

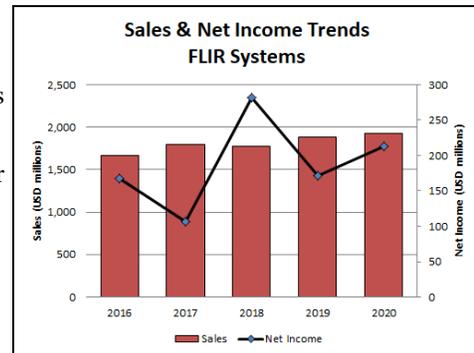
# ARCHIVED REPORT

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## FLIR Systems

### Outlook

- In May 2021, Teledyne completed its acquisition of FLIR Systems for \$8.2 billion
- The company is now called Teledyne FLIR and operates under Teledyne's Digital Imaging segment
- This report will now be archived



### Headquarters

FLIR Systems Inc  
27700 SW Parkway Ave  
Wilsonville, Oregon 97070-8238  
Telephone: + 1 (503) 498-3547  
Website: <https://www.flir.com/>

Founded in 1978, FLIR was originally a provider of infrared imaging systems that were installed on vehicles for use in conducting energy audits. The company later expanded its focus to other applications and markets for thermal imaging technology, such as stabilized thermal imaging cameras for law enforcement aircraft, radiometry devices for use in monitoring industrial systems, and thermal imaging systems for use in ground-based security and search-and-rescue operations.

FLIR Systems' most notable expansion occurred in 1998 when it bought Sweden's Agema Infrared Systems, effectively doubling the size of the company. The purchase was further augmented with the 1999 acquisition of Inframetrics. Together these additions gave the company a firm foundation in infrared camera development and thermography applications.

Today, the company is a designer, manufacturer, and marketer of sensor systems that enhance perception and awareness for a wide variety of users in the commercial, industrial, and government markets.

FLIR operates three manufacturing plants: two in the USA (Portland, Oregon, and Boston, Massachusetts) and one in Stockholm, Sweden.

### Structure and Personnel

James J. Cannon  
President and Chief Executive Officer  
Carol P. Lowe  
Executive Vice President and  
Chief Financial Officer  
Sonia Galindo  
Senior Vice President, General Counsel, Secretary,  
Chief Ethics & Compliance Officer

Jeffrey Frank  
Senior Vice President, Global Product Strategy  
Paula M. Cooney  
Senior Vice President, Chief Human Resources  
Officer

## FLIR Systems

### Product Area

FLIR Systems is primarily an infrared technology OEM and Tier II manufacturer. Its thermal imaging and threat detection systems are used for a wide variety of imaging, thermography, and security applications, including airborne and ground-based surveillance, condition monitoring, research and development, manufacturing process control, search and rescue, drug interdiction, navigation, transportation safety, border and maritime patrol, environmental monitoring, and chemical, biological, radiological, nuclear, and explosives (CBRNE) detection. The company manages its business interests in the following organizational manner:

1. Industrial Technologies
2. Defense Technologies

**Industrial Technologies.** The Industrial business unit develops and manufactures thermal and visible-spectrum imaging camera cores and components that are utilized by third parties to create thermal, industrial, and other types of imaging systems. This unit also houses emerging businesses, including imaging solutions for unmanned aerial systems (UAS), machine

vision cameras, people counting and tracking, and thermal imaging solutions for use by consumers in the smartphone and mobile devices markets. Products include thermal imaging cameras, gas detection cameras, firefighting cameras, process automation cameras, and environmental test and measurement devices.

**Defense Technologies.** This unit provides enhanced sensing and decision support solutions to a wide variety of military, law enforcement, public safety, and other government customers around the world for the protection of borders, troops, and public welfare. The Defense Technologies segment also develops and manufactures sensors, instruments, and integrated platform solutions for the detection, identification, and suppression of chemical, biological, radiological, nuclear, and explosives ("CBRNE") threats for military force protection, homeland security, and commercial applications. The Defense Technologies segment, through its 2019 acquisitions of Aeryon Labs and Endeavor Robotics, as well as its operations in Norway, produces advanced multimission unmanned air and unmanned ground systems.

### Facilities

FLIR Systems, 25 Esquire Rd, North Billerica, MA 01862 USA. Telephone: +1 (978) 901-8000.

FLIR Systems, 1024 S Innovation Dr, Stillwater, OK 74074. Telephone: +1 (405) 372-9535.

FLIR Systems AB, Antennvägen 6, 187 66 Täby, Sweden. Telephone: +46 8 753 2500.

FLIR Systems Ltd, 2 Kings Hill Ave, West Malling, Kent ME19 4AQ United Kingdom. Telephone: +44 1732 220011.

