, 2021 and December 29, 2019, respectively, and are recorded in other non-current assets.

Environmental

Costs that mitigate or prevent future environmental contamination or extend the life, increase the capacity or improve the safety or efficiency of property utilized in current operations are capitalized. Other costs that relate to current operations or an existing condition caused by past operations are expensed in the period incurred. Environmental liabilities are recorded when the Company's liability is probable and the costs are reasonably estimable, which is generally not later than the completion of the feasibility study or the Company's recommendation of a remedy or commitment to an appropriate plan of action. The accruals are reviewed periodically and, as investigations and remediations proceed, adjustments are made as necessary. Accruals for losses from environmental remediation obligations do not consider the effects of inflation, and anticipated expenditures are not discounted to their present value. The accruals are not reduced by possible recoveries from insurance carriers or other third parties, but do reflect anticipated allocations among potentially responsible parties at federal Superfund sites or similar state-managed sites and an assessment of the likelihood that such parties will fulfill their obligations at such sites. The measurement of environmental liabilities by the Company is based on currently available facts, present laws and regulations, and current technology. Such estimates take into consideration the Company's prior experience in site investigation and remediation, the data concerning cleanup costs available from other companies and regulatory authorities, and the professional judgment of the Company's environmental personnel in consultation with outside environmental specialists, when necessary. The Company's reserves for environmental remediation obligations totaled $6.5 million and $6.0 million as of January 3, 2021 and December 29, 2019, respectively. The short term amount is included in current accrued liabilities and the long-term amount is included in long-term accrued liabilities.

Foreign Currency Translation

The Company's foreign entities' accounts are generally measured using local currency as the functional currency. Assets and liabilities of these entities are translated at the exchange rate in effect at year-end. Revenues and expenses are translated at average month end rates of exchange prevailing during the year. Unrealized translation gains and losses arising from differences in exchange rates from period to period are included as a component of AOCI.

Derivative Instruments and Hedging Activities

Teledyne transacts business in various foreign currencies and has international sales and expenses denominated in foreign currencies, subjecting the Company to foreign currency risk. The Company's primary foreign currency risk objective is to protect the U.S. dollar value of future cash flows and minimize the volatility of reported earnings. The Company utilizes foreign currency forward contracts to reduce the volatility of cash flows primarily related to forecasted revenue and expenses denominated in Canadian dollars for our Canadian companies, and in British pounds for our U.K. companies. These contracts are designated and qualify as cash flow hedges. The Company has also converted a U.S. dollar denominated, variable rate debt obligation into a euro fixed rate obligation using a receive-float, pay fixed cross currency swap. These cross currency swaps are designated as cash flow hedges. In addition, the Company has converted domestic U.S. variable rate debt to fixed rate debt using a receive variable, pay fixed interest rate swap. The interest rate swap is also designated as a cash flow hedge.

The effectiveness of the cash flow hedge forward contracts, is assessed prospectively and retrospectively on a monthly basis using regression analysis, as well as using other timing and probability criteria. To receive hedge accounting treatment, all hedging relationships are formally documented at the inception of the hedges and must be highly effective in offsetting changes to future cash flows on hedged transactions. The effective portion of the cash flow hedge contracts' gains or losses resulting from changes in the fair value of these hedges is initially reported, net of tax, as a component of AOCI in stockholders' equity until the underlying hedged item is reflected in our consolidated statements of income, at which time the effective amount in AOCI is reclassified to revenue in our consolidated statements of income. Net deferred gains recorded in AOCI, net of tax, for forward contracts that will mature in the next 12 months total $5.4 million. These gains are expected to be offset by anticipated losses in the value of the forecasted underlying hedged item. Amounts related to the cross currency swaps and interests rate swap expected to be reclassified from AOCI into income in the next 12 months total $1.2 million.

In the event that the underlying forecasted transactions do not occur, or it becomes remote that they will occur, within the defined hedge period, the gains or losses on the related cash flow hedges will be reclassified from AOCI to other income and expense. During the current reporting period, all forecasted transactions occurred and, therefore, there were no such gains or losses reclassified to other income and expense, due to missed forecasts.

As of January 3, 2021, Teledyne had foreign currency forward contracts designated as cash flow hedges to buy Canadian dollars and to sell U.S. dollars totaling $127.5 million. These foreign currency forward contracts have maturities ranging from March 2021 to February 2022.

The cross currency swaps have notional amounts of €113.0 million and $125.0 million, and €135.0 million and $150.0 million, and mature in March 2023 and October 2024, respectively. The interest rate swap has a notional amount of $125.0 million U.S. dollars and matures in March 2023.

In addition, the Company utilizes foreign currency forward contracts which are not designated as hedging instruments for accounting purposes to mitigate foreign exchange rate risk associated with foreign currency denominated monetary assets and liabilities, including intercompany receivables and payables. As of January 3, 2021, Teledyne primarily had foreign currency contracts of this type in the following pairs (in millions):

Contracts to Buy			Contracts to Sell		
Currency	**Amount**		**Currency**	**Amount**	
Canadian Dollars	$	78.0	U.S. Dollars	US$	59.7
Euros	€	36.2	U.S. Dollars	US$	43.3
Great Britain Pounds	£	88.9	U.S. Dollars	US$	119.1
Canadian Dollars	$	22.3	Euros	€	14.4
Danish Krone	Kr.	302.3	U.S. Dollars	US$	49.0

The above table includes non-designated hedges derived from terms contained in triggered or previously designated cash flow hedges. The gains and losses on these derivatives which are not designated as hedging instruments, are intended to, at a minimum, partially offset the transaction gains and losses recognized in earnings.

All derivatives are recorded on the balance sheet at fair value. As discussed below, the accounting for gains and losses resulting from changes in fair value depends on the use of the derivative and whether it is designated and qualifies for hedge accounting. Teledyne does not use foreign currency forward contracts for speculative or trading purposes.

The effect of derivative instruments designated as cash flow hedges for 2020 and 2019 was as follows (in millions):

	2020	**2019**
Net gain (loss) recognized in AOCI - foreign exchange contracts (a)	**$ (13.7)**	$ 9.3
Net gain recognized in AOCI - interest rate contracts	**$ 4.8**	$ 0.8
Net gain (loss) reclassified from AOCI into revenue/cost of sales - foreign exchange contracts	**$ 1.5**	$ (1.8)
Net gain reclassified from AOCI into interest expense - foreign exchange contracts	**$ 4.4**	$ 2.4
Net gain (loss) reclassified from AOCI into interest expense -interest rate contracts	**$ (1.0)**	$ 0.2
Net gain (loss) reclassified from AOCI into other income and expense, net - foreign exchange contracts (b)	**$ (26.7)**	$ 6.0
Net foreign exchange loss recognized in revenue, net - foreign exchange contracts (c)	**$ —**	$ (0.5)

(a) Effective portion
(b) Amount reclassified to offset earnings impact of liability hedged by cross currency swap
(c) Amount excluded from effectiveness testing (recorded in other income and expense in 2018)

The effect of derivative instruments not designated as cash flow hedges recognized in other income and expense for 2020 and 2019 was a gain of $7.4 million and a gain of $4.9 million, respectively.

The Company has elected to use the income approach to value the derivatives, using observable Level 2 market expectations at measurement date and standard valuation techniques to convert future amounts to a single present amount. Level 2 inputs for the valuations are limited to quoted prices for similar assets or liabilities in active markets (specifically futures contracts on LIBOR and EURIBOR) and inputs other than quoted prices that are observable for the asset or liability (specifically LIBOR and EURIBOR cash and swap rates, foreign currency forward rates and cross currency basis spreads). Mid-market pricing is used as a practical expedient for fair value measurements. The fair value measurement of an asset or liability must reflect the nonperformance risk of the entity and the counterparty. Therefore, the impact of the counterparty's creditworthiness when in an asset position and the Company's creditworthiness when in a liability position has also been factored into the fair value measurement of the derivative instruments and did not have a material impact on the fair value of these derivative instruments. Both the counterparty and the Company are expected to continue to perform under the contractual terms of the instruments.

The fair values of the Company's derivative financial instruments are presented below. All fair values for these derivatives were measured using Level 2 information as defined by the accounting standard hierarchy (in millions):

Asset/(Liability) Derivatives	Balance sheet location	January 3, 2021	December 29, 2019
Derivatives designated as hedging instruments:			
Cash flow forward contracts	Other assets	**$ 7.3**	$ 1.3
Interest rate contracts	Other current assets	**—**	0.2
Interest rate contracts	Other non-current assets (liabilities)	**(1.8)**	0.3
Interest rate contracts	Other current liabilities	**(1.5)**	—
Cash flow forward contracts	Accrued liabilities	**—**	(0.1)
Cash flow cross currency swaps	Other current assets	**3.3**	5.4
Cash flow cross currency swaps	Other non-current liabilities	**(29.2)**	(7.8)
Cash flow cross currency swaps	Accrued liabilities	**—**	0.3
Cash flow cross currency swaps	Other current assets (accrued interest)	**0.1**	—
Total derivatives designated as hedging instruments		**(21.8)**	(0.4)
Derivatives not designated as hedging instruments:			
Non-designated forward contracts	Other current assets	**6.7**	0.1
Non-designated forward contracts	Accrued liabilities	**(1.2)**	(0.4)
Total derivatives not designated as hedging instruments		**5.5**	(0.3)
Total liability derivatives		**$ (16.3)**	$ (0.7)

Supplemental Cash Flow Information

Cash payments for federal, foreign and state income taxes were $74.5 million for 2020, which are net of $8.1 million in tax refunds. Cash payments for federal, foreign and state income taxes were $110.1 million for 2019, which are net of $7.1 million in tax refunds. Cash payments for federal, foreign and state income taxes were $64.7 million for 2018, which are net of $7.6 million in tax refunds. Cash payments for interest and credit facility fees totaled $19.1 million, $23.4 million and $28.1 million for 2020, 2019 and 2018, respectively.

Fair Value Measurements

Fair value is defined as the price that would be received for an asset or the exit price that would be paid to transfer a liability in the principal or most advantageous market in an orderly transaction between market participants on the measurement date. The Company considers assumptions that market participants would use when pricing the asset or liability, such as inherent risk, transfer restrictions, and risk of nonperformance. The Company uses the following three levels of inputs in determining the fair value, focusing on the most observable inputs when available:

- Level 1-Quoted prices in active markets for identical assets or liabilities.
- Level 2-Observable inputs other than Level 1 prices such as quoted prices for similar assets or liabilities; quoted prices in markets with insufficient volume or infrequent transactions (less active markets); or model-derived valuations in which all significant inputs are observable or can be derived principally from or corroborated by observable market data for substantially the full term of the assets or liabilities.
- Level 3-Unobservable inputs to the valuation methodology that are significant to the measurement of fair value of assets or liabilities.

To the extent that valuation is based on models or inputs that are less observable or unobservable in the market, the determination of fair value requires more judgment. In certain cases, the inputs used to measure fair value may fall into different levels of the fair value hierarchy. In such cases, for disclosure purposes, the level in the fair value hierarchy within which the fair value measurement is disclosed is determined based on the lowest level input that is significant to the fair value measurement.

Related Party Transactions

For all periods presented, the Company had no material related party transactions that required disclosure.

Recent Accounting Standards

In February 2018, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update ("ASU") No. 2018-02, "Income Statement-Reporting Comprehensive Income (Topic 220) Reclassification of Certain Tax Effects from Accumulated Other Comprehensive Income", to address a specific consequence of the Tax Cuts and Jobs Act ("Tax Act") by allowing a reclassification from AOCI to retained earnings for stranded tax effects resulting from the Tax Act reduction of the U.S. federal corporate income tax rate. The guidance is effective for all entities for annual periods beginning after December 15, 2018, with early adoption permitted, and is to be applied either in the period of adoption or retrospectively to each period in which the effect of the change in the U.S. federal corporate income tax rate in the Tax Act is recognized. In the third quarter of 2018, Teledyne elected to early adopt this ASU and elected to reclassify, in the period of enactment, stranded tax effects totaling $47.6 million from AOCI to retained earnings in its consolidated balance sheet. The reclassification amount primarily included income tax effects related to our pension and postretirement benefit plans. Income tax effects remaining in AOCI will be released into earnings as the related pretax amounts are reclassified to earnings.

In August 2017, the FASB issued ASU No. 2017-12, "Derivatives and Hedging (Topic 815) Targeted Improvements to Accounting for Hedging Activities." This guidance better aligns an entity's risk management activities and financial reporting for hedging relationships and expands and refines hedge accounting for both nonfinancial and financial risk components. This guidance also simplifies and aligns the recognition and presentation of the effects of the hedging instrument and the hedged item in the financial statements. We adopted the guidance as of December 31, 2018, the beginning of our 2019 fiscal year using the modified retrospective approach, there was no cumulative adjustment to retained earnings related to hedge ineffectiveness for the year ended December 31, 2018. Additionally, as a result of the adoption, we no longer disclose the ineffective portion of the change in fair value of our derivative financial instruments. The entire change in the fair value of the cash flow hedging instruments aside from components excluded from the assessment of hedge effectiveness is now recorded in other comprehensive income and will be subsequently reclassified to earnings in the period the hedged item impacts earnings. The adoption of this guidance did not have a material impact on our consolidated financial statements.

In January 2017, the FASB issued ASU 2017-04, "Simplifying the Test for Goodwill Impairment", which eliminates the computation of the implied fair value of goodwill to measure a goodwill impairment charge. Instead, entities will record a goodwill impairment charge based on the excess of a reporting unit's carrying amount over its fair value. We adopted the this ASU as of December 30, 2019 which reduced the complexity surrounding the evaluation of goodwill for impairment. The adoption of this guidance did not have a material impact on our consolidated financial statements.

In June 2016, the FASB issued ASU 2016-13, Financial Instruments - Credit Losses (Topic 326). The standard replaces the incurred loss impairment methodology under current GAAP with a methodology that reflects expected credit losses and requires the use of a forward-looking expected credit loss model for accounts receivables, loans, and other financial instruments. The standard requires a modified retrospective approach through a cumulative-effect adjustment to retained earnings as of the beginning of the first reporting period in which the guidance is effective. We adopted this ASU as of December 30, 2019 using the modified retrospective approach related to our accounts receivables and contract assets, resulting in no cumulative adjustment to retained earnings. The adoption of this guidance did not have a material impact on our consolidated financial statements.

