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Short Wave Infrared Imaging Market Forecasts to 2032 – Global Analysis By Material (Indium Gallium Arsenide, Mercury Cadmium Telluride, Lead Sulfide and Other Materials), Scanning Type (Area Scan and Line Scan), Wavelength, Technology, Application, End User and By Geography

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Abstracts

According to Stratistics MRC, the Global Short Wave Infrared Imaging Market is accounted for $1.3 billion in 2025 and is expected to reach $2.5 billion by 2032 growing at a CAGR of 8.8% during the forecast period. A technique known as short wave infrared (SWIR) imaging uses wavelengths in the electromagnetic spectrum that are beyond visible light, between 0.9 and 1.7 microns, to create images. It provides improved contrast and material recognition by making it possible to see objects and scenes that are hidden by smoke, fog, or darkness. Because it is non-invasive, SWIR imaging is frequently utilised in medical diagnostics, agriculture, surveillance, and industrial inspection. Users may precisely view hidden features like water content, chemical composition, or product flaws because, in contrast to thermal imaging, it detects reflected light rather than produced heat.

Market Dynamics:

Driver:

Superior imaging performance in challenging environments

The ability to see clearly through obscurants like smoke, fog, and dust is made possible by SWIR technology, which is essential for industrial and military uses. In situations

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where conventional imaging is ineffective, such as at night or in low light, it offers improved image clarity. Because of its performance, it is perfect for activities including quality control, surveillance, and inspection in challenging environments. Its demand in industrial and agriculture is increased by its capacity to identify moisture, flaws, or heat leaks in complex situations. The use of SWIR imaging is growing as companies place a higher priority on accuracy and dependability.

Restraint:

High cost and costly materials

The production costs of (SWIR) imaging systems are greatly increased by the need for specialised sensors and lenses. Indium gallium arsenide (InGaAs) and other costly materials raise the final cost even more. Because of this, a lot of small and medium-sized businesses decide not to invest in SWIR technology. Additionally, extensive deployment in commercial and non-military applications is limited by limited affordability. Despite rising demand in cutting-edge imaging systems, this price barrier hinders industry expansion.

Opportunity:

Defense & security investment

SWIR cameras are crucial for military operations because they provide excellent imaging in inclement weather and low light levels. More funds are being set aside by governments for threat detection and border surveillance systems, where SWIR imaging is essential. The use of SWIR sensors in night vision systems and unmanned aerial vehicles (UAVs) is growing quickly. The use of SWIR technology is further accelerated by increased attention to homeland security and counterterrorism initiatives. The deployment of SWIR systems across defence applications and ongoing innovation are guaranteed by these initiatives.

Threat:

Competition from alternative imaging

Alternative imaging methods that are more widely available commercially and frequently require less sophisticated gear include visible imaging systems and thermal imaging. Technologies with existing infrastructures and cheaper integration costs might be

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preferred by end customers. Additionally, the reliance on SWIR has lessened in some industries due to the quick developments in LiDAR and machine vision. Increased awareness and familiarity with regulations are also advantageous for alternative imaging. It is difficult for SWIR technology to become widely used outside of specialised or niche areas due to this fierce rivalry.

Covid-19 Impact

The COVID-19 pandemic significantly impacted the Short Wave Infrared (SWIR) Imaging market, causing disruptions in global supply chains and manufacturing activities. Delays in production and reduced availability of critical components led to slower project timelines and deployment, particularly in defense, industrial, and healthcare sectors. However, the crisis also accelerated the adoption of SWIR imaging technologies in medical diagnostics and temperature screening applications. Increased demand for non-contact monitoring and enhanced imaging for critical infrastructure inspection partially offset the downturn, enabling the market to gradually recover post-lockdown periods.

The mercury cadmium telluride segment is expected to be the largest during the forecast period

The mercury cadmium telluride segment is expected to account for the largest market share during the forecast period, due to its high quantum efficiency and excellent sensitivity across a broad infrared spectrum. Its ability to operate effectively at room temperature with minimal cooling requirements enhances system efficiency and reduces operational costs. MCT-based detectors are widely used in military, aerospace, and industrial applications for precise thermal and chemical imaging. The material's tenable bandgap allows customization for specific wavelength detection, making it ideal for advanced imaging systems. Rising demand for high-performance imaging in defense and surveillance further boosts the adoption of MCT in the SWIR market.

The scientific research segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the scientific research segment is predicted to witness the highest growth rate, due to advanced laboratories and research institutions. Researchers use SWIR technology for material analysis, biomedical imaging, and spectroscopy due to its ability to capture detailed data beyond visible light. Its non-destructive nature and high sensitivity enable accurate results in complex experiments.

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The use of SWIR imaging systems is further accelerated by rising spending in space exploration, nanotechnology, and quantum computing. As scientific breakthroughs continue, the need for innovative imaging solutions sustains steady market growth.