### Corporate Overview

FLIR Systems makes thermal imagers and thermal imager components, as well as larger systems containing thermal imagers (along with other sensors), for both commercial and military applications. FLIR's Government and Defense unit manufactures products ranging from weapon sights and perimeter surveillance systems to low-light cameras and laser illuminators.

#### New Products and Services

**Compact Vapor Chemical Agent Detector (CVCAD).** In June 2021, Teledyne FLIR won a contract to develop the first mass-wearable chemical detector for U.S. troops under the Pentagon's Compact Vapor Chemical Agent Detector (CVCAD) program. The company received \$4.0 million in initial funding.

**Centaur Order.** In March 2020, the U.S. Air Force placed an order for more than 180 of the company's Centaur unmanned ground vehicles (UGV), plus spares. The \$23 million contract is sourced through the DoD's Man Transportable Robotic System Increment II (MTRS Inc II) program.

**BETSS-C.** In December 2019, FLIR Systems was awarded a five-year, firm-fixed-price indefinite delivery, indefinite quantity (IDIQ) contract by the U.S. Army Contracting Command. The IDIQ vehicle has a ceiling value of \$92.9 million, with an initial order of \$5.2 million. The award is for repair, refurbishment, and logistics support of electro-optical (EO) and infrared (IR) sensors used by the Army's Product Manager Force Protection Systems programs, including Base

## FLIR Systems

Expeditionary Targeting Surveillance System-Combined (BETSS-C), Combat Outpost Surveillance Force Protection System, and Foreign Military Sales. BETSS-C entails a combination of cameras and surveillance equipment mounted on deployable towers and used to monitor wide areas around military locations and bases.

**Kobra.** In December 2019, FLIR Systems Kobra robot was selected for the United States (U.S.) Army's Common Robotic System-Heavy (CRS-H) program. The five-year production contract to build upwards of 350 unmanned ground vehicles (UGVs) is worth up to \$109 million. The CRS-H platform calls for a robot weighing up to 700 pounds. Army Explosive Ordnance Disposal (EOD) units will use the system to perform a range of missions, such as disarming vehicle-borne improvised explosive devices (VBIEDs), unexploded ordnance, or related heavy-duty tasks. The CRS-H is to replace the Army's Remote Ordnance Neutralization System (RONS) robots. The award covers a five-year production period.

**Agentase.** In September 2019, FLIR Systems won an indefinite delivery/indefinite quantity (IDIQ) contract worth up to \$35.1 million with the United States Army to deliver a new version of the company's Agentase C2 chemical agent disclosure spray to detect sulfur mustard, a highly toxic chemical warfare agent.

**NBCRV Support.** In April 2019, FLIR Systems received a \$48.1 million award from the U.S. Department of Defense (DoD) Joint Program Executive Office for Chemical, Biological, Radiological, and Nuclear Defense (JPEO-CBRND) in support of the Nuclear Biological Chemical Reconnaissance Vehicle Sensor Suite Upgrade (NBCRV SSU) program for the U.S. Army. FLIR will be the lead integrator in the modernization of the U.S. Army's NBCRV system. Under the agreement, FLIR will develop a platform-agnostic modular mission payload, which integrates multiple chemical, biological, and radiological sensors into a flexible command and control (C2) system. This C2 system will allow for data integration from the various sensors that will enable automation of certain tasks, reducing warfighter burden. The C2 system and the automation will allow for collaboration between manned Stryker vehicles, unmanned ground vehicles (UGVs), and sensor-integrated drone platforms. The effort will run through mid-2022.

**USAF UH-1N Sensors.** In December 2018, FLIR Systems was selected by Boeing to provide the FLIR Star SAFIRE 380-HDc EO/IR surveillance sensor for the USAF UH-1N replacement contract. The replacement program will replace the current fleet of USAF UH-1N helicopters, which support the service's nuclear intercontinental ballistic missile bases in

Wyoming, Montana and North Dakota. The aircraft will also be used for training, test, and operational support airlift missions. The initial contract award to FLIR is for the first four helicopters, with the total contract up to 84 MH-139 helicopters and valued at more than \$40 million to FLIR.

**Black Hornet 3.** In June 2018, FLIR Systems launched its Black Hornet 3 nano-unmanned aerial vehicle (UAV) for use by global militaries, government agencies, and first responders. The Black Hornet Personal Reconnaissance System (PRS) is already the world's smallest nano-unmanned aerial system (UAS), and FLIR's next-generation Black Hornet 3 adds the ability to navigate in GPS-denied environments. Offering improved speed and distance compared to previous versions, the Black Hornet 3 flies 2 kilometers at speeds of over 21 kilometers per hour.

In May 2018, FLIR was awarded a \$2.6 million order from the U.S. Army to deliver the FLIR Black Hornet PRS. The Army purchased the Black Hornet for test and evaluation purposes in both 2016 and 2017. The Army will continue its evaluation and consider a broader scale rollout of the Black Hornet for full operational deployment within all infantry units.