Note 3. Business Acquisitions, Goodwill and Acquired Intangible Assets

The Company spent $29.0 million, $484.0 million and $3.1 million on acquisitions and other investments, net of cash acquired, in 2020, 2019 and 2018, respectively.

2020 Acquisition

On January 5, 2020, we acquired OakGate Technology, Inc. ("OakGate") for $28.5 million in cash, net of cash acquired. Based in Loomis, California, OakGate provides software and hardware designed to test electronic data storage devices from development through manufacturing and end-use applications. The acquired business is part of the Test and Measurement product line of the Instrumentation segment.

2019 Acquisitions

On February 5, 2019, we acquired the scientific imaging businesses of Roper Technologies, Inc. for $224.8 million in cash. The acquired businesses include Princeton Instruments, Photometrics and Lumenera. The acquired businesses provide a range of imaging solutions, primarily for life sciences, academic research and customized original equipment manufacturer industrial imaging solutions. Princeton Instruments and Photometrics manufacture state-of-the-art cameras, spectrographs and optics for advanced research in physical sciences, life sciences research and spectroscopy imaging. Applications and markets include materials analysis, quantum technology and cell biology imaging using fluorescence and chemiluminescence. Lumenera primarily provides rugged USB-based customized cameras for markets such as traffic management, as well as life sciences applications. Principally located in the United States and Canada, the acquired businesses are part of the Digital Imaging segment.

On August 1, 2019, we acquired the gas and flame detection businesses of 3M Company for $233.5 million in cash. The gas and flame detection businesses includes Oldham, Simtronics, Gas Measurement Instruments, Detcon and select Scott Safety products. The gas and flame detection businesses provides a portfolio of fixed and portable industrial gas and flame detection instruments used in a variety of industries including petrochemical, power generation, oil and gas, food and beverage, mining and waste water treatment. Principally located in France, the United Kingdom and the United States, the acquired businesses are part of the Environmental Instrumentation product line of the Instrumentation segment.

On August 30, 2019, we acquired Micralyne Inc. ("Micralyne") for $25.7 million in cash. Micralyne is a foundry providing MEMS devices. In particular, Micralyne possesses unique microfluidic technology for biotech applications, as well as capabilities in non-silicon-based MEMS (e.g. gold, polymers) often required for human body compatibility. Based in Edmonton, Alberta, Canada, the acquired business is part of the Digital Imaging segment.

The results of these acquisitions have been included in Teledyne's results since the dates of their respective acquisition.

Pending 2021 Acquisition

See Note 15, Subsequent Events, to these Consolidated Financial Statements for information about the pending acquisition of FLIR Systems, Inc. ("FLIR").

Other

The primary reasons for the above acquisitions were to strengthen and expand our core businesses through adding complementary product and service offerings, allowing greater integrated products and services, enhancing our technical capabilities or increasing our addressable markets. The significant factors that resulted in recognition of goodwill were: (a) the purchase price was based on cash flow and return on capital projections assuming integration with our businesses and (b) the calculation of the fair value of tangible and intangible assets acquired that qualified for recognition. Teledyne funded the acquisitions primarily from borrowings under its credit facilities, issuance of senior notes and term loans and cash on hand.

Teledyne's goodwill was $2,150.0 million at January 3, 2021, and $2,050.5 million at December 29, 2019. The increase in the balance of goodwill in 2019 resulted from recent acquisitions and the impact of exchange rate changes. Teledyne's net acquired intangible assets were $409.7 million at January 3, 2021, and $430.8 million at December 29, 2019. The decrease in the balance of acquired intangible assets in 2020 primarily resulted from amortization of acquired intangible assets, partially offset by recent acquisitions and the impact of exchange rate changes. The Company's cost to acquire the 2020 and 2019 acquisitions has been allocated to the assets acquired and liabilities assumed based upon their respective fair values as of the date of the completion of the acquisition. The differences between the fair value of the consideration paid and the estimated fair value of the assets and liabilities acquired has been recorded as goodwill. The fair value of all the acquired identifiable assets and liabilities summarized below for the 2020 acquisition is provisional pending finalization of the Company's acquisition accounting, including the measurement of tax basis in certain jurisdictions and the resulting deferred taxes that might arise from book and tax basis differences, if any.

The following tables show the purchase price (net of cash acquired), provisional goodwill acquired for the OakGate acquisition and other investments made in 2020 (in millions):

	2020			
Acquisitions	**Acquisition Date**	**Cash Paid (a)**	**Goodwill Acquired**	**Acquired Intangible Assets**
OakGate Technology, Inc.	January 5, 2020	**$ 28.5**	**$ 16.9**	**$ 7.0**
Purchase price adjustment - Micralyne Inc.		**0.5**	**—**	**—**
Total		**$ 29.0**	**$ 16.9**	**$ 7.0**

(a) Net of cash acquired.

Goodwill resulting from the OakGate acquisition will not be deductible for tax purposes.

Provisional fair values allocated to the assets acquired and liabilities assumed (in millions):	2020
Current assets, excluding cash acquired	$ 3.7
Goodwill	16.9
Acquired intangible assets	7.0
Other long-term assets	2.8
Total assets acquired	30.4
Current liabilities	(1.9)
Total liabilities assumed	(1.9)
Cash paid, net of cash acquired	$ 28.5

The following table is a summary at the acquisition date of the acquired intangible assets and weighted average useful life in years for the OakGate acquisition made in 2020 (dollars in millions; amounts considered provisional as discussed above):

	2020	
Intangibles subject to amortization:	Intangible Assets	Weighted average useful life in years
Proprietary technology	$ 5.5	7.0
Customer list/relationships	1.2	10.0
Trademarks	0.3	3.0
Total acquired intangibles subject to amortization	$ 7.0	7.3
Goodwill	$ 16.9	n/a

Goodwill (in millions):	Instrumentation	Digital Imaging	Aerospace and Defense Electronics	Engineered Systems	Total
Balance at December 30, 2018	$ 754.7	$ 809.7	$ 148.5	$ 22.3	$ 1,735.2
Current year acquisitions	147.7	157.2	—	—	304.9
Foreign currency changes and other (a)	3.5	(4.2)	15.8	(4.7)	10.4
Balance at December 29, 2019	905.9	962.7	164.3	17.6	2,050.5
Current year acquisition	16.9	—	—	—	16.9
Foreign currency changes and other	46.0	35.1	1.5	—	82.6
Balance at January 3, 2021	$ 968.8	$ 997.8	$ 165.8	$ 17.6	$ 2,150.0

(a) Certain prior period balances have been recast due to a business realignment affecting the Aerospace and Defense Electronics segment the Digital Imaging segment and the Engineered Systems segment in 2019.

	2020			2019		
	Gross carrying amount	Accumulated amortization	Net carrying amount	Gross carrying amount	Accumulated amortization	Net carrying amount
Acquired intangible assets (in millions):						
Proprietary technology	$ 420.3	$ 242.7	$ 177.6	$ 397.5	$ 207.6	$ 189.9
Customer list/relationships	168.3	112.8	55.5	177.6	101.4	76.2
Patents	0.7	0.7	—	0.7	0.6	0.1
Non-compete agreements	0.9	0.9	—	0.9	0.9	—
Trademarks	4.5	3.6	0.9	4.1	3.3	0.8
Backlog	16.5	16.5	—	16.4	16.1	0.3
Acquired intangible assets subject to amortization	611.2	377.2	234.0	597.2	329.9	267.3
Acquired intangible assets not subject to amortization:						
Trademarks	175.7	—	175.7	163.5	—	163.5
Total acquired intangible assets	$ 786.9	$ 377.2	$ 409.7	$ 760.7	$ 329.9	$ 430.8

Amortizable acquired intangible assets are amortized on a straight-line basis over their estimated useful lives ranging from one to 15 years. Consistent with Teledyne's growth strategy, we seek to acquire companies in markets characterized by high barriers to entry and that include specialized products not likely to be commoditized. Given our markets and highly engineered nature of our products, the rates of new technology development and customer acquisition and/or attrition are often not volatile. As such, we believe the value of acquired intangible assets decline in a linear, as opposed to an accelerated fashion, and we believe amortization on a straight-line basis is appropriate.

The Company recorded $39.6 million, $37.4 million and $39.5 million in amortization expense in 2020, 2019 and 2018, respectively, for acquired intangible assets. The expected future amortization expense for the next five years is as follows (in millions): 2021 - $39.0; 2022 - $36.2; 2023 - $32.2; 2024 - $30.4; 2025 - $24.4.

The estimated remaining useful lives by asset category as of January 3, 2021, are as follows:

Acquired intangibles subject to amortization	**Weighted average remaining useful life in years**
Proprietary technology	5.8
Customer list/relationships	5.6
Patents	2.2
Trademarks	6.1
Total acquired intangibles subject to amortization	5.8

Note 4. Financial Instruments

The Company had $471.0 million in cash equivalents at January 3, 2021 and no cash equivalents at December 29, 2019. The Company has categorized its cash equivalents as a Level 1 financial asset, measured at fair value based on quoted prices in active markets of identical assets. The fair value of the Company's forward currency contracts as of January 3, 2021 and December 29, 2019, are disclosed in Note 2, under "Derivative Instruments and Hedging Activities," of the Notes to Consolidated Financial Statements and are based on Level 2 inputs. Teledyne estimates the fair value of its long-term debt based on debt of similar type, rating and maturity and at comparable interest rates. The fair value of the Company's senior unsecured notes as described in Note 9, "Long-Term Debt," of the Notes to Consolidated Financial Statements approximated the carrying value based upon Level 2 inputs and is valued based on observable market data at January 3, 2021 and December 29, 2019. The fair value of the Company's credit facility, term loans and other debt, also described in Note 9, at January 3, 2021 and December 29, 2019, approximated the carrying value due to the variable market rate used to calculate interest payments. The Company does not have any other significant financial assets or liabilities that are measured at fair value. The carrying value of other on-balance-sheet financial instruments approximates fair value, and the cost, if any, to terminate off-balance sheet financial instruments (primarily letters of credit) is not significant.

Note 5. Accounts Receivable and Unbilled Receivables

Accounts Receivable and Unbilled Receivables (in millions):	**Balance at year-end**	
	2020	**2019**
Commercial and other billed receivables	**$ 377.4**	$ 440.1
U.S. Government and prime contractors billed receivables	**36.9**	30.5
	414.3	470.6
Allowance for doubtful accounts	**(12.3)**	(10.2)
Account receivable, net	**$ 402.0**	$ 460.4
Commercial and other unbilled receivables, net	**$ 147.1**	$ 143.9
U.S. Government and prime contractors unbilled receivables, net	**75.0**	56.5
Unbilled receivables, net	**$ 222.1**	$ 200.4

Note 6. Inventories

Inventories (in millions):	Balance at year-end	
	2020	2019
Raw materials and supplies	**$ 231.0**	$ 231.2
Work in process	**60.5**	108.3
Finished goods	**62.5**	61.7
	354.0	401.2
Reduction to LIFO cost basis	**(6.7)**	(7.8)
Total inventories, net	**$ 347.3**	$ 393.4

Inventories at cost determined on the LIFO method were $29.2 million at January 3, 2021, and $40.0 million at December 29, 2019. The remainder of the inventories using average cost or the FIFO methods, were $324.8 million at January 3, 2021, and $361.2 million at December 29, 2019.

The Company recorded LIFO income of $1.1 million, $1.6 million and $0.1 million in 2020, 2019 and 2018, respectively.

Note 7. Supplemental Balance Sheet Information

Property, plant and equipment (in millions):	Balance at year-end	
	2020	2019
Land	**$ 70.0**	$ 68.1
Buildings	**286.0**	280.6
Equipment and software and other	**806.7**	763.1
	1,162.7	1,111.8
Accumulated depreciation and amortization	**(673.4)**	(623.9)
Total property, plant and equipment, net	**$ 489.3**	$ 487.9

The following table presents selected balance sheet components (in millions):

Balance sheet items	Balance sheet location	January 3, 2021	December 29, 2019
Salaries and wage accruals	Accrued liabilities	**$ 126.2**	$ 124.1
Deferred tax liabilities	Other long-term liabilities	**$ 39.0**	$ 34.0

Note 8. Stockholders' Equity

Common stock and treasury stock activity:	Common Stock	Treasury Stock
Balance, December 31, 2017	37,697,865	2,157,632
Issued	—	(547,064)
Balance, December 30, 2018	37,697,865	1,610,568
Issued	—	(460,669)
Balance, December 29, 2019	**37,697,865**	**1,149,899**
Issued	—	**(403,641)**
Balance, January 3, 2021	**37,697,865**	**746,258**

Shares issued include stock options exercised as well as shares issued under certain compensation plans.

Treasury Stock

In January 2016, the Company's Board of Directors authorized a stock repurchase program authorizing the Company to repurchase up to 3,000,000 shares of its common stock. The number of shares that we may repurchase will depend on a variety of factors, such as share price, levels of cash and borrowing capacity available, alternative investment opportunities available immediately or longer-term, and other regulatory, market or economic conditions. Although we have no current plans to repurchase stock, future repurchases, if any, are expected to be funded with cash on hand and borrowings under the Company's credit facility. No repurchases were made since 2015. Up to approximately three million shares may be repurchased under the stock repurchase program.

Preferred Stock

Authorized preferred stock may be issued with designations, powers and preferences designated by the Board of Directors. There were no shares of preferred stock issued or outstanding in 2020, 2019 or 2018.

Stock Incentive Plan

Teledyne has long-term incentive plans which provide its Board of Directors the flexibility to grant restricted stock, restricted stock units, performance shares, non-qualified stock options, incentive stock options and stock appreciation rights to officers and employees of Teledyne. Employee stock options become exercisable in one-third increments on the first, second and third anniversary of the grant and have a maximum 10-year life.

Stock Options

Stock option compensation expense is recorded on a straight line basis over the appropriate vesting period, generally three years except for stock options that were granted after 2018 to Teledyne's President and Chief Executive Officer and Teledyne's Executive Chairman, which were expensed immediately. The Company recorded $24.7 million, $26.1 million, and $19.8 million for stock option expense, for 2020, 2019 and 2018, respectively. The Company issues shares of common stock upon the exercise of stock options.

