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Infrared Imaging Market Assessment, By Technology [Uncooled Infrared Imaging, Cooled Infrared Imaging], By Wavelength [Short Wave Infrared, Mid-Wave Infrared, Long-wave Infrared, Far Wave Infrared, Others], By Application [Monitoring & Inspection, Security & Surveillance, Detection], By End-user [Healthcare, Aerospace & Defense, Automotive, Oil & Gas, Chemical, Others], By Region, Opportunities and Forecast, 2016-2030F

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Abstracts

Global infrared imaging market size was valued at USD 7.06 billion in 2022, which is expected to reach USD 12.2 billion in 2030, with a CAGR of 7.1% for the forecasted period between 2023 and 2030.

Infrared imaging is regarded as one of the most advanced technologies in the current market scenario as it provides numerous benefits such as checking the accurate location of mold in buildings that are invisible to the naked eye, building inspection, energy management, industrial maintenance, medical diagnostics, search and rescue operations, security, and wildlife tracking. The major factors fostering the market growth are higher accuracy rates, rise in IR adoption for EVs and chargers, growing demand for Security & Surveillance, increasing prevalence of health disorders, rise in usage in the military and defense sector, and expanding applications in automotive, industrial, and agricultural sectors.

The increasing utilization of Infrared Imaging in electric vehicles (EVs) and chargers is driven by its ability to monitor and manage thermal conditions for adequate battery

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performance and safety. Organizations worldwide are investing a hefty sum of money towards the technological advancements of infrared imaging as it allows real-time temperature monitoring of batteries and charging components, ensuring efficient operation, and preventing overheating. This, in turn, enhances EV range, charging speed, and safety, addressing crucial concerns in the electric vehicle industry.

For example, in May 2023, Infrared Capital Partners revealed its investment in the e-mobility firm, JOLT Energy. With financial support from InfraRed, JOLT is poised to roll out a substantial number of high-speed chargers, boasting an output of up to 320 kW, capable of fully charging an electric vehicle in just 20 minutes, primarily targeting urban areas.

Utilization of Hyper Spectral Imaging Is Fuelling the Market Growth

Hyperspectral imaging is one of the key driving factors of market growth. It enables precise identification and characterization of materials and substances based on their unique spectral signatures. Technology is highly valuable in agriculture, environmental monitoring, and remote sensing applications. Moreover, as industries seek more comprehensive data and insights, hyperspectral infrared imaging plays a pivotal role in meeting these demands, thereby propelling the overall market growth rate.

For example, NASA's AVIRIS (Airborne Visible/Infrared Imaging Spectrometer) is a hyperspectral sensor in the field of Earth Remote Sensing . The distinctive optical sensor provides precise images of the spectral radiance emitted by the Earth's surface and atmosphere across 224 continuous spectral bands, ranging from 400 to 2500 nanometers in wavelength. AVIRIS primarily aims to detect, quantify, and track Earth's surface and atmospheric components by analyzing molecular absorption and particle scattering patterns.

Regular Use of Infrared Imaging in the Defense Sector

The consistent application of Infrared Imaging in the defense sector is propelling market growth. The widespread use for surveillance, target detection, and situational awareness contributes significantly to the industry's growth and technological advancements. Moreover, the U.S. army is currently focusing on utilizing infrared imaging for improved night vision capabilities. Furthermore, The U.S. Army is regarded as the strongest military force followed by Russia and China and has the highest Defense Budget in the world.

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In July 2023, Raytheon Technologies secured a contract to produce infrared packages for installation on U.S. Army tanks and various vehicles. The low-rate initial production agreement for 3rd Generation FLIR B-Kit sensors has a potential value of up to USD 117.5 million and can extend for a couple of years.