In January 2019, FLIR Systems was awarded an \$89 million contract from French armed forces to deliver the Black Hornet PRS.

In April 2019, the British Army awarded FLIR a \$1.8 million contract to deliver the Black Hornet PRS.

In May 2020, the U.S. Army awarded an additional \$20.6 million contract to deliver the Black Hornet PRS. In January 2019, the U.S. Army awarded FLIR an initial \$39.7 million contract for the system.

In May 2021, FLIR Systems won an additional \$15.4 million contract to deliver its FLIR Black Hornet 3 to the U.S. Army.

Website: <https://www.flir.com/products/black-hornet-prs/>

### Plant Expansion/Organization Update

**Washington HQ Office.** In March 2019, FLIR Systems announced it would open a new headquarters office in Arlington, Virginia, near Washington, DC. Located in Pentagon Row at 1201 South Joyce Street in Arlington, the office will house 65 employees and serve as a conference center and gathering space to support the company's largest customer, the U.S. government. The 30,000-square-foot facility will serve as home office for FLIR's Government and Defense business unit and for members of the senior executive team, including the company's CEO, CFO, and CHRO. The company said it remains incorporated in the state of Oregon. It

## FLIR Systems

planned to begin a renovation project for its Wilsonville, Oregon, headquarters in the second quarter of 2019.

**ITAR Violations.** In April 2018, FLIR Systems was ordered to pay \$30 million in civil penalties over violations of the U.S. Arms Export Control Act and International Traffic in Arms Regulations (ITAR). Under the terms of the four-year consent agreement, the U.S. State Department has agreed to suspend \$15 million of the amount on the condition that the funds be used for department-approved remedial compliance measures. FLIR voluntarily disclosed certain alleged violations, which are resolved under this settlement.

### Mergers/Acquisitions/Divestitures

**Teledyne Acquires FLIR.** In January 2021, Teledyne announced it would acquire FLIR Systems in a deal valued at \$8.2 billion. The deal was completed in May 2021. The company is now called Teledyne FLIR and operates under Teledyne's Digital Imaging segment.

**Aria Insights IP Acquired.** In October 2019, FLIR Systems acquired tethered drone assets, intellectual property (IP), and certain operating assets from Aria Insights, Inc. Tethered drones connect to a base station or vehicle by microfilament wire, which provides both continuous power and secure communications. The Aria assets will be integrated into FLIR's Unmanned Systems and Integrated Solutions Division. Terms were not disclosed.

**DroneBase Investment.** In April 2019, FLIR Systems made a strategic investment in DroneBase, a global drone operations company that provides businesses access to a network of Unmanned Aerial Surveillance (UAS) pilots. FLIR and DroneBase will collaborate to develop specialized training for DroneBase pilots through the FLIR Infrared Training Center (ITC), creating an exclusive pilot network through a DroneBase certification process.

**Endeavor Robotics Acquired.** In March 2019, FLIR Systems completed its \$382 million acquisition of Endeavor Robotic Holdings, Inc. Endeavor Robotic is a developer of battle-tested, tactical unmanned ground vehicles (UGVs) for the global military, public safety, and critical infrastructure markets. Endeavor's ground robots utilize advanced sensing and actuation in providing explosive ordnance disposal, reconnaissance, inspection, and hazardous materials support for troops, police, and industrial users at stand-off range. Based outside Boston, the company was formerly known as iRobot Defense & Security.

Website: <https://www.flir.com/uis/ugs>

**Aeryon Labs Acquired.** In January 2019, FLIR Systems acquired Aeryon Labs Inc, a developer of high-performance unmanned aerial systems (UAS) for the global military, public safety, and critical infrastructure markets for \$200 million. Aeryon Labs was founded in 2007. It is based in Waterloo, Canada, and has offices in Denver, Colorado, and Salt Lake City, Utah, and is a designer and manufacturer of Group 1 UAS solutions built around aircraft weighing less than 20 pounds. Aeryon's vertical takeoff and landing quadcopter airframes integrate multiple sensors, including FLIR thermal technology, to provide users with immediate high-resolution intelligence, surveillance, and reconnaissance (ISR) capability.

**DroneSense Investment.** In April 2018, FLIR Systems completed a strategic investment in DroneSense, a developer of a software platform that serves public safety organizations in utilizing unmanned aircraft systems to better perform their missions. The minority investment by FLIR in DroneSense will create opportunities for the companies to collaborate and share their respective expertise and customer relationships to develop and bring to market advanced UAS operating, management, and reporting systems.

**Lorex Sold.** In February 2018, FLIR Systems completed the divestiture of its Canadian security products subsidiary Lorex Inc in a transaction that also included its Toronto-headquartered small and medium-sized security products business. Under the terms of the transaction, FLIR received approximately \$29 million in cash.