The total pretax intrinsic value of options exercised during 2020 and 2019 (which is the amount by which the stock price exceeded the exercise price of the options on the date of exercise) was $96.9 million and $82.5 million, respectively. At January 3, 2021, the intrinsic value of stock options outstanding was $403.6 million and the intrinsic value of stock options exercisable was $339.8 million. During 2020 and 2019, the amount of cash received from the exercise of stock options was $36.3 million and $34.6 million, respectively.

At January 3, 2021, there was $24.5 million of total unrecognized compensation cost related to non-vested stock option awards which is expected to be recognized over a weighted-average period of 1.3 years.

The fair value of stock options is determined by using a lattice-based option pricing model. The Company uses a combination of its historical stock price volatility and the volatility of exchange traded options, if any, on the Company stock to compute the expected volatility for purposes of valuing stock options granted. The period used for the historical stock price corresponded to the expected term of the options. The period used for the exchange traded options, if any, included the longest-dated options publicly available, generally three months. The expected dividend yield is based on Teledyne's practice of not paying dividends. The risk-free rate of return is based on the yield of U.S. Treasury Strips with terms equal to the expected life of the options as of the grant date. The expected life in years is based on historical actual stock option exercise experience.

Stock option valuation assumptions:	**2020**	**2019**	**2018**
Expected dividend yield	n/a	n/a	n/a
Expected volatility	23.7%	26.7%	31.0%
Risk-free interest rate	1.50% to1.75%	2.47% to 2.70%	1.99% to 2.58%
Expected life in years	6.6	6.6	6.8

Based on the assumptions used in the valuation of stock options, the grant date weighted average fair value of stock options granted in 2020, 2019 and 2018 was $106.26, $72.00 and $71.89, respectively.

Stock option transactions for Teledyne's stock option plans are summarized as follows:

	2020		**2019**		**2018**	
	Shares	**Weighted Average Exercise Price**	**Shares**	**Weighted Average Exercise Price**	**Shares**	**Weighted Average Exercise Price**
Beginning balance	**1,988,576**	**$ 130.67**	2,064,740	$ 104.66	2,285,703	$ 83.73
Granted	**247,273**	**$ 382.91**	390,789	$ 217.58	376,065	$ 192.28
Exercised	**(382,554)**	**$ 95.22**	(429,654)	$ 80.31	(516,927)	$ 71.95
Canceled or expired	**(34,148)**	**$ 252.43**	(37,299)	$ 181.62	(80,101)	$ 129.85
Ending balance	**1,819,147**	**$ 170.10**	1,988,576	$ 130.67	2,064,740	$ 104.66
Options exercisable at end of period	**1,242,786**	**$ 118.57**	1,242,205	$ 94.04	1,257,766	$ 78.26

The following table provides certain information with respect to stock options outstanding and stock options exercisable at January 3, 2021, under the stock option plans:

	Stock Options Outstanding				Stock Options Exercisable	
Range of Exercise Prices	Shares	Weighted Average Exercise Price		Remaining life in years	Shares	Weighted Average Exercise Price
$31.64-$49.99	32,723	$	44.23	0.7	32,723	$ 44.23
$50.00-$99.99	601,559	$	81.19	3.6	601,559	$ 81.19
$100.00-$149.99	328,787	$	123.40	6.1	328,787	$ 123.40
$150.00-$199.99	277,375	$	191.98	7.1	174,385	$ 191.97
$200.00-$249.99	340,564	$	217.70	8.1	104,877	$ 217.83
$250.00-$383.33	238,139	$	382.90	9.1	455	$ 383.33
	1,819,147	$	170.10	6.1	1,242,786	$ 118.57

Performance Shares

Teledyne's Performance Share Plan ("PSP") provides grants of performance share units, which key officers and executives may earn if Teledyne meets specified performance objectives over a three-year period. Awards are payable in cash and to the extent available, shares of Teledyne common stock. Awards are generally paid to the participants in three annual installments after the end of the performance cycle so long as they remain employed by Teledyne (with an exception for retirement). Participants in the PSP program can elect to receive a cash payment in lieu of awarded shares to pay income taxes due with respect to an installment payment. The cash payment in lieu of awarded shares is based on the then current market value of Teledyne stock.

Under the 2015 to 2017 plan, and based on actual performance, the Company issued 7,673, 8,586 and 6,481 shares of Teledyne common stock in 2020, 2019 and 2018, respectively.

In February 2018, the performance cycle for the three-year period ending December 31, 2020, was set. Under the plan, and based on actual performance, the maximum number of shares that could be issued in three equal installments in 2021, 2022 and 2023, is 51,630.

The estimated expense for each plan year was based on the expected cash payout and the expected shares to be issued, valued at the share price at the inception of the performance cycle, except for the shares that can be issued based on a market comparison. The estimated expense for these shares was calculated using a lattice-based simulation which takes into consideration several factors including volatility, risk free interest rates and correlation of Teledyne's stock price with the comparator, the Russell 1000 Index (for the 2015-2017 performance cycle, the comparator was the Russell 2000). No adjustment to the calculated expense for the shares issued based on a market based comparison will be made regardless of the actual performance. The Company recorded $6.2 million, $7.5 million and $5.1 million in compensation expense related to the PSP program for fiscal years 2020, 2019 and 2018, respectively.

Restricted Stock

Under Teledyne's restricted stock award program key officers and executives receive a grant of stock equal to a specified percentage of the participant's annual base salary at the date of grant. The restricted stock is subject to transfer and forfeiture restrictions during an applicable "restricted period". The restrictions have both time-based and performance-based components. The restricted period expires (and the restrictions lapse) on the third anniversary of the date of grant, subject to the achievement of stated performance objectives over a specified three-year performance period. If employment is terminated (other than by death, retirement or disability) during the restricted period, the stock grant is forfeited.

The estimated expense for restricted stock awards to employees is based on a lattice-based simulation which takes into consideration several factors including volatility, risk free interest rates and the correlation of Teledyne's stock price with the comparator, the Russell 1000 Index (for awards granted prior to 2018 the comparator was the Russell 2000). No adjustment to the estimated expense will be made regardless of actual performance. The Company recorded $3.3 million, $3.0 million and $2.7 million in compensation expense related to restricted stock awards to employees, for fiscal years 2020, 2019 and 2018, respectively. At January 3, 2021, there was $3.6 million of total estimated unrecognized compensation cost related to non-vested awards which is expected to be recognized over a weighted-average period of approximately 1.5 years.

The following table shows restricted stock award activity for grants made to employees:

Restricted Stock:	Shares	Weighted average fair value per share
Balance, December 31, 2017	88,436	$ 90.72
Granted	16,733	$ 176.64
Issued	(28,855)	$ 92.74
Forfeited/Canceled	(2,094)	$ 135.48
Balance, December 30, 2018	74,220	$ 108.05
Granted	17,522	$ 200.00
Issued	(35,330)	$ 72.91
Balance, December 29, 2019	**56,412**	**$ 158.62**
Granted	**10,080**	**$ 360.33**
Issued	**(23,087)**	**$ 114.74**
Balance, January 3, 2021	**43,405**	**$ 228.80**

In December 2016, Teledyne granted 16,045 restricted stock units with a grant date fair value of $2.0 million to Teledyne's then Chief Executive Officer, which vested in equal annual installments over three years. The calculated expense of $2.0 million was expensed evenly over the three years performance period. In 2019, 2018 and 2017 we issued 2,697, 2,697 and 2,389 shares, respectively, which were net of shares withheld to pay income taxes.

Non-employee directors each receive restricted stock units valued at $110,000 (or valued at $55,000 for a person who becomes a director for the first time after the date of the Annual Meeting). The restricted stock units generally vest one year following the date of grant and are settled in shares of common stock on the date of vesting unless a director has elected to defer settlement of the award until his or her separation from Board service. The annual expense related to non-employee director's restricted stock units was approximately $1.0 million for each of 2020, 2019 and 2018.

The following table shows restricted stock award activity for grants made to non-employee directors:

Directors Restricted Stock:	Shares	Weighted average fair value per share
Balance, December 31, 2017	8,373	$ 131.25
Granted	5,112	$ 193.39
Issued	(5,733)	$ 134.26
Balance, December 30, 2018	7,752	$ 170.00
Granted	4,155	$ 251.23
Issued	(2,840)	$ 193.39
Balance, December 29, 2019	**9,067**	**$ 199.90**
Granted	**3,692**	**$ 312.41**
Issued	**(2,640)**	**$ 249.72**
Canceled	**(353)**	**$ 311.17**
Balance, January 3, 2021	**9,766**	**$ 224.94**

Note 9. Long-Term Debt

Long-Term Debt (dollars in millions):	January 3, 2021	December 29, 2019
$750.0 million credit facility, due March 2024, weighted average rate of 1.05% at January 3, 2021 and 2.80% at December 29, 2019	**$ 125.0**	$ 125.0
Term loan due October 2024, variable rate of 1.15% at January 3, 2021 and 2.702% at December 29, 2019, swapped to a Euro fixed rate of 0.612%	**150.0**	150.0
5.30% Fixed Rate Senior Notes repaid September 2020	**—**	75.0
2.81% Fixed Rate Senior Notes repaid November 2020	**—**	25.0
3.09% Fixed Rate Senior Notes due December 2021	**95.0**	95.0
3.28% Fixed Rate Senior Notes due November 2022	**100.0**	100.0
0.70% €50 Million Fixed Rate Senior Notes due April 2022	**61.1**	56.0
0.92% €100 Million Fixed Rate Senior Notes due April 2023	**122.1**	111.9
1.09% €100 Million Fixed Rate Senior Notes due April 2024	**122.1**	111.9
Other debt	**4.0**	2.0
Debt issuance costs	**(0.8)**	(1.2)
Total long-debt	**778.5**	850.6
Current portion of long-term debt and other debt	**(97.6)**	(100.6)
Total long-term debt, net of current portion	**$ 680.9**	$ 750.0

Maturities of long-term debt as of January 3, 2021 (in millions):

Fiscal year	
2021	**$ 97.1**
2022	**161.1**
2023	**122.1**
2024	**397.1**
2025	**0.8**
Thereafter	**1.1**
Total principal payments	**779.3**
Debt issuance costs	**(0.8)**
Total debt	**$ 778.5**

The Company has no sinking fund requirements.

Teledyne's $750.0 million credit agreement has a maturity date to March 2024. The credit agreement permits Teledyne to increase the aggregate amount of the borrowing capacity by up to $250.0 million subject to certain conditions. Excluding interest and fees, no payments are due under the $750.0 million unsecured credit facility ("credit facility") until it matures. Borrowings under our credit facility and term loans are at variable rates which are, at our option, tied to a Eurocurrency rate equal to LIBOR (London Interbank Offered Rate) plus an applicable rate or a base rate as defined in our credit agreements. Eurocurrency rate loans may be denominated in U.S. dollars or an alternative currency as defined in the agreement. Eurocurrency or LIBOR based loans under the facility typically have terms of one, two, three or six months and the interest rate for each such loan is subject to change if the loan is continued or converted following the applicable maturity date. The Company has not drawn any loans with a term longer than three months under the credit facility. Base rate loans have interest rates that primarily fluctuate with changes in the prime rate. Interest rates are also subject to change based on our consolidated leverage ratio as defined in the credit agreement. The credit facility also provides for facility fees that vary between 0.12% and 0.25% of the credit line, depending on our consolidated leverage ratio as calculated from time to time. Available borrowing capacity under the credit facility, which is reduced by borrowings and certain outstanding letters of credit, was $615.5 million at January 3, 2021. The credit agreement and term loans requires the Company to comply with various financial and operating covenants and at January 3, 2021, the Company was in compliance with these covenants. At January 3, 2021, Teledyne had $27.7 million in outstanding letters of credit.

As part of the pending FLIR acquisition, Teledyne has arranged a $4.5 billion 364-day credit commitment to fund the transaction and refinance certain existing debt. See also Note 15, Subsequent Events, to these Consolidated Financial Statements for additional information regarding the funding of the pending acquisition of FLIR.

Total interest expense including credit facility fees and other bank charges was $15.8 million in 2020, $22.0 million in 2019 and $29.2 million in 2018.

Note 10. Income Taxes

Income before income taxes included income from domestic operations of $289.5 million for 2020, $295.9 million for 2019 and $243.7 million for 2018. Income before taxes included income from foreign operations of $180.2 million for 2020, $177.8 million for 2019 and $150.2 million for 2018.

Income tax provision/(benefit) - (in millions):	**2020**	**2019**	**2018**
Current			
Federal	**$ 25.3**	$ 66.0	$ 22.9
State	**7.0**	10.6	8.1
Foreign	**39.1**	28.4	31.8
Total current	**71.4**	105.0	62.8
Deferred			
Federal	**(0.5)**	(37.0)	2.3
State	**2.3**	(2.3)	0.6
Foreign	**(5.4)**	5.7	(5.6)
Total deferred	**(3.6)**	(33.6)	(2.7)
Provision for income taxes	**$ 67.8**	$ 71.4	$ 60.1

The following is a reconciliation of the statutory federal income tax rate to the actual effective income tax rate:

Tax rate reconciliation:	**2020**	**2019**	**2018**
U.S. federal statutory income tax rate	**21.0 %**	21.0 %	21.0 %
State and local taxes, net of federal benefit	**2.0**	2.2	1.9
Research and development tax credits	**(3.4)**	(2.2)	(2.3)
Investment tax credits	**(1.0)**	(1.1)	(1.2)
Foreign rate differential	**0.6**	0.7	1.1
Net reversals for unrecognized tax benefits	**0.7**	(0.6)	(0.3)
Stock-based compensation	**(4.5)**	(3.3)	(3.3)
U.S. export sales	**(2.5)**	(3.0)	(1.3)
Other	**1.5**	1.4	(0.3)
Effective income tax rate	**14.4%**	15.1 %	15.3 %

Deferred income taxes result from temporary differences in the recognition of income and expense for financial and income tax reporting purposes, and differences between the fair value of assets acquired in business combinations accounted for as purchases for financial reporting purposes and their corresponding tax bases. Deferred income taxes represent future tax benefits or costs to be recognized when those temporary differences reverse.

