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Functional Safety Market Forecasts to 2030 – Global Analysis By Component (Hardware and Software), Device Type (Safety Sensors, Safety Controllers, Programmable Safety Systems (PSS), Emergency Stop Devices, Actuators and Final Control Elements, Valves and Other Device Types), Safety System, End User and By Geography

https://marketpublishers.com/r/F31E3221A4B9EN.html
Date: February 2025
Pages: 150
Price: US$ 4,150.00 (Single User License)
ID: F31E3221A4B9EN

Abstracts

According to Stratistics MRC, the Global Functional Safety Market is accounted for $6.2 billion in 2024 and is expected to reach $12.0 billion by 2030 growing at a CAGR of 11.4% during the forecast period. Functional safety is the part of safety that ensures a system or equipment operates correctly and safely, even in the presence of faults or failures. It involves identifying hazards, assessing risks, and implementing measures such as redundancy, monitoring, and fault detection to prevent accidents or harm. It is particularly important in industries like automotive, manufacturing, and process control, where systems must maintain safe operation during normal and fault conditions.

According to the U.S. Bureau of Labor Statistics, 5,486 workers died of industrial accidents in 2022, which was a 5.7% increase in deaths as compared to 2021. According to the World Health Organization (WHO), over 1.35 million people worldwide die in traffic accidents each year, emphasizing the critical need for enhanced vehicular safety systems.

Market Dynamics:

Driver:

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Increasing adoption of automation

The increasing adoption of automation in the market enhances system reliability and reduces human error in critical applications. Automation enables real-time monitoring, fault detection, and faster response times, improving safety performance across industries like automotive, manufacturing, and process control. As safety standards evolve, automation technologies like AI and machine learning support continuous system assessment, ensuring compliance and risk mitigation, driving growth in the functional safety sector.

Restraint:

Complexity of standards

The complexity of functional safety standards can have negative effects on the market by increasing implementation costs and delays. Navigating intricate guidelines, such as ISO 26262 or IEC 61508, can be challenging for organizations, particularly small businesses with limited resources. This complexity often leads to higher compliance costs, longer development cycles, and potential for errors during implementation, hindering the efficiency and speed at which safety-critical systems are brought to market.

Opportunity:

Rising demand for safety in the automotive sector

The rising demand for safety in the automotive sector is driving growth in the market. As vehicles become more automated, ensuring the safety of advanced driver assistance systems (ADAS) and autonomous driving technologies is critical. Functional safety standards like ISO 26262 are guiding the development of reliable systems that prevent accidents and mitigate risks. Increased regulatory requirements and consumer safety expectations further fuel the demand for advanced safety solutions in automotive automation.

Threat:

High implementation costs

High implementation costs in the market can hinder adoption, especially for smaller

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companies. The need for specialized equipment, skilled personnel, and compliance with stringent safety standards increases overall expenses. These costs can limit innovation and slow down the deployment of safety systems in critical industries. Furthermore, ongoing maintenance and audits add to financial burdens, potentially reducing the market's accessibility and delaying advancements in safety technologies.

Covid-19 Impact:

The COVID-19 pandemic disrupted the market by causing delays in manufacturing, project timelines, and regulatory processes. Supply chain interruptions and workforce shortages led to slower development and implementation of safety systems. Additionally, reduced budgets in certain sectors hindered investments in new safety technologies. However, the pandemic also highlighted the importance of automation and safety in industries, potentially accelerating future demand for robust functional safety solutions in the post-pandemic era.

The valves segment is expected to be the largest during the forecast period

The valves segment is expected to account for the largest market share during the forecast period. Safety valves, such as emergency shutdown valves and relief valves, are designed to automatically activate during hazardous situations to prevent accidents. They are integrated with safety systems to ensure safe operation by isolating or diverting processes when abnormal conditions are detected, maintaining system integrity and reducing risks in industries like oil & gas, chemicals, and manufacturing.

The power generation segment is expected to have the highest CAGR during the forecast period

Over the forecast period, the power generation segment is predicted to witness the highest growth rate. These systems include safety controllers, sensors, emergency shutdown systems, and safety relays that protect against failures such as equipment malfunctions or external threats. By monitoring critical parameters like pressure, temperature, and flow, functional safety components help prevent accidents, ensuring the safe and efficient operation of power plants, including renewable energy and nuclear facilities.

Region with largest share:

During the forecast period, the North America region is expected to hold the largest

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market share due to increasing automation across industries such as automotive, manufacturing, and energy. Stringent safety regulations drive demand for compliant safety solutions. Advancements in autonomous vehicles, robotics, and industrial automation further fuel market expansion. The region’s well-established infrastructure and technological innovation provide a strong foundation for the continued adoption of functional safety systems and standards.

Region with highest CAGR:

Over the forecast period, the Asia Pacific region is anticipated to exhibit the highest CAGR. The shift towards automation and smart factories is driving demand for functional safety solutions. As industries like automotive manufacturing and process industries adopt advanced robotics and IoT (Internet of Things) technologies, there is a greater need to ensure safety in automated systems. Additionally, the rapid economic growth in APAC, is leading to increased industrial output and infrastructure development, which is fueling demand for safety solutions.

Key players in the market

Some of the key players in Functional Safety market include ABB Ltd., Siemens AG, Schneider Electric, Honeywell International Inc., Emerson Electric Co., Rockwell Automation, Inc., Yokogawa Electric Corporation, Mitsubishi Electric Corporation, General Electric Company, Rexroth Bosch Group, TUV Rheinland Group, Endress+Hauser, Belden Inc., OMRON Corporation, Panasonic Corporation, HIMA Paul Hildebrandt GmbH, and Fortive Corporation.

Key Developments:

In December 2024, Siemens Smart Infrastructure has completed the acquisition of Danfoss Fire Safety, a Denmark based specialist in fire suppression technology. This strategic step will boost growth and accelerate the expansion of Siemens’ sustainable fire safety portfolio with high-pressure water mist and low-pressure CO?.

In June 2024, ABB India announced its collaboration with Witt India to set up smoke extraction motors in tunnels to augment safety. This collaboration aims to contribute towards infrastructure development ensuring safer and more efficient journey for commuters through India's road tunnels

Components Covered:

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Hardware

Software

Device Types Covered:

Safety Sensors

Safety Controllers

Programmable Safety Systems (PSS)

Emergency Stop Devices

Actuators and Final Control Elements

Valves

Other Device Types

Safety Systems Covered:

Emergency Shutdown Systems (ESD)

Burner Management Systems (BMS)

Urbomachinery Control Systems (TMC)

High-Integrity Pressure Protection Systems (HIPPS)

Fire and Gas Monitoring Control Systems

Turbomachinery Control (TMC) System

Supervisory Control and Data Acquisition (SCADA) Systems

Distributed Control System (DCS)

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End Users Covered:

- Automotive
- Power Generation
- Oil & Gas
- Food & Beverage
- Pharmaceuticals
- Chemical & Petrochemical
- Railways
- Other End Users

Regions Covered:

- North America
  - US
  - Canada
  - Mexico
- Europe
  - Germany
  - UK
  - Italy

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- France
- Spain
- Rest of Europe

Asia Pacific

- Japan
- China
- India
- Australia
- New Zealand
- South Korea
- Rest of Asia Pacific

South America

- Argentina
- Brazil
- Chile
- Rest of South America

Middle East & Africa

- Saudi Arabia
- UAE
- Qatar

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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 2022, 2023, 2024, 2026, and 2030
- 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
- 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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