**Prox Dynamics Acquired.** In November 2016, FLIR Systems acquired Prox Dynamics AS, a Norwegian developer and manufacturer of nano-class UAS for military and paramilitary intelligence, surveillance, and reconnaissance (ISR) applications, for approximately \$134 million in cash. A key product is Prox Dynamics' PRS that features its Black Hornet aerial sensor and a hand controller, a system that is pocket sized and hand-launched by a soldier in the field. Weighing less than 1 ounce, the Black Hornet helicopter can fly for up to 25 minutes at line-of-sight distances of up to one mile. The business is part of FLIR's UAS line of business and operates within the Surveillance segment.

**Point Grey Research.** In November 2016, FLIR Systems acquired Point Grey Research Inc for \$259 million in cash. Founded in 1997 and based in Richmond, British Columbia, Point Grey develops advanced visible imaging cameras and solutions that are used in industrial automation systems, medical diagnostic equipment, people counting systems, intelligent traffic systems, military and defense

## FLIR Systems

products, and advanced mapping systems. The business would be known as the Integrated Imaging Solutions line of business and operate within FLIR's OEM and Emerging segment.

**Armasight Acquired.** In June 2016, FLIR Systems acquired Armasight Inc, a developer of precision sporting, hunting, and military optics products, for approximately \$41 million in cash. Armasight, based in San Francisco, California, develops and distributes a wide range of rifle scopes, spotting scopes, binoculars, goggles, and illuminating tools for civilian, law enforcement, and military customers. The acquisition would combine FLIR's existing lines of personal vision systems and thermal weapon sights with Armasight's products under a new unit, FLIR Outdoor and Tactical Systems, which would report within FLIR's Surveillance segment.

**DVTEL Acquired.** In November 2015, FLIR Systems acquired DVTEL Inc, a producer of software and hardware technologies for advanced video surveillance, for approximately \$92 million in cash. DVTEL, based in Ridgefield Park, New Jersey, develops and distributes integrated video management system (VMS) software, advanced video analytics software, visible and thermal security cameras, and related servers and encoders. The combination enables FLIR, with its existing FLIR-branded thermal and visible cameras as well as its Lorex-branded security systems, to be a full-spectrum end-to-end security system provider, serving the consumer, small and medium business, enterprise, and infrastructure-level markets.

**Micro-Optics Assets Acquired.** In August 2013, FLIR Systems acquired certain assets of DigitalOptics Corporation's micro-optics business for \$14.9 million. Included in the purchase were fabrication equipment and more than 200 patents and pending patent applications associated with the design and production of complex optical surfaces, substrates, and low-cost components. DigitalOptics' micro-optics business, based in Charlotte, North Carolina, is a fabricator of wafer-scale specialty optics products, including lenses, lens arrays, optical receivers and transceivers, and various infrared optical components. These high-volume, low-cost optics products are used in a wide array of industries and applications, including security, surveillance, photolithography, data communications, laser-based medical equipment, and 3-D gesture recognition.

**Lorex Technology Acquired.** In December 2012, FLIR Systems completed its acquisition of Lorex Technology for \$60 million. Lorex, based in Markham, Ontario, is a producer of home security video surveillance systems that can be installed by the user, as well as a provider of video surveillance products to security system integrators.

**Traficon Acquired.** In December 2012, FLIR Systems acquired Traficon International NV, a provider of video detection technologies for traffic applications, for approximately \$46 million in cash. Traficon, based in Wevelgem, Belgium, produces video image processing software and hardware for traffic analysis.

**Aerius Photonics Acquired.** In July 2011, FLIR Systems acquired Aerius Photonics, a provider of short-wavelength infrared detectors and advanced laser components, for approximately \$27 million in cash. Renamed FLIR Electro-Optical Components, Ventura, California-based Aerius specializes in the design, development, and manufacture of high-sensitivity photonic components for use in various applications in the commercial and military markets. Its products include indium gallium arsenide (InGaAs)-based infrared detectors, high-powered vertical-cavity surface-emitting laser (VCSEL) diodes, ultralightweight laser rangefinders and altimeters, and infrared illuminators and pointers. The operations joined the company's Thermal Vision and Measurement business segment.

### Teaming/Competition/Joint Ventures

**Sonardyne International.** In February 2011, FLIR Systems teamed with Sonardyne International Ltd on a multimillion-dollar project in the United Arab Emirates. The companies, with FLIR as the project leader, provided a commercial off-the-shelf (COTS) integrated perimeter and coastal protection solution for a key coastal facility. The installed CommandSpace solution provides multidimensional wide-area surveillance above and below the water line for comprehensive perimeter security. Under the contract, FLIR provided ground surveillance radars as well as thermal and charged-coupled device imagers. Sonardyne provided Sentinel intruder detection sonar. As with all FLIR CommandSpace solutions, the entire system would be integrated via the FLIR command and control software platform to display radar, sonar, and optical data on a single common operating picture (COP).