The categories of assets and liabilities that have resulted in differences in the timing of the recognition of income and expense were as follows (in millions):

Deferred income tax assets:	**2020**	**2019**
Long-term:		
Accrued liabilities	**$ 22.2**	$ 20.5
Inventory valuation	**15.4**	14.5
Accrued vacation	**7.6**	7.8
Deferred compensation and other benefit plans	**39.0**	30.2
Postretirement benefits other than pensions	**1.8**	1.8
Operating lease liabilities	**29.9**	33.5
Capitalization of research and development	**37.1**	38.8
Tax credit and net operating loss carryforward	**44.2**	30.2
Valuation allowance	**(12.9)**	(6.1)
Total deferred income tax assets	**184.3**	171.2
Deferred income tax liabilities:		
Long-term:		
Property, plant and equipment differences	**16.5**	16.0
Intangible amortization	**139.4**	133.5
Operating lease right-of-use assets	**27.7**	33.5
Other	**3.7**	5.5
Total deferred income tax liabilities	**187.3**	188.5
Net deferred income tax liabilities	**$ 3.0**	$ 17.3

We intend to reinvest indefinitely the earnings of our material foreign subsidiaries in our operations outside of the United States. The cash that the Company's foreign subsidiaries hold for indefinite reinvestment is generally used to finance foreign operations and investments, including acquisitions. We estimate that future domestic cash generation will be sufficient to meet future domestic cash requirements. Due to the Tax Act, U.S. federal and applicable state income taxes have been accrued for the deemed repatriation. At January 3, 2021, the amount of undistributed foreign earnings was $326.8 million, for which we have not recorded a deferred tax liability of approximately $1.4 million for corporate income taxes which would be due if reinvested foreign earnings were repatriated. Should we decide to repatriate the foreign earnings, we would need to adjust our income tax provision in the period we determined that we would no longer indefinitely reinvest the earnings outside the United States.

In assessing the need for a valuation allowance, we consider all positive and negative evidence, including recent financial performance, scheduled reversals of temporary differences, projected future taxable income, availability of taxable income in carryback periods and tax planning strategies. Based on a review of such information, management believes that it is possible that some portion of deferred tax assets will not be realized as a future benefit and therefore has recorded a valuation allowance. The valuation allowance for deferred tax assets increased by $6.8 million in 2020, primarily related to deferred tax assets for which it is more likely than not that a tax benefit will not be realized by the reporting entity.

At January 3, 2021, the Company had approximately $71.5 million of net operating loss carryforward primarily from the Company's entities in the United Kingdom, Denmark and Norway, all of which have no expiration date. The Company had foreign capital loss carryforward in the amount of $2.2 million which has no expiration date. Also the Company had aggregate Canadian federal and provincial investment tax credits of $16.3 million, which have expiration dates of 2030 to 2040. In addition, the Company had domestic federal and state net operating loss carryforward of $19.6 million and $113.2 million, respectively. Generally, federal net operating loss carryforward amounts are limited in their use by earnings of certain acquired subsidiaries, and have no expiration date and the state net operating loss carryforward amounts have expiration dates ranging from 2021 to 2040. Finally, the Company had federal research and development credit carryforward in the amount of $0.5 million which will expire between 2032 and 2035 and state tax credits of $11.7 million, of which $11.3 million have no expiration date and $0.4 million have expiration dates ranging from 2023 to 2040.

Unrecognized tax benefits (in millions):	**2020**	**2019**	**2018**
Beginning of year	**$ 24.5**	$ 25.0	$ 26.0
Increase in prior year tax positions (a)	**5.1**	4.2	2.3
Increase for tax positions taken during the current period	**9.4**	4.3	2.1
Reduction related to settlements with taxing authorities	**(1.9)**	(4.6)	(0.1)
Reduction related to lapse of the statute of limitations	**(4.9)**	(4.3)	(5.2)
Impact of exchange rate changes	**0.1**	(0.1)	(0.1)
End of year	**$ 32.3**	$ 24.5	$ 25.0

a) Includes the impact of acquisitions in all years.

The Company anticipates the total unrecognized tax benefit for various federal, state and foreign tax items may be reduced by $2.8 million due to the expiration of statutes of limitation for various federal, state and foreign tax issues in the next 12 months.

We recognized net tax benefits and expense for interest and penalties related to unrecognized tax benefits within the provision for income taxes in our statements of operations of $0.1 million of expense, $0.3 million of benefit and $0.3 million of expense, for 2020, 2019 and 2018, respectively. Interest and penalties in the amount of $1.2 million, $1.1 million and $1.7 million were recognized in the 2020, 2019 and 2018 statement of financial position, respectively. Substantially all of the unrecognized tax benefits as of January 3, 2021, if recognized, would affect our effective tax rate.

We file income tax returns in the United States federal jurisdiction and in various states and foreign jurisdictions. The Company has substantially concluded on all U.S. federal income tax matters for all years through 2016, United Kingdom income tax matters for all years through 2019, France income tax matters for all years through 2016 and Canadian income tax matters for all years through 2012.

Note 11. Pension Plans and Postretirement Benefits

Pension Plans

Effective January 1, 2020, Teledyne restructured its domestic qualified defined benefit pension plan. The restructuring involved dividing our domestic qualified defined pension plan into two separate plans, one comprised primarily of inactive participants (the “inactive plan”) and the other comprised primarily of active participants (the “active plan”). The reorganization was made to facilitate a targeted investment strategy over time and to provide additional flexibility in evaluating opportunities to reduce risk and volatility. Actuarial gains and losses associated with the active plan will continue to be amortized over the average remaining service period of the active participants, which is approximately nine years, while the actuarial gains and losses associated with the inactive plan will be amortized over the average remaining life expectancy of the inactive participants which is approximately 17 years.

These plans cover substantially all U.S. employees hired before January 1, 2004, or approximately 10% of Teledyne’s active employees. As of January 1, 2004, new hires participate in a defined contribution plan only. The Company also has several small domestic non-qualified and foreign-based defined benefit pension plans.

In 2018, the Company’s U.S. domestic qualified pension plan purchased group annuity contracts from insurance companies and paid a total annuity premium of $17.8 million. These annuity contracts transfer the obligation to the insurance companies to guarantee the full payment of all annuity payments to existing retired pension plan participants or their surviving beneficiaries. These annuity contracts assume all investment risk associated with the assets that were delivered as the annuity contract premiums. These annuity contracts covered 321 existing retired pension plan participants for 2018, at the time of purchase. No annuity contracts were purchased in 2020 or 2019.

The domestic qualified pension plans allow participants to elect a lump-sum payment at retirement. In 2020, 2019 and 2018, the Company made lump sum payments of $24.9 million, $17.2 million and $18.6 million, respectively, from the domestic qualified pension plan assets to certain participants in the plan. Each year beginning with 2014, the Society of Actuaries released revised mortality tables, which updated life expectancy assumptions. In consideration of these tables, each year the Company reviews the mortality assumptions used in determining our pension and post-retirement obligations.

	Domestic			Foreign		
	2020	**2019**	**2018**	**2020**	**2019**	**2018**
Service cost - benefits earned during the period (in millions)	**$ 9.3**	$ 8.5	$ 9.8	**$ 1.1**	$ 0.9	$ 0.9

	Domestic			Foreign		
Pension non-service (income)/expense (in millions):	**2020**	**2019**	**2018**	**2020**	**2019**	**2018**
Interest cost on benefit obligation	**26.5**	32.4	31.5	**0.9**	1.2	1.3
Expected return on plan assets	**(56.0)**	(64.8)	(70.0)	**(1.1)**	(1.4)	(1.7)
Amortization of prior service cost	**(6.0)**	(6.0)	(6.0)	**0.1**	0.1	(0.1)
Amortization of actuarial loss	**22.5**	30.6	31.1	**0.3**	0.3	0.4
Settlements/Curtailment	**—**	—	—	**—**	(0.5)	(0.1)
Pension non-service (income)/expense	**$ (13.0)**	$ (7.8)	$ (13.4)	**$ 0.2**	$ (0.3)	$ (0.2)

The expected long-term rate of return on plan assets is reviewed annually, taking into consideration the Company's asset allocation, historical returns on the types of assets held, the current economic environment, and prospective expectations. We determined the discount rate based on a model which matches the timing and amount of expected benefit payments to maturities of high-quality corporate bonds priced as of the pension plan measurement date. The yields on the bonds are used to derive a discount rate for the obligation.

The following assumptions were used to measure the net benefit income/cost within each respective year for the domestic qualified plans and the foreign plans:

Pension Plan Assumptions:	Weighted average discount rate	Weighted average increase in future compensation levels	Expected weighted-average long-term rate of return
Domestic plan - 2020	3.38% - 3.52%	2.75%	6.71% - 7.80%
Domestic plan - 2019	4.59%	2.75%	7.80%
Domestic plan - 2018	4.02%	2.75%	8.00%
Foreign plans - 2020	0.20% - 1.80%	1.00% - 2.50%	1.00% - 3.00%
Foreign plans - 2019	0.90% - 2.60%	1.00% - 2.50%	1.00% - 3.80%
Foreign plans - 2018	0.70% - 2.40%	1.00% - 2.50%	1.00% - 4.50%

For its domestic based pension plans the Company is projecting a long-term rate of return on plan assets will range from 6.71% to7.80% in 2021. For its foreign based pension plans the Company is projecting a long-term rate of return on plan assets will range from 0.80% to 2.50% in 2021.

	Domestic		Foreign	
	2020	**2019**	**2020**	**2019**
Changes in benefit obligation (in millions):				
Benefit obligation - beginning of year	**$ 805.7**	$ 731.7	**$ 60.3**	$ 52.3
Service cost - benefits earned during the year	**9.3**	8.5	**1.1**	0.9
Interest cost on projected benefit obligation	**26.5**	32.4	**0.9**	1.2
Actuarial (gain) loss	**72.5**	93.1	**5.8**	5.6
Benefits paid	**(67.2)**	(60.0)	**(1.7)**	(2.0)
Other - including foreign currency, settlements/curtailments	**—**	—	**4.0**	2.3
Benefit obligation - end of year	**$ 846.8**	$ 805.7	**$ 70.4**	$ 60.3
Accumulated benefit obligation - end of year	**$ 842.0**	$ 801.3	**$ 65.3**	$ 56.3

The key assumptions used to measure the benefit obligation at each respective year-end were:

Key assumptions:	Domestic Plans			Foreign Plans		
	2020	**2019**	**2018**	**2020**	**2019**	**2018**
Discount rate	2.55% - 2.78%	3.41%	4.59%	0.10% - 1.20%	0.20%- 1.80%	0.90% - 2.60%
Salary growth rate	2.75%	2.75%	2.75%	1.00% - 2.50%	1.00% - 2.50%	1.00% -2.50%

	Domestic		Foreign	
	2020	**2019**	**2020**	**2019**
Changes in plan assets (in millions):				
Fair value of net plan assets - beginning of year	**$ 835.7**	$ 780.3	**$ 48.0**	$ 43.4
Actual return on plan assets	**83.5**	113.1	**4.0**	5.4
Employer contribution - other benefit plan	**2.5**	2.3	**1.1**	0.7
Foreign currency changes	**—**	—	**3.4**	0.6
Benefits paid	**(67.2)**	(60.0)	**(1.7)**	(2.0)
Other	**—**	—	**(0.4)**	(0.1)
Fair value of net plan assets - end of year	**$ 854.5**	$ 835.7	**$ 54.4**	$ 48.0

The measurement date for the Company's pension plans is December 31.

The following tables sets forth the funded status and amounts recognized in the consolidated balance sheets at year-end 2020 and 2019 for the domestic qualified and nonqualified pension plans and the foreign-based pension plans for benefits provided to certain employees (in millions):

	Domestic		Foreign	
	2020	**2019**	**2020**	**2019**
Funded status	**$ 7.7**	$ 30.0	**$ (16.0)**	$ (12.3)
Amounts recognized in the consolidated balance sheets:				
Prepaid pension asset long-term	**$ 67.9**	$ 71.8	**$ —**	$ —
Accrued pension obligation long-term	**(51.6)**	(33.8)	**(15.5)**	(11.7)
Accrued pension obligation short-term	**(2.7)**	(2.7)	**(0.5)**	(0.6)
Other long-term liabilities	**(5.9)**	(5.3)	**—**	—
Net amount recognized	**$ 7.7**	$ 30.0	**$ (16.0)**	$ (12.3)
Amounts recognized in accumulated other comprehensive loss:				
Net prior service cost (credit)	**$ (6.6)**	$ (30.6)	**$ 0.8**	$ (0.4)
Net loss	**454.2**	431.7	**10.6**	7.8
Net amount recognized, before tax effect	**$ 447.6**	$ 401.1	**$ 11.4**	$ 7.4

Amounts for pension plans with accumulated benefit obligations in excess of fair value of plan assets are as follows (in millions):

	2020	**2019**
Projected benefit obligation	**$ 300.4**	$ 102.0
Accumulated benefit obligation	**$ 290.8**	$ 98.0
Fair value of plan assets	**$ 224.3**	$ 48.0

At year-end 2020 and 2019 the Company had an accumulated non-cash reduction to stockholders' equity of $347.8 million and $323.1 million, respectively, related to its pension and postretirement plans. The accumulated non-cash reductions to stockholders' equity did not affect net income and were recorded net of accumulated deferred taxes of $110.5 million at year end 2020 and $102.5 million at year end 2019.

At January 3, 2021, the estimated amounts of the minimum liability adjustment that are expected to be recognized as components of net periodic benefit cost during 2021 for the pension plans are: net loss $26.7 million and net prior service credit $3.5 million.

Estimated future pension plan benefit payments (in millions):	**Domestic**	**Foreign**
2021	$ 54.9	$ 2.4
2022	56.4	2.3
2023	55.4	2.5
2024	54.4	2.5
2025	55.3	2.6
2026-2030	263.6	14.2
Total	$ 540.0	$ 26.5

The following table sets forth the percentage of year-end market value by asset class for the pension plans:

Market value by asset class:	**Domestic Plan Assets % to Total**		**Foreign Plan Assets % to Total**	
	2020	**2019**	**2020**	**2019**
Equity instruments	**38 %**	49 %	**52 %**	56 %
Fixed income instruments	**49**	31	**25**	25
Alternatives and other	**13**	20	**23**	19
Total	**100 %**	100 %	**100 %**	100 %

The Company has an active management policy for the pension assets in the qualified domestic pension plan. As of January 3, 2021, the long term asset allocation target for the domestic plan consists of approximately 38% in equity instruments, approximately 51% in fixed income instruments and approximately 11% in alternatives.