Usage of Infrared Cameras in Inspection and Quality Control Bring Extensive Opportunities

A rise in the adoption of infrared cameras for inspection & quality control purposes has created significant market opportunities. These cameras offer enhanced capabilities in identifying defects and ensure product quality across different industries. Their ability to detect temperature variations, hidden flaws, and irregularities has led to widespread applications in manufacturing, construction, and other sectors. As industries prioritize quality assurance, the demand for infrared cameras continues to rise, presenting a promising market expansion and innovation landscape.

For example, in November 2022, Teledyne FLIR, a division of Teledyne Technologies Incorporated, revealed the FLIR ONE Edge Pro, a wireless thermal-visible camera designed for mobile devices. Unlike its other models, it eliminates the need for physical connection to the mobile device and has distinct models for respective operating systems, thereby providing a maximum level of flexibility for thermal inspections.

North America Comprehensively Dominate the Market Share

North America comprehensively dominated the market for Infrared Imaging, and it is expected to do so over the upcoming years. It can primarily be attributed to extensive R&D investments that have led to the development of cutting-edge infrared imaging solutions, attracting both domestic and international consumers. Additionally, the region's strong industrial and defense sectors have driven demand for surveillance, thermography, and night vision applications. Moreover, a robust manufacturing base and a well-established network of suppliers in the United States contribute to North America's leadership, ensuring timely and reliable access to Infrared Imaging products and services.

For example, in March 2023, USA-based, L3 Harris Technologies announced that it received a contract worth USD 765 million from NASA to develop the next-generation and higher-resolution imager, GeoXO Imager. The new imager will deliver enhanced visible and infrared imagery, enabling more precise observations and better water vapor measurements. These improvements are poised to substantially impact the Western

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Hemisphere's weather forecasting accuracy and timelines.

Government Initiatives to Bolster the Market

Government initiatives play a crucial role in bolstering the growth of the global infrared imaging market. The initiatives are essential for reasons, including fostering R&D, promoting industry standards, and ensuring compliance with safety regulations. Moreover, these initiatives are driving innovation, and facilitating public-private partnerships, which in turn, has led to faster adoption of infrared imaging technologies, economic growth, and national security improvements.

In March 2023, the LP DAAC unveiled its plans for the forthcoming summer 2023 launch of NASA's Visible Infrared Imaging Radiometer Suite (VIIRS) Version 2 land data offerings. This release encompassed data originating from two satellites, namely the Suomi National Polar-orbiting Partnership (Suomi NPP) and the National Oceanic and Atmospheric Administration-20 (NOAA-20), formerly known as Joint Polar Satellite System-1 (JPSS-1)

Impact of COVID-19

The COVID-19 pandemic has significantly impacted the global infrared imaging market. Pre-COVID-19, the market grew steadily, with myriad applications in diverse industries like healthcare, aerospace, and surveillance. However, the pandemic disrupted supply chains and manufacturing, causing temporary slowdowns. In the post-COVID-19 situation, thermal imaging systems are witnessing a huge rise in demand for temperature screening and infection control, especially in healthcare and public settings. This crisis underscored the importance of Infrared Imaging in crisis management and public health. However, as economies recovered, the businesses started adapting to new norms, posing the market towards growth through technological advancements, expanding applications, and R&D investments.

Key Players Landscape and Outlook

The global infrared imaging market is witnessing notable progress, with major firms investing in Security and surveillance technologies to boost their market value and revenue. Moreover, companies are engaging in various collaborations, acquisitions, and partnerships, which are, in turn, reshaping the industry and accelerating the overall market growth rate.

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In August 2023, Teledyne FLIR, a division of Teledyne Technologies Incorporated, announced the release of its highly anticipated Lepton 3.1R, the world's first radiometric thermal camera module with a 95-degree field of view (FOV), 160 x 120 resolution, and a scene dynamic range of up to 400 degrees Celsius. The 3.1R model had retained the same compact and low-power form factor that has made the Lepton family of thermal camera modules the best-selling brand in the world for mobile, small electronics, and uncrewed systems.

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