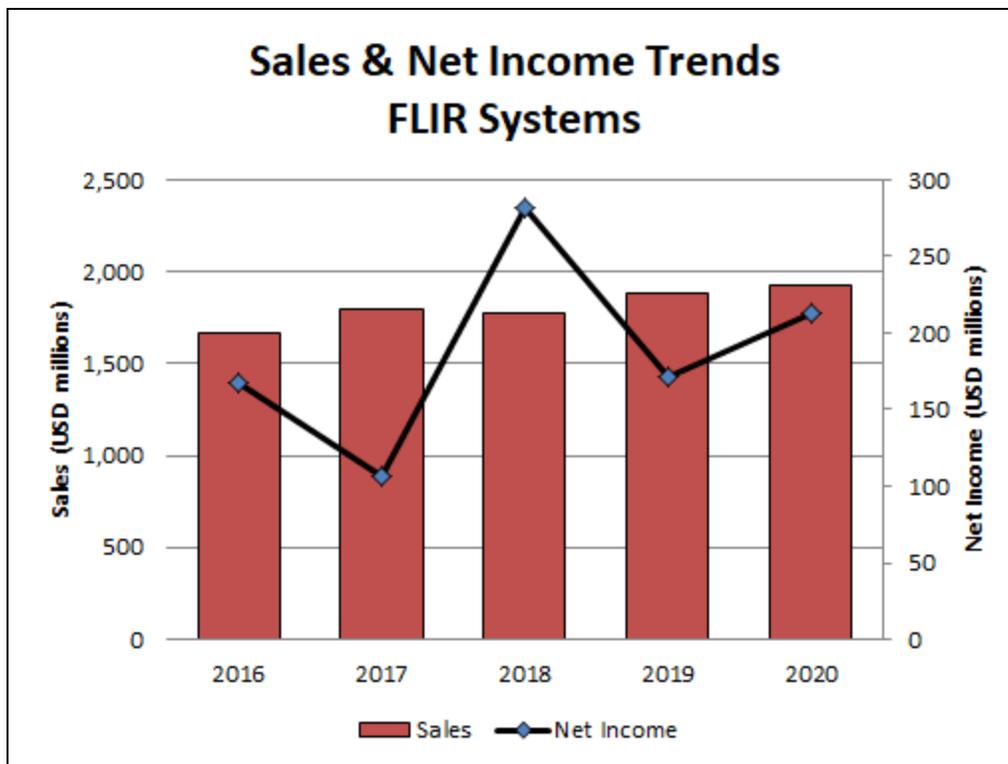
## FLIR Systems

### Financial Results/Corporate Statistics

FLIR Systems reported sales of \$1.92 billion in 2020, up 2 percent from sales of \$1.89 billion in 2019. The company posted net income of \$213 million in 2020, compared with \$172 million in 2019.

#### FLIR Systems (Nasdaq: FLIR)

(USD millions)	2016	2017	2018	2019	2020
Net Sales	1,662	1,800	1,776	1,887	1,924
Net Income	167	107	282	172	213
Sales to Gov't	416	466	515	604	596
Percent Gov't Sales	25%	26%	29%	32%	31%
R&D Expenditures	148	171	176	204	210
Total Backlog	592	652	602	807	810
Long-Term Debt	502	421	422	648	725
Shareholder Equity	1,678	1,834	1,877	1,871	1,883
Debt-to-Equity Ratio	.29	.22	.22	.35	.38
Employees	3,436	3,542	3,649	4,265	4,179