The pension plan's investments are stated at fair value. Plan investments that are considered a level 1 fair value hierarchy and are valued at quoted market prices in active markets. Plan investments that are considered a level 2 fair value hierarchy and are valued based on observable market data. Plan investments that would be considered a level 3 fair value hierarchy are valued based on management's own assumption about the assumptions that market participants would use in pricing the asset or liability (including assumptions about risk).

Certain investments measured at fair value using net asset values as a practical expedient are not required to be categorized in the fair value hierarchy table listed below. As such, the total fair value of these net asset values based investments has been included in the table below to permit reconciliation to the plan asset amounts previously disclosed.

The fair values of the Company's net pension assets, by fair value hierarchy, for both the U.S. and foreign pension plans as of January 3, 2021, by asset category are as follows (in millions):

Asset category:(a)	**Level 1**	**Level 2**	**Level 3**	**Total**
Cash and cash equivalents (b)	$ —	$ 55.0	$ —	$ 55.0
Equity securities	44.6	218.9	—	263.5
U.S. government securities and futures	202.1	13.3	—	215.4
Corporate bonds	—	48.8	—	48.8
Insurance contracts related to foreign plans	—	16.9	—	16.9
Fair value of net plan assets at the end of the year	$ 246.7	$ 352.9	$ —	$ 599.6

Investments measured at net asset value:	
Alternatives	$ 202.9
Mutual funds (c)	16.8
Mortgage-backed securities	52.5
High yield bonds	37.1
Fair value of net plan assets at the end of the year	$ 309.3

a) There were no transfers of plan assets between the three levels of the fair value hierarchy during the year.
b) Reflects cash and cash equivalents held in overnight cash investments.
c) The mutual funds are invested in equity securities.

The fair values of the Company's net pension assets, by fair value hierarchy, for both the U.S. and foreign pension plans as of December 29, 2019, by asset category are as follows (in millions):

Asset category: (a)	Level 1	Level 2	Level 3	Total
Cash and cash equivalents (b)	$ —	$ 65.4	$ —	$ 65.4
Equity securities	52.5	266.7	—	319.2
U.S. government securities and futures	128.3	6.6	—	134.9
Corporate bonds	—	47.4	—	47.4
Insurance contracts related to foreign plans	—	14.0	—	14.0
Fair value of net plan assets at the end of the year	$ 180.8	$ 400.1	$ —	$ 580.9

Investments measured at net asset value:	
Alternatives	$ 195.3
Mutual funds (c)	29.7
Mortgage-backed securities	49.2
High yield bonds	28.7
Fair value of net plan assets at the end of the year	$ 302.9

(a) There were no transfers of plan assets between the three levels of the fair value hierarchy during the year.
(b) Reflects cash and cash equivalents held in overnight cash investments.
(c) The mutual funds are invested in equity securities.

U.S. equities are valued at the closing price reported in an active market on which the individual securities are traded. U.S. equities and non-U.S. equities are also valued at the net asset value provided by the independent administrator or custodian of the commingled fund. The net asset value is based on the value of the underlying equities, which are traded on an active market. Corporate bonds are valued using inputs such as the closing price reported, if traded on an active market, values derived from comparable securities of issuers with similar credit ratings, or under a discounted cash flow approach that utilizes observable inputs, such as current yields of similar instruments. Fixed income investments are also valued at the net asset value provided by the independent administrator or custodian of the fund. The net asset value is based on the underlying assets, which are valued using inputs such as the closing price reported, if traded on an active market, values derived from comparable securities of issuers with similar credit ratings, or under a discounted cash flow approach that utilizes observable inputs, such as current yields of similar instruments. Alternative investments are primarily valued at the net asset value as determined by the independent administrator or custodian of the fund. The net asset value is based on the underlying investments, which are valued using inputs such as quoted market prices of identical instruments or values derived from comparable securities of issuers with similar credit ratings, or under a discounted cash flow approach that utilizes observable inputs, such as current yields of similar instruments.

The Company's contributions associated with its 401(k) plans were $13.8 million, $13.4 million and $11.9 million, for 2020, 2019 and 2018, respectively.

Postretirement Plans

The Company sponsors several postretirement defined benefit plans covering certain salaried and hourly employees. The plans provide health care and life insurance benefits for certain eligible retirees. No service cost was incurred for these plans in 2020, 2019 or 2018.

Postretirement benefits non-service expense (in millions):	2020	2019	2018
Interest cost on benefit obligation	**$ 0.2**	$ 0.4	$ 0.4
Amortization of actuarial gain	**(0.2)**	(0.3)	(0.3)
Postretirement benefits non-service expense	**$ —**	$ 0.1	$ 0.1

Changes in benefit obligation (in millions):	2020	2019
Benefit obligation - beginning of year	**$ 8.1**	$ 8.7
Interest cost on projected benefit obligation	**0.2**	0.4
Actuarial loss	**1.1**	0.1
Benefits paid	**(1.4)**	(1.2)
Other	**0.1**	0.1
Benefit obligation - end of year	**$ 8.1**	$ 8.1

The measurement date for the Company's postretirement plans is December 31.

Future postretirement plan benefit payments (in millions):		
2021	$	0.9
2022		0.8
2023		0.8
2024		0.7
2025		0.6
2026-2030		2.6
Total	$	6.4

The following table sets forth the funded status and amounts recognized in Teledyne's consolidated balance sheets for the postretirement plans at year-end 2020 and 2019 (in millions):

		2020		2019
Funded status:				
Funded status	**$**	**(8.1)**	$	(8.1)
Unrecognized net gain		**(0.9)**		(2.2)
Accrued benefit cost	**$**	**(9.0)**	$	(10.3)
Amounts recognized in the consolidated balance sheets:				
Accrued postretirement benefits (long-term)	**$**	**(7.2)**	$	(7.2)
Accrued postretirement benefits (short-term)		**(0.9)**		(0.9)
Accumulated other comprehensive income		**(0.9)**		(2.2)
Net amount recognized	**$**	**(9.0)**	$	(10.3)

At January 3, 2021, the amount in AOCI that has not yet been recognized as a component of net periodic benefit income for the retiree medical plans is a net gain $0.9 million and no net prior service credit. At January 3, 2021, the estimated amortization from AOCI expected to be recognized as components of net periodic benefit income during 2021 for the retiree medical plans is a net gain of $0.1 million and no net prior service cost.

The annual assumed rate of increase in the per capita cost of covered benefits (the health care cost trend rate) for health care plans is 6.25% in 2021 and was assumed to decrease to 5.0% by the year 2027 and remain at that level thereafter. Assumed health care cost trend rates have a significant effect on the amounts reported for the health care plans. A one percentage point increase in the assumed health care cost trend rates would result in an increase in the annual service and interest costs by less than $0.1 million for 2020 and would result in an increase in the postretirement benefit obligation by $0.2 million at January 3, 2021. A one percentage point decrease in the assumed health care cost trend rates would result in a decrease in the annual service and interest costs by less than $0.1 million for 2020 and would result in a decrease in the postretirement benefit obligation by $0.2 million at January 3, 2021.

Note 12. Business Segments

The Company has four reportable segments: Instrumentation; Digital Imaging; Aerospace and Defense Electronics; and Engineered Systems. The Company manages, evaluates and aggregates its operating segments for segment reporting purposes primarily on the basis of product and service type, production process, distribution methods, type of customer, management organization, sales growth potential and long-term profitability. The Instrumentation segment provides monitoring and control instruments for marine, environmental, industrial and other applications, electronic test and measurement equipment and harsh environment interconnect products. The Digital Imaging segment includes high-performance sensors, cameras and systems, within the visible, infrared and X-ray spectra, for use in industrial, government and medical applications, as well as micro electro-mechanical systems ("MEMS") and high-performance, high-reliability semiconductors including analog-to-digital and digital-to-analog converters. It also includes our sponsored and centralized research laboratories benefiting government programs and businesses. The Aerospace and Defense Electronics segment provides sophisticated electronic components and subsystems and communications products, including defense electronics, harsh environment interconnects, data acquisition and communications equipment for aircraft and components and subsystems for wireless and satellite communications, as well as general aviation batteries. The Engineered Systems segment provides innovative systems engineering and integration, advanced technology application, software development and manufacturing solutions for defense, space, environmental and energy applications. The Engineered Systems segment also designs and manufactures electrochemical energy systems and small turbine engines.

Segment results include net sales and operating income by segment but excludes noncontrolling interest, equity income or loss, unusual non-recurring legal matter settlements, interest income and expense, gains and losses on the disposition of assets, sublease rental income and non-revenue licensing and royalty income, domestic and foreign income taxes and corporate office expenses. Corporate expense includes various administrative expenses relating to the corporate office and certain nonoperating expenses not allocated to our segments.

As part of a continuing effort to reduce costs and improve operating performance, as well as to respond to the impact of COVID-19, in 2020, the Company took actions to reduce headcount by 9.8% across various businesses, reducing our exposure to weak end markets, such as commercial aerospace. At January 3, 2021, $2.1 million remains to be paid related to these actions.

The following pre-tax charges were incurred related to severance and facility consolidations (in millions):

	2020	2019	2018
Instrumentation	$ 5.9	$ 1.5	$ 5.6
Digital Imaging	2.9	1.1	0.7
Aerospace and Defense Electronics	11.1	0.5	1.3
Engineered Systems	0.5	0.1	0.2
Corporate	0.4	—	—
Total	$ 20.8	$ 3.2	$ 7.8

Information on the Company's business segments was as follows (in millions):

Net sales:	2020	2019	2018
Instrumentation	$ 1,094.5	$ 1,105.1	$ 1,021.2
Digital Imaging	986.0	992.9	875.3
Aerospace and Defense Electronics	589.4	690.1	640.2
Engineered Systems	416.3	375.5	365.1
Total net sales	$ 3,086.2	$ 3,163.6	$ 2,901.8

Operating income:	2020	2019	2018
Instrumentation	$ 213.2	$ 200.4	$ 147.4
Digital Imaging	192.8	176.5	155.5
Aerospace and Defense Electronics	80.8	143.4	131.8
Engineered Systems	50.1	36.5	37.9
Corporate expense	(56.8)	(65.1)	(56.0)
Total operating income	$ 480.1	$ 491.7	$ 416.6

Depreciation and amortization:	2020	2019	2018
Instrumentation	$ 38.3	$ 35.9	$ 37.0
Digital Imaging	49.2	48.5	50.8
Aerospace and Defense Electronics	13.7	14.3	13.8
Engineered Systems	9.2	6.0	4.3
Corporate	5.8	7.2	7.1
Total depreciation and amortization	$ 116.2	$ 111.9	$ 113.0

Capital expenditures:	2020	2019	2018
Instrumentation	$ 18.0	$ 18.9	$ 14.8
Digital Imaging	33.4	45.2	35.8
Aerospace and Defense Electronics	10.4	19.0	18.7
Engineered Systems	7.5	3.6	13.6
Corporate	2.1	1.7	3.9
Total capital expenditures	$ 71.4	$ 88.4	$ 86.8

Identifiable assets are those assets used in the operations of the segments. Corporate assets primarily consist of cash and cash equivalents, deferred taxes, pension assets and other assets.

Identifiable assets:	**2020**	**2019**	**2018**
Instrumentation	**$ 1,676.2**	$ 1,680.2	$ 1,392.7
Digital Imaging	**2,000.8**	1,874.6	1,577.5
Aerospace and Defense Electronics	**567.6**	618.3	509.9
Engineered Systems	**175.1**	143.4	151.5
Corporate	**665.1**	263.3	177.7
Total identifiable assets	**$ 5,084.8**	$ 4,579.8	$ 3,809.3

Information on the Company's sales by country of origin and long-lived assets by major geographic area was as follows (in millions):

Sales by country of origin:	**2020**	**2019**	**2018**
United States	**$ 2,078.7**	$ 2,179.6	$ 2,044.9
Canada	**333.7**	301.0	294.8
United Kingdom	**237.5**	251.7	178.8
The Netherlands	**105.5**	134.2	105.3
All other countries	**330.8**	297.1	278.0
Total sales	**$ 3,086.2**	$ 3,163.6	$ 2,901.8

Long-lived assets:	**2020**	**2019**	**2018**
United States	**$ 1,707.0**	$ 1,839.4	$ 1,402.3
Canada	**372.9**	355.0	264.6
United Kingdom	**539.5**	492.2	414.9
France	**505.1**	367.1	353.8
All other countries	**201.7**	195.6	246.7
Total long-lived assets	**$ 3,326.2**	$ 3,249.3	$2,682.3

Long-lived assets consist of property, plant and equipment, goodwill, acquired intangible assets, prepaid pension assets and other long-term assets including deferred compensation assets but excluding any deferred tax assets. The all other countries category primarily consists of Teledyne's operations in Europe.

Product Lines

The Instrumentation segment includes three product lines: Environmental Instrumentation, Marine Instrumentation and Test and Measurement Instrumentation. All other segments each contain one product line.

The tables below provide a summary of the sales by product line for the Instrumentation segment (in millions):

Instrumentation:	**2020**	**2019**	**2018**
Environmental Instrumentation	**$ 411.3**	$ 391.4	$ 339.6
Marine Instrumentation	**426.3**	450.2	433.0
Test and Measurement Instrumentation	**256.9**	263.5	248.6
Total	**$1,094.5**	$1,105.1	$1,021.2

Sales to the U.S. Government included sales to the U.S. Department of Defense of $578.4 million in 2020, $545.5 million in 2019, and $494.9 million in 2018. Total sales to international customers were $1,385.3 million in 2020, $1,391.6 million in 2019, and $1,353.7 million in 2018. Of these amounts, sales by operations in the United States to customers in other countries were $546.8 million in 2020, $638.0 million in 2019, and $600.5 million in 2018. There were no sales to individual countries outside of the United States in excess of 10 percent of the Company's sales. Sales between business segments generally were priced at prevailing market prices and were $23.4 million, $30.3 million and $23.4 million for 2020, 2019 and 2018, respectively.

