

Functional Safety Market by Safety Sensors (Emergency Stop, Temperature, Pressure, Gas), Safety Light Curtain, Safety Controller, Programmable Safety System, Safety Switches, TIC Analysis Type (Fault & Event Analysis), Robotics – Global Forecast to 2029

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Abstracts

The global functional safety market was valued at USD 5,883.4 million in 2024 and is projected to reach USD 7,896.7 million by 2029; it is expected to register a CAGR of 6.1% during the forecast period. Mounting adoption of advanced safety solutions to prevent accidents in industrial facilities is driving the functional safety market. Whereas high installation and maintenance costs is restraining the growth of the functional safety market.

“Emergency Shutdown System (ESD) segment is expected to hold the largest market share throughout the forecast period.”

An ESD system is used to manage emergencies, especially those that can lead to the release of hydrocarbons, uncontrolled flood, or fire outbreaks in areas where the materials stored are hazardous. Such emergencies can lead to the stoppage of a plant, unit or equipment. Concha, sensors relating to ESD capture specific states and logic solvers act on these sensors to put final items like valves and pumps to a safe state. In the event of a problem, the ESD system removes power from the process, but at the same time in a controlled manner.

Furthermore, ESD systems are essential in multiple sectors, such as oil & gas, chemicals, power generation, manufacturing, and water treatment. They act promptly on

their own in situations like leakage, fire, or system failure where they shut down the equipment, safeguard the workers, and observe various measures and codes of safety.

“Non-robotic application of functional safety is expected to hold the largest market share during the forecast period.”

The functional safety market for non-robotic application is expected to have the largest market share during the forecast period as functional safety is more of an imperative and has a lot to offer high-risk industries such as manufacturing, oil and gas industry and power generation industries. These are regulatory requirements such as IEC 61508/ 61511 or other regulations that govern use of many safety critical systems, need for protection of assets and machinery.

"Oil & Gas segment is likely to hold the largest market in 2024."

The global functional safety market is expected to register the largest portion of oil and a gas segment in 2024. The oil & gas industry experience several risks and hazards which causes serious mishap to people, assets and/or the environment. In the industry, different types of safety instrumented systems (SIS) are deployed towards achieving functional safety. A control and protection scheme for example is the Emergency Shutdown (ESD) systems that enable inhibition of a couple of systems and apparatus in an endeavor to reduce the impact of the emergent situation. They also segregate hydrocarbon stock, electrical equipment and emergency blowers and ventilation systems to give right response in the event of fire.

Additionally, High Integrity Pressure Protection System (HIPPS) safeguards the pipelines, vessels and process packages against over pressure. Some of the industries' players that deliver functional safety systems and safety devices include ABB Ltd, Siemens, and Schneider Electric.

“The Germany is to contribute the highest market share of European region during the forecast period.”

Germany is predicted to be the highest market share of European region during the forecast period. In Germany, machine and functional safety measures are strictly followed under various regulatory standards. The IEC 61508 standard has been adopted and published as DIN EN 61508 by the German Institute for Standardization (DIN). The machinery supplied and in operation in Europe is required to comply with this functional safety standard. The national-level regulatory standards and EU directives

present in this country are increasing the demand for safety-related systems, which, in turn, is driving the growth of the functional safety market.

Breakdown of primaries

The study contains insights from various industry experts, ranging from component suppliers to Tier 1 companies and OEMs. The break-up of the primaries is as follows:

By Company Type - Tier 1 – 51%, Tier 2 – 32%, Tier 3 – 17%

By Designation— C-level Executives - 47%, Directors - 32%, Others - 21%

By Region—North America - 36%, Europe - 29%, Asia Pacific - 27%, RoW - 8%

The functional safety market is dominated by a few globally established players such as Schneider Electric (France), ABB (Switzerland), Honeywell International Inc. (US), Emerson Electric Co. (US), Rockwell Automation (US), General Electric (US), Siemens (Germany), Siemens (Germany), Stratasys (US), Omron Corporation (Japan), Yokogawa Electric Corporation (Japan), Endress+Hauser Group Services AG (Switzerland). The study includes an in-depth competitive analysis of these key players in the functional safety market, with their company profiles, recent developments, and key market strategies.

Research Coverage:

The report segments the functional safety market and forecasts its size by system, device, service, application, industry, and region. The report also discusses the drivers, restraints, opportunities, and challenges pertaining to the market. It gives a detailed view of the market across four main regions—North America, Europe, Asia Pacific, and RoW. Supply chain analysis has been included in the report, along with the key players and their competitive analysis in the functional safety ecosystem.

Key Benefits to Buy the Report:

Analysis of key drivers (Enforcement of stringent safety regulations by the government, Increasing investment in oil and gas plants to meet energy demand, Mounting adoption of advanced safety solutions to prevent accidents in industrial facilities, Rapid digital transformation to revolutionize traditional

manufacturing), Restraint (High installation and maintenance costs, Complexities associated with development and integration), Opportunity (Rising emphasis on workplace safety in developed countries, Increasing deployment of IIoT technology in industries), Challenges (Complexities related to designing systems that comply with complex safety standards

Requirement of functional safety systems specialized expertise for Implementation and maintenance)

Product Development/Innovation: Detailed insights on upcoming technologies, research and development activities, and new product launches in the functional safety market.

Market Development: Comprehensive information about lucrative markets – the report analyses the functional safety market across varied regions

Market Diversification: Exhaustive information about new products and services, untapped geographies, recent developments, and investments in the functional safety market.

Competitive Assessment: In-depth assessment of market shares, growth strategies, and service offerings of leading players Schneider Electric (France), ABB (Switzerland), Honeywell International Inc. (US), Emerson Electric Co. (US), Rockwell Automation (US), General Electric (US), Siemens (Germany), Siemens (Germany), Stratasys (US), Omron Corporation (Japan), Yokogawa Electric Corporation (Japan), among others in the functional safety market.

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I would like to order

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