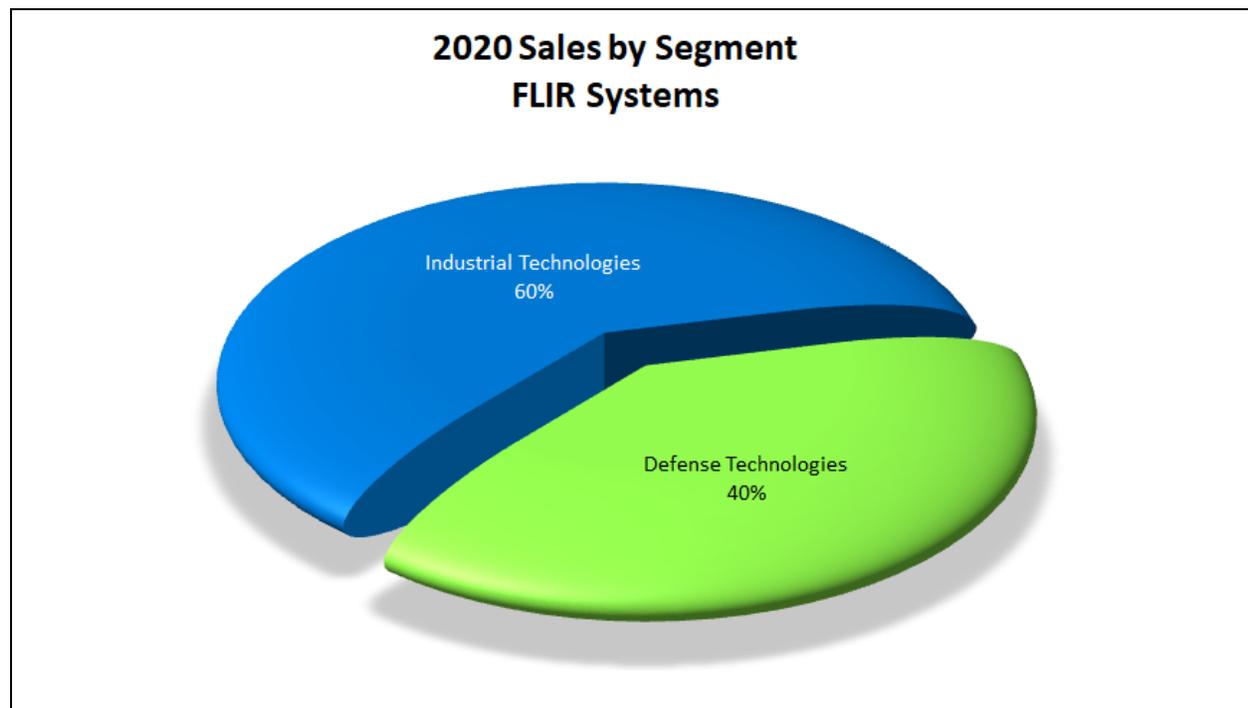


## FLIR Systems

### Industry Segments

In the first quarter of 2020, FLIR completed a business reorganization as part of its "Project Be Ready" restructuring program, which resulted in identification of two reportable segments (Industrial Technologies and Defense Technologies).

<b>SALES</b>	<b>2018</b>	<b>2019</b>	<b>2020</b>
(USD millions)			
Industrial Technologies	1113	1092	1156
Defense Technologies	663	795	767
<b>TOTAL</b>	<b>1,776</b>	<b>1,887</b>	<b>1,923</b>
<b>OPERATING INCOME</b>			
(USD millions)			
Industrial Technologies	268	276	344
Defense Technologies	194	197	168
<b>TOTAL</b>	<b>462</b>	<b>473</b>	<b>512</b>
<b>BACKLOG</b>			
(USD millions)			
Industrial Technologies	211	269	285
Defense Technologies	391	538	525
<b>TOTAL</b>	<b>602</b>	<b>807</b>	<b>810</b>



## FLIR Systems

GEOGRAPHIC SALES	2016	2017	2018	2019	2020
(USD millions)					
United States	903	956	935	1,037	1,029
Europe	339	375	377	398	393
Asia	196	227	255	257	293
Middle East/Africa	131	128	131	123	141
Canada/Latin America	93	114	78	71	67
<b>TOTAL</b>	<b>1,662</b>	<b>1,800</b>	<b>1,776</b>	<b>1,886</b>	<b>1,923</b>

### Major Competitors

FLIR Systems' principal competitors include divisions of BAE Systems, Elbit Systems, General Dynamics, L3Harris, Leonardo DRS, Nexter, Lockheed Martin, Raytheon, Safran, Textron, and Thales.

## Strategic Outlook

As a manufacturer of thermal imaging systems used by government as well as industry and consumer markets, FLIR Systems has benefited from years of increased spending on intelligence-gathering, surveillance, and reconnaissance products.

Over the years, FLIR Systems has diversified its operations within the thermal imaging systems market. Through focused acquisitions and internal development, FLIR's operations are well balanced between commercial- and government-oriented systems.

FLIR has continued to expand its product line with the acquisition of several UAV-related operations. The company entered this market in 2016 with the purchase of Norwegian firm Prox Dynamics. This buy is notable in that it provided FLIR with a dedicated platform, the Black Hornet micro-UAV. The move into this market is expected to be a solid one given the strong military interest in small UAVs and the potential for resulting contracts that could be very lucrative for the company's bottom line.

More recently, the company has initiated a flurry of acquisitions, adding three new complementary

operations to its portfolio. In the first half of 2019, the company bought Aeryon Labs, Endeavor Robotics, and a stake in DroneBase. The goal with these buys is to further develop synergies between FLIR and these operations as well as to integrate FLIR's existing systems. FLIR is no stranger to Aeryon and Endeavor, as the two firms were existing customers prior to the buyout.

The acquisition bore fruit with the 2019 win of the Common Robotic System - Heavy (CRS-H) project for the U.S. Army. The U.S. Army may procure 225-248 CRS-H systems. The contract mentioned delivery of up to 350 robots.