We also disaggregate our revenue from contracts with customers by customer type, contract-type and geographic region for each of our segments, as we believe it best depicts how the nature, amount, timing and uncertainty of our revenue and cash flows are affected by economic factors.

(in millions)	Fiscal Year Ended January 3, 2021 — Customer Type: United States Government (a)	Other, Primarily Commercial	Total	Fiscal Year Ended December 29, 2019 — Customer Type: United States Government (a)	Other, Primarily Commercial	Total	Fiscal Year Ended December 30, 2018 — Customer Type: United States Government (a)	Other, Primarily Commercial	Total
Net Sales:									
Instrumentation	**$ 80.6**	**$ 1,013.9**	**$1,094.5**	$ 80.4	$ 1,024.7	$1,105.1	$ 68.3	$ 952.9	$1,021.2
Digital Imaging	**120.9**	**865.1**	**986.0**	107.4	885.5	992.9	90.5	784.8	875.3
Aerospace and Defense Electronics	**229.9**	**359.5**	**589.4**	225.3	464.8	690.1	177.2	463.0	640.2
Engineered Systems	**386.8**	**29.5**	**416.3**	338.9	36.6	375.5	319.3	45.8	365.1
Total	**$ 818.2**	**$ 2,268.0**	**$3,086.2**	$ 752.0	$ 2,411.6	$3,163.6	$ 655.3	$ 2,246.5	$2,901.8

a) Includes sales as a prime contractor or subcontractor.

(in millions)	Fiscal Year Ended January 3, 2021 — Contract Type: Fixed Price	Cost Type	Total	Fiscal Year Ended December 29, 2019 — Contract Type: Fixed Price	Cost Type	Total	Fiscal Year Ended December 30, 2018 — Contract Type: Fixed Price	Cost Type	Total
Net Sales:									
Instrumentation	**$1,081.6**	**$ 12.9**	**$ 1,094.5**	$ 1,094.4	$ 10.7	$ 1,105.1	$1,001.0	$ 20.2	$1,021.2
Digital Imaging	**883.5**	**102.5**	**986.0**	903.1	89.8	992.9	795.5	79.8	875.3
Aerospace and Defense Electronics	**588.8**	**0.6**	**589.4**	687.8	2.3	690.1	637.4	2.8	640.2
Engineered Systems	**219.0**	**197.3**	**416.3**	168.9	206.6	375.5	165.8	199.3	365.1
Total	**$2,772.9**	**$ 313.3**	**$ 3,086.2**	$ 2,854.2	$ 309.4	$ 3,163.6	$2,599.7	$ 302.1	$2,901.8

(in millions)	Fiscal Year Ended January 3, 2021 — Geographic Region (a): United States	Europe	All other	Total	Fiscal Year Ended December 29, 2019 — Geographic Region (a): United States	Europe	All other	Total	Fiscal Year Ended December 30, 2018 — Geographic Region (a): United States	Europe	All other	Total
Net sales:												
Instrumentation	**$ 844.4**	**$ 204.4**	**$ 45.7**	**$ 1,094.5**	$ 899.7	$ 164.8	$ 40.6	$1,105.1	$ 835.0	$ 134.6	$ 51.6	$1,021.2
Digital Imaging	**309.3**	**272.9**	**403.8**	**986.0**	316.1	299.4	377.4	992.9	239.3	270.2	365.8	875.3
Aerospace and Defense Electronics	**508.7**	**80.1**	**0.6**	**589.4**	588.3	100.8	1.0	690.1	605.5	32.5	2.2	640.2
Engineered Systems	**416.3**	**—**	**—**	**416.3**	375.5	—	—	375.5	365.1	—	—	365.1
Total	**$2,078.7**	**$ 557.4**	**$450.1**	**$ 3,086.2**	$2,179.6	$ 565.0	$419.0	$3,163.6	$2,044.9	$ 437.3	$419.6	$2,901.8

a) Net sales by geographic region of origin.

Note 13. Lease Commitments

Lease Commitments

We determine if an arrangement is a lease at inception. Operating leases are recorded as right-of-use assets, other long-term lease liabilities and current accrued liabilities in our consolidated balance sheets. Finance leases are included in property and equipment, current accrued liabilities, and other long-term liabilities in our consolidated balance sheets.

Operating lease right-of-use assets represent our right to use an underlying asset for the lease term and lease liabilities represent our obligation to make lease payments arising from the lease. Operating lease right-of-use assets and lease liabilities are recognized at commencement date based on the present value of lease payments over the lease term and use an implicit rate when readily available. Since most of our leases do not provide an implicit rate, we use the incremental borrowing rate to determine the present value of lease payments. The rate will take into consideration the underlying asset's economic environment, including the length of the lease term and currency that the lease is payable in. Our lease agreements may include options to extend the lease term at either a fixed cost, fixed increase or market value adjustment. We evaluate the likelihood of exercising each renewal option based on many factors, including the length of the renewal option and the future new lease cost, if known, or the estimated future new lease cost if it is not a fixed amount and will include those renewal options that are reasonably certain to be exercised for purposes of calculating the lease liability and corresponding right-of-use asset. Lease expense for lease payments is recognized on a straight-line basis over the lease term.

Operating Leases

Teledyne has approximately 115 long-term operating lease agreements for manufacturing facilities and office space. These agreements frequently include one or more renewal options and may require the Company to pay for non-lease components such as utilities, taxes, insurance and maintenance expense. We account for lease and non-lease components as a single lease component when the payments are fixed. Variable payments included in the lease agreement are expensed as incurred. No lease agreement imposes a restriction on the Company's ability to engage in financing transactions or enter into further lease agreements. At January 3, 2021, Teledyne has right-of-use assets of $123.4 million included in other long-term other assets on the balance sheet.

At January 3, 2021, future minimum lease payments for operating leases with non-cancelable terms of more than one year were as follows (in millions):

Operating lease commitments:		
2021	$	23.8
2022		22.4
2023		19.2
2024		17.0
2025		15.5
Thereafter		66.0
Total minimum lease payments		163.9
Less:		
Imputed interest		(26.2)
Current portion (included in other current liabilities)		(21.2)
Present value of minimum lease payments, net of current portion	$	116.5

The weighted average remaining lease term for operating leases is approximately 9 years and the weighted average discount rate is approximately 4.00% Rental expense under operating leases, including leases with a term of 12 months or less, net of immaterial sublease income, was $29.4 million in 2020, $26.5 million in 2019 and $30.7 million in 2018. Cash paid for amounts included in the measurement of lease liabilities was $27.8 million for 2020 and $24.7 million for 2019.

Finance Leases and Subleases

Our finance leases and subleases are not material.

Note 14. Commitments and Contingencies

The Company is subject to federal, state and local environmental laws and regulations which require that it investigate and remediate the effects of the release or disposal of materials at sites associated with past and present operations, including sites at which the Company has been identified as a potentially responsible party under the federal Superfund laws and comparable state laws.

In accordance with the Company's accounting policy disclosed in Note 2, environmental liabilities are recorded when the Company's liability is probable and the costs are reasonably estimable. In many cases, however, investigations are not yet at a stage where the Company has been able to determine whether it is liable or, if liability is probable, to reasonably estimate the loss or range of loss, or certain components thereof. Estimates of the Company's liability are further subject to uncertainties regarding the nature and extent of site contamination, the range of remediation alternatives available, evolving remediation standards, imprecise engineering evaluations and estimates of appropriate cleanup technology, methodology and cost, the extent of corrective actions that may be required, and the number and financial condition of other potentially responsible parties, as well as the extent of their responsibility for the remediation. Accordingly, as investigation and remediation of these sites proceeds, it is likely that adjustments in the Company's accruals will be necessary to reflect new information. The amounts of any such adjustments could have a material adverse effect on the Company's results of operations in a given period, but the amounts, and the possible range of loss in excess of the amounts accrued, are not reasonably estimable. Based on currently available information, however, management does not believe that future environmental costs in excess of those accrued with respect to sites with which the Company has been identified are likely to have a material adverse effect on the Company's financial condition or liquidity.

At January 3, 2021, the Company's reserves for environmental remediation obligations totaled $6.5 million, of which $1.5 million is included in current accrued liabilities with the remainder included in long-term accrued liabilities. The Company periodically evaluates whether it may be able to recover a portion of future costs for environmental liabilities from its insurance carriers and from third parties. The timing of expenditures depends on a number of factors that vary by site, including the nature and extent of contamination, the number of potentially responsible parties, the timing of regulatory approvals, the complexity of the investigation and remediation, and the standards for remediation. The Company expects that it will expend present accruals over many years, and will complete remediation of all sites with which it has been identified in up to thirty years.

Various claims (whether based on U.S. Government or Company audits and investigations or otherwise) may be asserted against the Company related to its U.S. Government contract work, including claims based on business practices and cost classifications and actions under the False Claims Act. Although such claims are generally resolved by detailed fact-finding and negotiation, on those occasions when they are not so resolved, civil or criminal legal or administrative proceedings may ensue. Depending on the circumstances and the outcome, such proceedings could result in fines, penalties, compensatory and treble damages or the cancellation or suspension of payments under one or more U.S. Government contracts. Under government regulations, a company, or one or more of its operating divisions or units, can also be suspended or debarred from government contracts based on the results of investigations. However, although the outcome of these matters cannot be predicted with certainty, management does not believe there is any audit, review or investigation currently pending against the Company of which management is aware that is likely to result in suspension or debarment of the Company, or that is otherwise likely to have a material adverse effect on the Company's financial condition or liquidity, although the resolution in any reporting period of one or more of these matters could have a material adverse effect on the Company's results of operations for that period.

A number of other lawsuits, claims and proceedings have been or may be asserted against the Company, including those pertaining to product liability, acquisitions, patent infringement, commercial contracts, employment and employee benefits. While the outcome of litigation cannot be predicted with certainty, and some of these lawsuits, claims or proceedings may be determined adversely to the Company, management does not believe that the disposition of any such pending matters is likely to have a material adverse effect on the Company's financial condition.

Note 15. Subsequent Events

On January 4, 2021, the first day of the 2021 fiscal year, Teledyne and FLIR entered into a definitive agreement under which Teledyne will acquire FLIR in a cash and stock transaction valued at approximately $8.0 billion. Under the terms of the agreement, FLIR stockholders will receive $28.00 per share in cash and 0.0718 shares of Teledyne common stock for each FLIR share, which implies a total purchase price of $56.00 per FLIR share based on Teledyne's 5-day volume weighted average price as of December 31, 2020. The transaction is expected to close in the middle of 2021 subject to the receipt of required regulatory approvals, including expiration or termination of the applicable waiting period under the Hart-Scott-Rodino Antitrust Improvements Act, approvals of Teledyne and FLIR stockholders and other customary closing conditions.

FLIR Systems, Inc. designs, develops, manufactures, markets, and distributes technologies that enhance perception and awareness. FLIR provides innovative sensing solutions through thermal imaging, visible-light imaging, video analytics, measurement and diagnostic, and advanced threat detection systems. FLIR offers a diversified portfolio that serves a number of applications in government and defense, industrial, and commercial markets. FLIR, headquartered in Wilsonville, Oregon, will be part of the Digital Imaging segment.

As part of the pending acquisition of FLIR, Teledyne has arranged a $4.5 billion 364-day credit commitment to support funding of the transaction. Teledyne expects to fund the acquisition with a combination of equity, cash on hand and permanent debt financing, including a combination of senior notes and bank term loans.

Note 16. Quarterly Financial Data (Unaudited)

Fiscal Year 2020 (a) (in millions, except per-share amounts)	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Net Sales	$ 784.6	$ 743.3	$ 749.0	$ 809.3
Costs and expenses				
Cost of sales	492.6	460.6	458.5	493.6
Selling, general and administrative expenses	188.0	172.9	168.0	171.9
Total costs and expenses	680.6	633.5	626.5	665.5
Operating income	104.0	109.8	122.5	143.8
Interest and debt expense, net	(4.1)	(3.7)	(4.1)	(3.4)
Non-service retirement benefit income	2.5	3.2	3.2	3.2
Other expense, net	(1.4)	(1.4)	(1.9)	(2.5)
Income before income taxes	101.0	107.9	119.7	141.1
Provision for income taxes (b)	18.8	14.2	25.8	9.0
Net income	$ 82.2	$ 93.7	$ 93.9	$ 132.1
Basic earnings per common share	$ 2.25	$ 2.55	$ 2.55	$ 3.58
Diluted earnings per common share	$ 2.17	$ 2.48	$ 2.48	$ 3.48

a) Fiscal year 2020 was a 53-week fiscal-year, each quarter contained 13 weeks except the fourth quarter which contained 14 weeks..
b) Includes $4.2 million in net discrete income tax benefits in the first quarter, $10.4 million in net discrete income tax benefits in the second quarter, $1.2 million in net discrete income tax benefits the third quarter and $18.8 million in net discrete income tax benefits in the fourth quarter.

Fiscal Year 2020 (in millions)	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Net Sales:				
Instrumentation	$ 285.1	$ 263.1	$ 263.5	$ 282.8
Digital Imaging	246.7	237.6	239.7	262.0
Aerospace and Defense Electronics	156.3	143.1	144.8	145.2
Engineered Systems	96.5	99.5	101.0	119.3
Total net sales	$ 784.6	$ 743.3	$ 749.0	$ 809.3
Operating income:				
Instrumentation	$ 50.8	$ 48.5	$ 50.7	$ 63.2
Digital Imaging	43.8	46.8	45.5	56.7
Aerospace and Defense Electronics	13.4	17.5	26.7	23.2
Engineered Systems	11.4	10.8	12.5	15.4
Corporate expense	(15.4)	(13.8)	(12.9)	(14.7)
Total operating income	$ 104.0	$ 109.8	$ 122.5	$ 143.8

Fiscal Year 2019 (a) (in millions, except per-share amounts)	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Net Sales	$ 745.2	$ 782.0	$ 802.2	$ 834.2
Costs and expenses				
Cost of sales	463.9	463.6	487.7	505.1
Selling, general and administrative expenses	184.0	186.5	185.8	195.3
Total costs and expenses	647.9	650.1	673.5	700.4
Operating income	97.3	131.9	128.7	133.8
Interest and debt expense, net	(5.4)	(5.4)	(5.5)	(4.7)
Non-service retirement benefit income	2.2	2.0	1.9	1.9
Other expense, net	(1.2)	(0.6)	(1.7)	(1.5)
Income before income taxes	92.9	127.9	123.4	129.5
Provision for income taxes (b)	17.6	23.3	16.7	13.8
Net income	$ 75.3	$ 104.6	$ 106.7	$ 115.7
Basic earnings per common share	$ 2.09	$ 2.89	$ 2.93	$ 3.17
Diluted earnings per common share	$ 2.02	$ 2.80	$ 2.84	$ 3.06

a) Fiscal year 2019 was a 52-week fiscal-year, each quarter contained 13 weeks.
b) Includes $3.1 million in net discrete income tax benefits in the first quarter, $4.3 million in net discrete income tax benefits in the second quarter, $10.4 million in net discrete income tax benefits the third quarter and $8.3 million in net discrete income tax benefits in the fourth quarter.

