Smart Safety

- Increase productivity
- Minimise downtime with diagnostic information from the safety system
- Benefit from the broadest portfolio of safety products, solutions and services
- Enable smarter machines for use in The Connected Enterprise
Smart Safety – enabling smarter machines and equipment

Harnessing the power of safety and operational data can substantially improve safety compliance and performance. Accessing safety system data and transforming it into meaningful information results in increased machinery productivity, and minimises downtime.

Challenges to safe operations

**Worker behaviours**
- Operators bypassing poorly designed safety systems
- Systems that don’t account for procedural anomalies
- Standard operating procedures not being followed

**Evolving workforce**
- Safety implications of major workforce shift worldwide
- Older workers nearing retirement at higher risk for musculoskeletal injuries
- Younger, less experienced workers more prone to injury

**Machinery downtime**
- Downtime for jams, misfeeds, adjustments, changeovers and maintenance
- Minimal visibility of downtime information
- No context of downtime issues (workers interaction, machinery fault, shift patterns)
- Limited information to remedy issues

**Regulatory compliance**
- Compliance with industry standards can be challenging
- Documenting and reporting on approved safety systems can be challenging

**Data management**
- Continuing reliance on outdated data collection and reporting methods
- Safety data often manually entered for inspections, compliance logs, incident reports, training and other processes
- Systems in which data is stored typically not connected to plant floor systems

To gain more diagnostic data traditional safety devices required more complex wiring solutions. With a Smart Safety solution, you can now access more diagnostic data and simplify your wiring system.

An integrated Smart Safety solution provides all the data needed to create a comprehensive picture of the status of the machine or production line.

Harnessing the power of safety and operational data can substantially improve safety compliance and performance. Accessing safety system data and transforming it into meaningful information results in increased machinery productivity, and minimises downtime.
Access to real-time data and seamless connectivity is transforming the production environment. Smart capabilities enable end users to gain new efficiencies, improve product quality and make operations more responsive. Smart Safety helps to standardise machinery and safety control. These systems are less susceptible to nuisance shutdowns and can help to improve productivity and profitability.

Why is the E-stop function being operated so much?

<table>
<thead>
<tr>
<th>SAFE SPEED ACTIVATION</th>
<th>PALLETRIZER ACCESS</th>
<th>LOW MARGIN</th>
<th>Number of operations monitored for replacement scheduling.</th>
</tr>
</thead>
<tbody>
<tr>
<td>OBJECT DETECTED.</td>
<td>Requests in 24hrs</td>
<td>Per week</td>
<td></td>
</tr>
<tr>
<td>Average times per hour</td>
<td>0 0 0 2</td>
<td>0 0 0 2</td>
<td></td>
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Low Margin!
Cleaning required

<table>
<thead>
<tr>
<th>EMERGENCY STOPS</th>
<th>LIGHT CURTAIN</th>
</tr>
</thead>
<tbody>
<tr>
<td>Times tripped per day</td>
<td>Times tripped per day</td>
</tr>
<tr>
<td>0 0 2 0</td>
<td>0 0 1 0</td>
</tr>
</tbody>
</table>

Damaged Switch!
Zone 1, Conveyor

Misalignment!
Line 1, guard door 3
Smart Safety solutions provide detailed diagnostic data to your design environment, visualisation system, information software, and GuardLogix Programmable Automation Controller – enabling Smart Machines for use in The Connected Enterprise and helping to increase productivity and minimise downtime while reducing total cost of ownership.

Cable reduction of up to 38%
A solution incorporating Smart Safety devices enables safety professionals to transform the way they monitor and manage safety. Rockwell Automation provides a complete Smart Safety solution to meet safety requirements, covering safety input devices, safety logic and safety output devices.

**Improve insight into worker behaviour and compliance**
By incorporating safety information into EHS management systems, day to day discrepancies between policies and operating procedures can be identified.

**Enhance safety**
Connecting people, equipment and worksites creates new opportunities to enhance worker and environmental safety, including remote access, operations visibility, worker locating and information delivery via mobile devices.

**Reduce safety-related downtime**
Better visibility into safety-system performance and stoppages can help determine the root cause of shutdowns. Safety and production data also can be combined to understand the frequency, duration, time and location of safety-related shutdowns.