This success did not go unnoticed, and in 2021, Teledyne Technologies acquired FLIR for \$8.2 million. Under Teledyne, the company is now called Teledyne FLIR and operates under Teledyne's Digital Imaging segment.

As such, this report will be archived, and its content and coverage will be merged with the Teledyne Technologies report.

## Prime Award Summary

FLIR Systems did not rank in the Federal Procurement Data System - Next Generation ([www.fpds.gov](http://www.fpds.gov)) Top 100 Contractors Report. Information on the company's federal contracting can be sourced from the database of [www.USAspending.gov](http://www.USAspending.gov), the official U.S. government source for data on federal awards. Individual contract awards are listed in the U.S. Contract Awards section of this report (below).

**FLIR Systems****Program Activity**

Some important aerospace and government programs currently underway at FLIR Systems are listed below. For detailed information on or analysis of specific aerospace and defense programs or equipment, please refer to the applicable Forecast International service (for example, *Civil Aircraft, Military Aircraft, Warships, Missiles, Military Electronic Systems, and Unmanned Vehicles*).

**Electronics Programs****AAQ-21/22 (Star SAFIRE)**

The Stability and Standoff Range (Star) Shipborne / Airborne Forward-Looking Infrared Equipment (SAFIRE) is a high-performance thermal imaging system. The AAQ-22 SAFIRE thermal imaging system consists of a gimballed turret mounted on the underside of the platform aircraft, a handheld (fixed-mountable) system controller, a video display, and an interface control unit. The system is appropriate for maritime patrol, reconnaissance, search-and-rescue, navigation, and targeting tasks performed by military, paramilitary, and civilian organizations. Platforms have included the S-61, UH-1N, Lynx, P-3C, OH-58, ALX, Saab 340BPlus, P-3C, Super Puma, UH-60Q, and MH-60G aircraft. The AAQ-22 SAFIRE is also available for shipboard installation. The next several years should see steady production of the Star SAFIRE airborne thermal imaging sensor in several variants for a wide range of client nations and agencies. Further, customers of the original Star SAFIRE variants are likely to upgrade to the HD version.

**PEQ-1C SOFLAM**

The PEQ-1(V) Special Operations Forces Laser Marker (SOFLAM) is a laser rangefinder and target designation system that marks targets for laser-guided bombs. The latest variant is the PEQ-1C SOFLAM SOFLRD (Special Operations Forces Laser Rangefinder Designator) model. Northrop Grumman is the prime. FLIR Systems provides the enhanced targeting sight. Production is complete, with maintenance and spares support the current focus.

**Ranger Ground Surveillance Radars**

In January 2012, FLIR Systems introduced two new long-range radar technologies to the Ranger product line

of ground surveillance radars, the Ranger R20SS and Ranger R5D.

The Ranger R20SS is a solid-state, electronic scanning, ground surveillance radar with next-generation "track-while-scan" performance. Capable of detecting personnel and vehicles at distances up to 20 kilometers, the Ranger R20SS couples target detection and acquisition capability with a low-weight, compact design for portability and easy implementation, which is ideal for vehicle and man-portable operations.

The Ranger R5D is a dual-mode, perimeter surveillance radar that is designed specifically for the environmental conditions in the Middle East. FLIR's dual-mode functionality boasts all the benefits of frequency-modulated continuous-wave (FMCW) radar with the long-range capabilities of Doppler radar. In either mode, the Ranger R5D is able to detect tangential movement, with a range of up to 5,600 meters in Fast Scan mode and up to 10,500 meters in Doppler mode. This is possible through the use of the same antenna, while maintaining low false alarm rates.

**Unmanned Vehicle Programs****PackBot SUGV**

The PackBot is a man-transportable robot that performs bomb disposal, surveillance and reconnaissance, CBRN detection, and HazMat handling operations. FLIR Systems is providing the PackBot as a solution for the U.S. Army's (Manual Transport Robotic System) MTRS Increment II requirement. The Increment II will offer a common chassis with the ability to install various payloads for current and future missions.

**Throwbots**

These are very small unmanned ground vehicles. FLIR Systems, Roboteam, ReconRobotics, and Nexter are the leading providers of these systems. FLIR Systems offers its FirstLook, a throwable, rugged, and expandable robot that provides immediate situational awareness, performs persistent observation, and investigates hazardous material. FirstLook allows operations where other robots cannot fit or maneuver.