Fiscal Year 2019 (in millions)	1st Quarter	2nd Quarter	3rd Quarter	4th Quarter
Net Sales:				
Instrumentation	$ 256.5	$ 264.1	$ 282.9	$ 301.6
Digital Imaging	232.4	248.4	244.0	268.1
Aerospace and Defense Electronics	166.6	176.0	177.1	170.4
Engineered Systems	89.7	93.5	98.2	94.1
Total net sales	$ 745.2	$ 782.0	$ 802.2	$ 834.2
Operating income:				
Instrumentation	$ 39.9	$ 49.0	$ 52.0	$ 59.5
Digital Imaging	36.6	51.6	41.2	47.1
Aerospace and Defense Electronics	32.5	38.6	39.5	32.8
Engineered Systems	6.4	9.0	10.6	10.5
Corporate expense	(18.1)	(16.3)	(14.6)	(16.1)
Total operating income	$ 97.3	$ 131.9	$ 128.7	$ 133.8

Schedule II VALUATION AND QUALIFYING ACCOUNTS

Schedule II

VALUATION AND QUALIFYING ACCOUNTS

For the Fiscal Years Ended January 3, 2021, December 29, 2019 and December 30, 2018
(In millions)

Description	Balance at beginning of period		Additions: Charged to costs and expenses	Additions: Acquisitions	Deductions and other (a)	Balance at end of period	
Fiscal Year 2020							
Allowance for doubtful accounts	$	10.2	4.1	—	(2.0)	$	12.3
Environmental reserves	$	6.0	1.1	—	(0.6)	$	6.5
Fiscal Year 2019							
Allowance for doubtful accounts	$	6.7	1.3	2.3	(0.1)	$	10.2
Environmental reserves	$	6.0	0.6	—	(0.6)	$	6.0
Fiscal Year 2018							
Allowance for doubtful accounts	$	10.3	0.6	—	(4.2)	$	6.7
Environmental reserves	$	5.1	1.6	—	(0.7)	$	6.0

(a) Represents payments except the amounts for allowance for doubtful accounts primarily represents uncollectible accounts written-off, net of recoveries.

Item 16. Form 10-K Summary

None

EXHIBIT INDEX

Exhibit No.	Description
2.1	Separation and Distribution Agreement dated as of November 29, 1999 by and among Allegheny Teledyne Incorporated, TDY Holdings, LLC, Teledyne Industries, Inc. and Teledyne Technologies Incorporated (incorporated by reference to Exhibit 2.1 to the Company's Current Report on Form 8-K dated as of November 29, 1999 (File No. 1-15295))
2.2	Agreement and Plan of Merger, dated as of January 4, 2021, by and among Teledyne Technologies Incorporated, Firework Merger Sub I, Inc., Firework Merger Sub II, LLC and FLIR Systems, Inc. (incorporated by reference to Exhibit 2.1 to the Company's Current Report on Form 8-K dated January 2, 2021 File No. 1-15295))
3.1	Restated Certificate of Incorporation of Teledyne Technologies Incorporated (including Certificate of Designation of Series A Junior Participating Preferred Stock) (incorporated by reference to Exhibit 3.1 to the Company's Annual Report on Form 10-K for the year ended January 2, 2000 (File No. 1-15295))
3.2	Second Amended and Restated Bylaws of Teledyne Technologies Incorporated (incorporated by reference to Exhibit 3.1 to the Company's Current Report on Form 8-K dated January 2, 2021 (File No. 1-15295))
4.1	Description of the Registrant's Securities (incorporated by reference to Exhibit 4.1 to the Company's Annual Report on Form 10-K for the fiscal year ended December 29, 2019 File No. 1-15295))
10.1	Employee Benefits Agreement between Allegheny Teledyne Incorporated and Teledyne Technologies Incorporated (incorporated by reference to Exhibit 10.3 to the Company's Current Report on Form 8-K/A (Amendment No. 1) dated as of November 29, 1999 (File No. 1-15295))†
10.2	Teledyne Technologies Incorporated 2008 Incentive Award Plan (incorporated by reference to Annex A of the Company's Definitive Proxy Statement filed March 7, 2008 (File No. 1-15295))†
10.3	Teledyne Technologies Incorporated Administrative Rules of the 2008 Incentive Award Plan Related to Non-Employee Director Stock Compensation (incorporated by reference to Exhibit 10.2 to the Company's Quarterly Report on Form 10-Q for the fiscal quarter ended March 30, 2008 (File No. 1-15295))†
10.4	Form of Stock Option Agreement under the 2008 Incentive Award Plan (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K dated January 19, 2010 (File No.1-15295))†
10.5	Teledyne Technologies Incorporated Amended and Restated 2008 Incentive Award Plan (incorporated by reference to Annex A of the Company's Definitive Proxy Statement filed March 8, 2012 (File No. 1-15295))†
10.6	Administrative Rules of the Teledyne Technologies Incorporated Amended and Restated 2008 Incentive Award Plan Related to Non-Employee Director Stock Compensation (incorporated by reference to Exhibit 10.2 to the Company's Quarterly Report on Form 10-Q for the fiscal quarter ended April 1, 2012 (File No. 1-15295))†
10.7	Form of Stock Option Agreement under the Teledyne Technologies Incorporated Amended and Restated 2008 Incentive Award Plan (incorporated by reference to Exhibit 10.3 to the Company's Quarterly Report on Form 10-Q for the fiscal quarter ended April 1, 2012 (File No. 1-15295))†
10.8	Teledyne Technologies Incorporated 2014 Incentive Award Plan (incorporated by reference to Annex A of the Company's Definitive Proxy Statement filed March 5, 2014 (File No. 1-15295))†
10.9	Form of stock option agreement and conditions under the Teledyne Technologies Incorporated 2014 Incentive Award Plan (incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K dated April 23, 2014 File No. 1-15295))†

10.10 Administrative Rules of the Teledyne Technologies Incorporated 2014 Incentive Plan Related to Non-Employee Director Stock Compensation (incorporated by reference to Exhibit 10.3 to the Company's Current Report on Form 8-K dated April 23, 2014 (File No. 1-15295))†

10.11 Administrative Rules of the 2014 Incentive Award Plan Related to Non-Employee Director Restricted Stock Unit Awards and Fees (incorporated by reference to Exhibit 10.4 to the Company's Current Report on Form 8-K dated December 31, 2014 (File No. 1-15295))†

10.12 Amended and Restated Teledyne Technologies Incorporated 2014 Incentive Award Plan (incorporated by reference to Annex A of the Company's Definitive Proxy Statement filed March 10, 2017)†

10.13 Standing resolutions of the Nominating and Governance Committee related to non-employee director compensation (incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K dated April 26, 2017).†

10.14 Administrative Rules of the Amended and Restated Teledyne Technologies Incorporated 2014 Incentive Award Plan Related to Non-Employee Director Restricted Stock Unit Awards and Fees (incorporated by reference to Exhibit 10.3 to the Company's Current Report on Form 8-K dated April 26, 2017).†

10.15 Administrative Rules for the Restricted Stock Award Program under the Amended and Restated Teledyne Technologies Incorporated 2014 Incentive Award Plan (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K dated January 23, 2018)†

10.16 Form of Restricted Stock Award Agreement under the Amended and Restated Teledyne Technologies Incorporated 2014 Incentive Award Plan (incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K dated January 23, 2018)†

10.17 Form of Stock Option Award Agreement under the Amended and Restated Teledyne Technologies Incorporated 2014 Incentive Award Plan (incorporated by reference to Exhibit 10.3 to the Company's Current Report on Form 8-K dated January 23, 2018)†

10.18 Terms and Conditions of Stock Option Award Agreement under the Amended and Restated Teledyne Technologies Incorporated 2014 Incentive Award Plan for grants made after 2018 (incorporated by reference to Exhibit 10.17 to the Company's Annual Report on Form 10-K for the fiscal year ended December 29, 2019 File No. 1-15295))†

10.19 Summary Plan Description for the Performance Share Plan 2018-2020 Cycle under the Amended and Restated Teledyne Technologies Incorporated 2014 Incentive Award Plan (incorporated by reference to Exhibit 10.4 to the Company's Current Report on Form 8-K dated January 23, 2018)†

10.20 Performance Plan Summary Plan Description (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K dated January 26, 2021 File No. 1-15295))†

10.21 Sixth Amended and Restated Employment Agreement, by and between Teledyne Technologies Incorporated and Robert Mehrabian, dated as of October 23, 2018. (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on October 23, 2018) (File No. 1-15295)†

10.22 Amendment No. 1 to Sixth Amended and Restated Employment Agreement dated as of January 26, 2021, by and between Teledyne Technologies Incorporated and Robert Mehrabian (incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K dated January 26, 2021 File No. 1-15295))†

10.23 Employment Agreement, by and between Teledyne Technologies Incorporated and Aldo Pichelli, dated as of October 23, 2018. (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K filed on October 23, 2018) (File No. 1-15295)†

10.24 Amendment No. 1 to Employment Agreement dated as of January 26, 2021, by and between Teledyne Technologies Incorporated and Aldo Pichelli*†

10.25 Amended and Restated Change in Control Severance Agreement, dated as of January 31, 2011, by and between Teledyne Technologies Incorporated and Robert Mehrabian (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K dated January 31, 2011 (File No. 1-15295))†

10.26 Amended and Restated Change in Control Severance Agreement, dated as of January 31, 2011, by and between Teledyne Technologies Incorporated and Al Pichelli (incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K dated January 31, 2011 (File No. 1-15295))†

10.27 Amended and Restated change in Control Severance Agreement dated January 31, 2011, by and between Teledyne Technologies Incorporated and Susan L. Main (incorporated by reference to Exhibit 10.12 to Company's Annual Report on Form 10-K for the fiscal years ended December 29, 2013 (File No. 1-15295))†

10.28 Amended and Restated Change in Controls Severance Agreement, dated as of January 31, 2011, by and between Teledyne Technologies Incorporated and Jason Vanwees (incorporated by reference to Exhibit 10.39 to the Company's Annual Report on Form 10-K for the fiscal year end January 3, 2016(File No. 1-15295)†

10.29 Amended and Restated Change in Control Severance Agreement, dated as of January 31, 2011, by and between Teledyne Technologies Incorporated and Melanie Cibik (incorporated by reference to Exhibit 10.13 to the Company's Annual Report on Form 10-K for the fiscal year end December 29, 2013 (File No. 1-15295))†

10.30 Teledyne Technologies Incorporated Executive Deferred Compensation Plan, as originally effective as of November 29, 1999, as amended and restated effective December 31, 2004 (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K dated December 31, 2008)(File No. 1-15295)†

10.31 Teledyne Technologies Incorporated Pension Equalization/Benefit Restoration Plan, as originally effective as of November 29, 1999, as amended and restated effective December 31, 2004 (incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K dated December 31, 2008(File No. 1-15295))†

10.32 Teledyne Technologies Pension Equalization/Benefit Restoration Plan - Resolutions of the Plan Administration Committee (incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K dated December 31, 2014 (File No. 1-15295))†

10.33 Amended and Restated Credit Agreement, dated as of March 1, 2013, by and among Teledyne Technologies Incorporated (Teledyne), certain subsidiaries of Teledyne as Designated Borrowers, certain subsidiaries of Teledyne as Guarantors, the Lender parties thereto and Bank of America, N.A. as Administrative Agent, Swing-Line Lender and L/C Issuer (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K dated March 1, 2013) (File No. 1-15295))

10.34 First Amendment to Amended and Restated Credit Agreement, dated as of December 4, 2015,(incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K dated December 4, 2018 (File No. I-15295)

10.35 Second Amendment, dated as of January 17, 2017, to Amended and Restated Credit Agreement, (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K dated January 17, 2017 (File No. 1-15295)

10.36 Third Amendment, dated as of March 17, 2017, to Amended and Restated Credit Agreement (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K dated March 17, 2017)

10.37 Fourth Amendment, dated as of March 15, 2019, to Amended and Restated Credit Agreement (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K dated March 15, 2019)

10.38 Fifth Amendment, dated as of October 30, 2019, to Amended and Restated Credit Agreement (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K dated October 30, 2019)

10.39 Sixth Amendment to Amended and Restated Credit Agreement dated as of January 19, 2021, by and among Teledyne Technologies Incorporated, the designated borrowers party thereto, the guarantors party thereto, the lenders party thereto and Bank of America, N.A., as administrative agent, swing line lender and L/C issuer (incorporated by reference to Exhibit 10.2 to the Company's Current Report on Form 8-K dated January 19, 2021 File No. 1-15295))