**Improve compliance**
The safety data required for compliance and reporting purposes is largely collected through time-consuming, error-prone manual audits today. By integrating auditing functions into the HMI and controller, organisations can automate and speed up the auditing process, free up personnel to focus on other priorities, and reduce the likelihood of errors.
Scenario 1

Remote troubleshooting with Smart Safety

- Safety device performance communicated over EtherNet/IP
- Predictive maintenance routines established from historical data
- EtherNet/IP network allows standard and safety data to be captured on individual device operation
- Simplifies wiring and system complexity
- All time stamped data of device operation available in FactoryTalk Historian

Visit [www.machinesafetysolutions.com](http://www.machinesafetysolutions.com) to see how Smart Safety can make the difference
Scenario 2

Request safe access over EtherNet/IP network

- Guard position, lock status and access request managed over standard unmodified ethernet (Safety over EtherNet/IP)
- Historical data of access request can be used for application adjustments
- Simplified network architecture for standard and safety control
- Add-on profile in Studio 5000 provides simplified setup and monitoring
- Indication given separately for guard door position and guard lock status

1. Box falls from pallet in shrink wrapper due to speed of conveyor.
3. System checks for safe condition and then grants access. Access approval logged in system.
5. Machine operator closes guard door, initiates a reset request which locks the guard closed. Request logged in system.
6. All data logged in system is available to enable machine performance adjustments.

Visit www.machinesafetysolutions.com to see how Smart Safety can make the difference
Scenario 3

Machine uptime from Smart Safety data

- Access frequency into the machine through individually identified access points, is available with Smart Safety
- Smart Safety allows data to be captured on individual device operation
- Simplifies wiring and system complexity
- Smart Safety can be used with your existing safety devices
- Historical data of access request can be used for application adjustments

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Scenario 4

Predictive maintenance with Smart Safety solution

- Smart Safety allows predictive maintenance procedures to be adopted based on device use or age.
- Smart Safety allows data to be captured on individual device operation.
- Simplifies wiring and system complexity.
- Smart Safety can be used with your existing safety devices.
- Historical data of access request can be used for application adjustments.

1. Operations of safety devices per shift are captured.
2. All safety device operational use from manufacturing line available.
3. Monitoring number of operations helps predict when device is at end of life.
4. Information is available for maintenance staff to replace device.
5. Device can be replaced at next planned maintenance schedule.
6. Machine downtime reduced to a minimum.

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3 pillars of support for your safety requirements

The right products
Rockwell Automation has the broadest portfolio of any machinery safety solutions supplier, and can provide all three parts of a safety system.

Safety input devices
- Presence-sensing safety devices
- Safety interlock switches
- Emergency stop & trip devices
- Operator interface

Safety logic controllers
- Safety relays
- Configurable safety relay
- Integrated safety controllers
- Safety I/O devices

Safety actuators
- Safety contactors
- PowerFlex® AC drives
- Kinetix® integrated motion

Connection systems/networks
- ‘Quick connect’ connection systems
- Safety over EtherNet/IP
- GuardLink linking technology

The right tools
A wide range of tools that support compliance with safety standards, reduce the risk of injuries and improve productivity.

Safety Automation Builder
FREE software tool to help simplify machine safety design and validation, reducing time and costs. Integration with RASWin Risk Assessment Software provides you with consistent, reliable, documented management of the Functional Safety Lifecycle.

SISTEMA integration
The SISTEMA tool automates calculation of the attained Performance Level outlined in (EN) ISO 13849-1. Data is available to be used with the SISTEMA calculation tool.
- Helps users in the design stage
- Comprehensive Rockwell Automation database

Pre-engineered Safety Functions
Machine safety can be developed by combining blocks of safety functions. Our pre-engineered safety functions come with a SISTEMA Performance Level calculation as outlined in (EN) ISO 13849-1.
- Reduces design times
- Includes set-up, wiring, configuration and validation information
- Complete bill of materials

Accelerator Toolkits
Easy to use system design, programming, and diagnostic tools to assist in the rapid development and deployment of safety systems.
- Reduces design time and risk
The right people

A comprehensive range of safety services and support is available from both Rockwell Automation and its machinery safety certified ‘Recognised System Integrator’ partners.

TÜV Rheinland certified machine safety training courses

Helping deliver staff training that qualifies towards an industry-standard TÜV Rheinland Certificate, enabling trainees to understand safety requirements and compliance.

Risk Assessment Service

Rockwell Automation’s global safety team of consultants and partners can assist end users, integrators and OEMs at any step of a safeguarding project. Comply with safety standards to reduce the risk of injuries and improve productivity.

Trained staff and partners

Rockwell Automation has TÜV Rheinland machinery safety qualifications it requires its employees and partners to achieve in order to support you. Leverage their knowledge now.

Knowledge of automation and safety

The benefit of partnering with Rockwell Automation is you gain the support and expertise of people who understand automation and safety, not just safety.