**FLIR Systems****U.S. Contract Awards**

Below is a listing of major contracts recently awarded to FLIR Systems from the U.S. government (contracts as of press date). Note that the Description section is excerpted directly from U.S. DoD listings. For full details on contracts and their associated modifications, visit <https://www.defense.gov/Newsroom/Contracts/>

<b>Date</b>	<b>Award (USD millions)</b>	<b>Contract #</b>	<b>DESCRIPTION</b>
<b>2016</b>			
1/7/16	14.6	H92241-16-D-0003	LIFE-CYCLE CONTRACTOR SUPPORT FOR EOS SYSTEMS IN SUPPORT OF THE TECHNOLOGY APPLICATIONS PROGRAM OFFICE.
7/15/16	13.3	N00164-16-D-JQ96	ELECTRO-OPTICS SENSOR SYSTEMS FOR BOTH SEA STAR SAFIRE III & BRITE STAR II SYSTEMS.
<b>2017</b>			
6/19/17	17.9	N68335-17-D-0027	19 FLIR STAR SAFIRE 380 HD SYSTEMS IN SUPPORT OF THE COAST GUARD HC-27J FLEET.
9/28/17	74.7	W9113M-17-F-0007	PROCUREMENT OF A FLEET OF NEW SENSOR SYSTEMS.
1/1/17	?	W911QY-18-D-0062	FLIR SYSTEMS WILL SHARE IN AN \$8,276,161,000 HYBRID (COST, CPFF, CPIF, FFP, FPI, AND FP-REDETERMINATION) CONTRACT FOR A JOINT ENTERPRISE RESEARCH, DEVELOPMENT, ACQUISITION, PRODUCTION & PROCUREMENT PROGRAM TO SUPPORT R&D OF CBRN AND HIGH-YIELD EXPLOSIVES DEFENSE SYSTEMS, CAPABILITIES, EQUIPMENT, SUPPLIES & MATERIAL.
<b>2018</b>			
2/9/18	18.9	N00164-18-D-JQ99	TWO-YEAR ORDERING PERIOD FOR NON-WARRANTY REPAIRS, PROVISION ITEM SPARES, PRODUCT REVISION & UPGRADES AND PRODUCTION SYSTEMS OF THE MARITIME MOUNTED SENSOR & HANDHELD SENSOR, PLUS GROUND APPLICATIONS.
4/13/18	10.7	N00164-13-D-JQ59	EO/IR SENSORS & CABLE KITS FOR THE PATROL BOAT - ELECTRO OPTICS SYSTEM (PB-EOS) FOR THE U.S. COAST GUARD & NAVY.
12/21/18	10.4	W9113M-15-D-0001	REPAIR & REFURBISHMENT OF FORWARD-LOOKING INFRARED RADAR.
<b>2019</b>			
8/15/19	12.7	N00164-19-D-JQ49	INDEFINITE-DELIVERY/INDEFINITE-QUANTITY CONTRACT WITH A FIVE-YEAR ORDERING PERIOD FOR SUPPLIES, REPAIRS & UPG FOR LITTORAL COMBAT SHIP CONFIGURATION OF SEA STAR SAFIRE III ELECTRO-OPTICS SENSOR SYSTEMS
8/28/19	92.9	W909MY-19-D-0016	REPAIR & REFURBISHMENT & LOGISTICS SUPPORT.
9/20/19	35.1	W911QY-19-D-0054	PROVIDE A CONTAMINATION INDICATION & DECONTAMINATION ASSURANCE TECHNOLOGY, AS WELL AS AN APPLICATOR.
9/26/19	29.2	SPRRA1-19-D-0134	INFERRED TURRET ASSEMBLIES.

**FLIR Systems**

Date	Award (USD millions)	Contract #	DESCRIPTION
2/27/20	16.1	?	REPAIRS OF SENSOR SYSTEMS, PROCUREMENT OF SPARE PARTS, UPGRADES & ENGINEERING SERVICES THAT ARE IN DIRECT SUPPORT OF THE GROUND BASED OPERATIONAL SURVEILLANCE SYSTEM PROGRAM. THIS ACTION SUPPORTS THE MARINE CORPS SYSTEM COMMAND G-BOSS PROGRAM'S FLIR OPTICAL SENSOR SYSTEMS: THE STAR SAFIRE III (GYRO-STABILIZED LONG-RANGE THERMAL INFRARED IMAGING SENSOR SYSTEM) & THE THV-3000 (PAN & TILT LONG-RANGE THERMAL IMAGING SENSOR SYSTEM).
3/18/20	12.1	N00164-18-D-JQ99	NON-WARRANTY REPAIRS, PROVISION ITEM ORDERING SPARES, PRODUCT REVISIONS, UPGRADES & PRODUCTION SYSTEMS OF THE MARITIME MOUNTED SENSOR. THE CONTRACT WILL SUPPORT MULTIPLE ELECTRO-OPTIC SENSOR SYSTEMS TO INCLUDE THE FOLLOWING MARITIME FORWARD-LOOKING INFRARED, COMBATANT CRAFT FORWARD LOOKING INFRARED, SHIPBOARD INFRARED SENSOR SYSTEMS, SEA FORWARD LOOKING INFRARED.
3/31/21	31.6	W56HZV-21-F-0160	CONTRACT FOR THE MAN TRANSPORTABLE ROBOT SYSTEM INCREMENT II.

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