10.40	Note Purchase Agreement, dated September 23, 2014, by and among Teledyne Technologies Incorporated and the Purchasers identified therein (incorporated by reference to Exhibit 99.1 to the Company’s Current Report on Form 8-K filed on September 23, 2014 (File No. 1-15295))
10.41	Amendment to Note Purchase Agreement, dated as of April 18, 2017, between Teledyne Technologies Incorporated and the noteholders under that certain Note Purchase Agreement dated as of August 27, 2015 (incorporated by reference to Exhibit 10.4 to the Company’s Current Report on Form 8-K dated April 18, 2017).
10.42	Note Purchase Agreement, dated August 27, 2015, by and among Teledyne Technologies Incorporated and the Purchasers identified therein (incorporated by reference to Exhibit 10.1 to the Company’s Current Report on Form 8-K dated August 27, 2015) (File No. 1-15295))
10.43	Amendment to Note Purchase Agreement, dated as of April 18, 2017, between Teledyne Technologies Incorporated and the noteholders under that certain Note Purchase Agreement dated as of September 23, 2014 (incorporated by reference to Exhibit 10.3 to the Company’s Current Report on Form 8-K dated April 18, 2017).
10.44	Amended and Restated Term Loan Credit Agreement, dated October 30, 2019, by an among Teledyne Technologies Incorporated and Teledyne Netherlands BV, as borrowers, the several banks and other financial institutions form time to time parties thereto as lenders, Bank of America, N.A., as administrative agent, and B of A Securities, Inc., as sole book manager and sole lead arranger (incorporated by reference to Exhibit 10.1 to the Company's Current Report on Form 8-K dated October 30, 2019).
10.45	First Amendment to Amended and Restated Term Loan Credit Agreement dated as of January 19, 2021, by and among Teledyne Technologies Incorporated and Teledyne Netherlands BV, as borrowers, the guarantors party thereto, the several banks and other financial institutions from time to time parties thereto as lenders and Bank of America, N.A., as administrative agent (incorporated by reference to Exhibit 10.1 to the Company’s Current Report on Form 8-K dated January 19, 2021 File No. 1-15295))
10.46	Note Purchase and Guaranty Agreement, dated as of April 18, 2017, by and among Teledyne Technologies Incorporated, Teledyne Netherlands B.V. and the purchasers identified therein (incorporated by reference to Exhibit 10.1 to the Company’s Current Report on Form 8-K dated April 18, 2017).
10.44	Guaranty Agreement to Note Purchase Agreement, dated as of April 18, 2017, made by the Subsidiary Guarantors (incorporated by reference to Exhibit 10.5 to the Company’s Current Report on Form 8-K dated April 18, 2017).
10.48	Bridge Facility Commitment Letter, dated January 4, 2021, by and among BofA Securities, Inc., Bank of America, N.A. and Teledyne Technologies Incorporated (incorporated by reference to Exhibit 10.1 to the Company’s Current Report on Form 8-K dated January 2, 2021 File No. 1-15295))
10.49	Form of Indemnification Agreement executed by each of the Company’s directors and named executive officers (incorporated by reference to Exhibit 10.1 to the Company’s Current Report on Form 8-K dated April 22, 2009 (File No. 1-15295))†
14.1	Teledyne Technologies Incorporated Global Code of Ethical Conduct - this code of ethics may be accessed via the Company’s website at www.teledyne.com/aboutus/ethics.pdf
14.2	Code of Ethics for Financial Professionals - this code of ethics may be accessed via the Company’s website at www.teledyne.com/aboutus/ethics.asp
14.3	Directors, Code of Business Conduct and Ethics - this code of ethics may be accessed via the Company’s website at www.teledyne.com/aboutus/ethics.asp
21	Subsidiaries of Teledyne Technologies Incorporated*
23.1	Consent of Deloitte & Touche LLP, Independent Registered Public Accounting Firm *
24.1	Power of Attorney - Directors*
31.1	Certification of Chief Executive Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002*
31.2	Certification of Chief Financial Officer pursuant to Section 302 of the Sarbanes-Oxley Act of 2002*
32.1	Certification of Chief Executive Officer pursuant to Section 906 of the Sarbanes-Oxley Act of 2002*
32.2	Certification of Chief Financial Officer pursuant to Section 906 of the Sarbanes-Oxley Act of 2002*

101.INS	XBRL Instance Document**
101.SCH	XBRL Taxonomy Extension Schema Document**
101.CAL	XBRL Taxonomy Extension Calculation Linkbase Document**
101.DEF	XBRL Taxonomy Extension Definition Linkbase Document**
101.LAB	XBRL Taxonomy Extension Label Linkbase Document**
101.PRE	XBRL Taxonomy Extension Presentation Linkbase Document**
104	Cover Page Interactive Data File (formatted as Inline XBRL and contained in Exhibit 101)

* Submitted electronically herewith.

** Attached as Exhibit 101 to this report are the following documents formatted in XBRL (Extensible Business Reporting Language) for the year ended January 3, 2021: (i) the Consolidated Statement of Income, (ii) the Consolidated Balance Sheet, (iii) the Consolidated Statement of Shareholders' Equity, (iv) the Consolidated Statement of Comprehensive Income (Loss), (v) the Consolidated Statement of Cash Flows, (vi) Notes to Consolidated Financial Statements and (vii) Financial Schedule of Valuation and Qualifying Accounts.

† Denotes management contract or compensatory plan or arrangement required to be filed as an Exhibit to this Form 10-K.

SIGNATURES

Pursuant to the requirements of Section 13 or 15(d) of the Securities Exchange Act of 1934, the registrant has duly caused this report to be signed on its behalf by the undersigned, thereunto duly authorized as of February 25, 2021.

Teledyne Technologies Incorporated (Registrant)

By: /s/ Aldo Pichelli

Aldo Pichelli

President and Chief Executive Officer

Pursuant to the requirements of the Securities Exchange Act of 1934, this report has been signed below by the following persons on behalf of the registrant and in the capacities and on the dates indicated.

/s/ Aldo Pichelli Aldo Pichelli	President and Chief Executive Officer Chief Executive Officer (Principal Executive Officer)	February 25, 2021
/s/ Susan L. Main Susan L. Main	Senior Vice President and Chief Financial Officer (Principal Financial Officer)	February 25, 2021
/s/ Cynthia Belak Cynthia Belak	Vice President and Controller (Principal Accounting Officer)	February 25, 2021
/s/ Robert Mehrabian Robert Mehrabian	Executive Chairman and Director	February 25, 2021
* Roxanne S. Austin	Director	February 25, 2021
* Denise R. Cade	Director	February 25, 2021
* Charles Crocker	Director	February 25, 2021
* Kenneth C. Dahlberg	Director	February 25, 2021
* Michelle A. Kumbier	Director	February 25, 2021
* Simon M. Lorne	Director	February 25, 2021
* Robert A. Malone	Director	February 25, 2021
* Wesley W. von Schack	Director	February 25, 2021
* Jane C. Sherburne	Director	February 25, 2021
* Michael T. Smith	Director	February 25, 2021

*By: /s/ Melanie S. Cibik

Melanie S. Cibik
Pursuant to Power of Attorney
filed as Exhibit 24.1

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Cautionary Statement Regarding Forward Looking Statements

This report contains forward-looking statements, as defined in the Private Securities Litigation Reform Act of 1995, with respect to management's beliefs about the financial condition, results of operations and businesses of Teledyne Technologies Incorporated ("Teledyne") in the future. Forward-looking statements involve risks and uncertainties, are based on the current expectations of the management of Teledyne and are subject to uncertainty and changes in circumstances. The forward-looking statements contained herein may include statements about the expected effects on Teledyne of the proposed acquisition of FLIR Systems, Inc. ("FLIR"), the anticipated timing and scope of the proposed transaction, anticipated earnings enhancements, estimated cost savings and other synergies related to the proposed transaction, costs to be incurred in achieving synergies, anticipated capital expenditures and product developments, and other strategic options. Forward-looking statements generally are accompanied by words such as "projects", "intends", "expects", "anticipates", "targets", "estimates", "will" and words of similar import that convey the uncertainty of future events or outcomes. All statements made in this communication that are not historical in nature should be considered forward-looking. By its nature, forward-looking information is not a guarantee of future performance or results and involves risks and uncertainties because it relates to events and depends on circumstances that will occur in the future. Actual results could differ materially from these forward-looking statements.

Many factors could change anticipated results, including ongoing challenges and uncertainties posed by the COVID-19 pandemic for businesses and governments around the world; the occurrence of any event, change or other circumstances that could give rise to the right of Teledyne or FLIR or both to terminate the Merger Agreement; the outcome of any legal proceedings that may be instituted against Teledyne or FLIR in connection with the Merger Agreement; the failure to obtain necessary regulatory approvals (and the risk that such approvals may result in the imposition of conditions that could adversely affect the combined company or the expected benefits of the transaction) or stockholder approvals or to satisfy any of the other conditions to the proposed transaction on a timely basis or at all; the failure to obtain the debt portion of the financing for the proposed transaction; the inability to complete the acquisition and integration of FLIR successfully, to retain customers and key employees and to achieve operating synergies, including the possibility that the anticipated benefits of the proposed transaction are not realized when expected or at all, including as a result of the impact of, or problems arising from, the integration of the two companies or as a result of the strength of the economy and competitive factors in the areas where Teledyne and FLIR do business; the possibility that the proposed transaction may be more expensive to complete than anticipated, including as a result of unexpected factors or events; the parties' ability to meet expectations regarding the timing, completion and accounting and tax treatments of the proposed transaction; changes in relevant tax and other laws; the inability to develop and market new competitive products; inherent uncertainties involved in the estimates and judgments used in the preparation of financial statements and the providing of estimates of financial measures, in accordance with United States GAAP and related standards; operating results of FLIR being lower than anticipated; disruptions in the global economy; the spread of the COVID-19 virus resulting in production, supply, contractual and other disruptions, including facility closures and furloughs and travel restrictions; customer and supplier bankruptcies; changes in demand for products sold to the defense electronics, instrumentation, digital imaging, energy exploration and production, commercial aviation, semiconductor and communications markets; funding, continuation and award of government programs; cuts to defense spending resulting from existing and future deficit reduction measures or changes to United States and foreign government spending and budget priorities triggered by the COVID-19 pandemic; impacts from the United Kingdom's exit from the European Union; uncertainties related to the policies of the new United States Presidential Administration; the imposition and expansion of, and responses to, trade sanctions and tariffs; escalating economic and diplomatic tension between China and the United States; and threats to the security of our confidential and proprietary information, including cyber security threats. Lower oil and natural gas prices, as well as instability in the Middle East or other oil producing regions, and new regulations or restrictions relating to energy production, including with respect to hydraulic fracturing, could further negatively affect our businesses that supply the oil and gas industry. Disruptions from the production delay of Boeing's 737 Max aircraft and continued weakness in the commercial aerospace industry will negatively affect the markets of our commercial aviation businesses. In addition, financial market fluctuations affect the value of the company's pension assets.

Changes in the policies of United States and foreign governments, including economic sanctions, could result, over time, in reductions or realignment in defense or other government spending and further changes in programs in which the company participates.

While Teledyne's growth strategy includes possible acquisitions, we cannot provide any assurance as to when, if, or on what terms any acquisitions will be made. Acquisitions involve various inherent risks, such as, among others, our ability to integrate acquired businesses, retain customers and achieve identified financial and operating synergies. There are additional risks associated with acquiring, owning and operating businesses outside of the United States, including those arising from United States and foreign government policy changes or actions and exchange rate fluctuations.

Additional factors that could cause results to differ materially from those described above can be found in Teledyne's Annual Report on Form 10-K for the year ended January 3, 2021, which is on file with the Securities and Exchange Commission ("SEC") and available in the "Investors" section of Teledyne's website, teledyne.com, under the heading "Investor Information" and in other documents Teledyne files with the SEC, and in FLIR's Annual Report on Form 10-K for the year ended December 31, 2020, which is on file with the SEC and available on the "Investor Relations" page of FLIR's website, flir.com, under the heading "Filings and Financials" and in other documents FLIR files with the SEC.

All forward-looking statements speak only as of the date they are made and are based on information available at that time. Neither Teledyne nor FLIR assumes any obligation to update forward-looking statements to reflect circumstances or events that occur after the date the forward-looking statements were made or to reflect the occurrence of unanticipated events except as required by federal securities laws. As forward-looking statements involve significant risks and uncertainties, caution should be exercised against placing undue reliance on such statements.

Additional Information and Where to Find It

In connection with the proposed transaction between Teledyne and FLIR, Teledyne will file with the SEC a Registration Statement on Form S-4 that will include a joint proxy statement of Teledyne and FLIR and a prospectus of Teledyne, as well as other relevant documents concerning the proposed transaction. The proposed transaction involving Teledyne and FLIR will be submitted to Teledyne's stockholders and FLIR's stockholders for their consideration. **Stockholders of Teledyne and stockholders of FLIR are urged to read the registration statement and the joint proxy statement/prospectus regarding the transaction when they become available and any other relevant documents filed with the SEC, as well as any amendments or supplements to those documents, because they will contain important information.**

Stockholders will be able to obtain a free copy of the definitive joint proxy statement/prospectus, as well as other filings containing information about Teledyne and FLIR, without charge, at the SEC's website (http://www.sec.gov). Copies of the joint proxy statement/prospectus and the filings with the SEC that will be incorporated by reference in the joint proxy statement/prospectus can also be obtained, without charge, by directing a request to Teledyne, Attn: Investor Relations, 1049 Camino Dos Rios, Thousand Oaks, California 91360, or to FLIR, Attn: Corporate Secretary, 1201 S Joyce St, Arlington, Virginia 22202.

Participants in the Solicitation

Teledyne, FLIR and certain of their respective directors, executive officers and employees may be deemed to be participants in the solicitation of proxies in connection with the proposed transaction. Information regarding Teledyne's directors and executive officers will be available in its definitive proxy statement for its 2021 Annual Meeting, which is expected to be filed with the SEC on or about March 8, 2021 and its Annual Report on Form 10-K for the year ended January 3, 2021, which was filed with the SEC on February 25, 2021. Information regarding FLIR's directors and executive officers is available in its Annual Report on Form 10-K for the year ended December 31, 2020, which was filed with the SEC on February 25, 2021. Other information regarding the participants in the proxy solicitation and a description of their direct and indirect interests, by security holdings or otherwise, will be contained in the joint proxy statement/prospectus and other relevant materials filed with the SEC. Free copies of this document may be obtained as described in the preceding paragraph.

No Offer or Solicitation

This communication shall not constitute an offer to sell or the solicitation of an offer to sell or an offer to buy any securities, nor shall there be any sale of securities in any jurisdiction in which such offer, solicitation or sale would be unlawful prior to registration or qualification under the securities laws of any such jurisdiction. No offer of securities shall be made except by means of a prospectus meeting the requirements of Section 10 of the Securities Act of 1933.

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 Editor: Neil Humphrey | Design: Chris McCorkindale | Printed in the United States of America.

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