Region with largest share:

During the forecast period, the Asia Pacific region is expected to hold the largest market share due to increased investments in defense modernization, rising demand for industrial inspection technologies, and the expansion of semiconductor and electronics manufacturing. Countries like China, Japan, and South Korea are leading in technological adoption. Additionally, growing research in photonics and biomedical imaging further boosts the market. The increasing number of surveillance projects and integration of SWIR imaging in autonomous vehicles also contribute significantly to the region's expanding market footprint.

Region with highest CAGR:

Over the forecast period, the North America region is anticipated to exhibit the highest CAGR, owing to the strong defense budgets, established aerospace infrastructure, and widespread use in medical diagnostics and security applications. The presence of major market players and advanced R&D capabilities, especially in the U.S., supports continuous innovation. Unlike Asia Pacific, the focus here is more on high-end applications such as hyperspectral imaging, environmental monitoring, and space exploration. The rising demand for night vision systems and machine vision in industrial automation also propels market growth across sectors in this region.

Key players in the market

Some of the key players profiled in the Short Wave Infrared Imaging Market include Teledyne FLIR, Xenics NV, Hamamatsu Photonics K.K., Princeton Infrared Technologies, Inc., Allied Vision Technologies GmbH, New Imaging Technologies (NIT), INTEGRA Technologies, Raytheon Technologies Corporation, Lynred, IRCameras, LLC, BaySpec, Inc., Photon etc., InView Technology Corporation and Raptor Photonics Ltd.

Key Developments:

In February 2025, Hamamatsu introduced a new series of InGaAs photodiodes designed to significantly enhance system performance in short wave infrared (SWIR)

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imaging applications. These advanced photodiodes offer improved sensitivity, low noise, and wide spectral response, making them ideal for high-precision tasks in industrial inspection, medical diagnostics, and scientific imaging systems.

In August 2024, Teledyne FLIR IIS launched the Forge 1GigE SWIR (Short Wave Infrared) Camera Series, featuring the Sony SenSWIR 1.3 MP IMX990 InGaAs sensor. The cameras cover both visible and SWIR spectrums (400–1700 nm), targeting applications such as semiconductor inspection, food quality, environmental monitoring, and recycling.

In February 2024, Teledyne and Valeo announced a strategic partnership to deliver the first Automotive Safety Integrity Level (ASIL) B thermal imaging technology for night vision Advanced Driver-Assistance Systems (ADAS). They secured a major contract with a leading global automotive OEM to incorporate new thermal imaging cameras into the next generation of ADAS, supporting functions like automatic emergency braking at night for passenger, commercial, and autonomous vehicles.

Materials Covered:

- Indium Gallium Arsenide
- Mercury Cadmium Telluride
- Lead Sulfide
- Other Materials

Scanning Types Covered:

- Area Scan
- Line Scan

Wavelengths Covered:

- Short Wave Infrared (0.9 to 1.7 µm)

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Extended SWIR (1.7 to 2.5 µm)

Technologies Covered:

Cooled Short Wave Infrared

Uncooled Short Wave Infrared

Applications Covered:

Security & Surveillance

Monitoring & Inspection

Detection

Spectroscopy

Thermography

Other Applications

End Users Covered:

Military & Defense

Industrial

Medical & Life Sciences

Scientific Research

Electronics & Semiconductor

Automotive

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- Food & Agriculture
- Other End Users

Regions Covered:

- North America
  - US
  - Canada
  - Mexico
- Europe
  - Germany
  - UK
  - Italy
  - France
  - Spain
  - Rest of Europe
- Asia Pacific
  - Japan
  - China
  - India
  - Australia

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New Zealand

South Korea

Rest of Asia Pacific

South America

Argentina

Brazil

Chile

Rest of South America

Middle East & Africa

Saudi Arabia

UAE

Qatar

South Africa

Rest of Middle East & Africa

What our report offers:
- Market share assessments for the regional and country-level segments
- Strategic recommendations for the new entrants
- Covers Market data for the years 2024, 2025, 2026, 2028, and 2032
- Market Trends (Drivers, Constraints, Opportunities, Threats, Challenges, Investment Opportunities, and recommendations)
- Strategic recommendations in key business segments based on the market estimations
- Competitive landscaping mapping the key common trends
- Company profiling with detailed strategies, financials, and recent developments

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- Supply chain trends mapping the latest technological advancements

Free Customization Offerings:

All the customers of this report will be entitled to receive one of the following free customization options:

Company Profiling

Comprehensive profiling of additional market players (up to 3)

SWOT Analysis of key players (up to 3)

Regional Segmentation

Market estimations, Forecasts and CAGR of any prominent country as per the client's interest (Note: Depends on feasibility check)

Competitive Benchmarking

Benchmarking of key players based on product portfolio, geographical presence, and strategic alliances

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Note: Tables for North America, Europe, APAC, South America, and Middle East & Africa Regions are also represented in the same manner as above.

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