

# Oil and Gas Industry Solution

## Overfill Prevention System Application Solution

### A Solution Package to Prevent Hazardous Overflow

#### Features

- Complete integrated solution, scalable from one to 16 tanks
- Compliant to API 2350, IEC 61511 and German WHG standards, and up to SIL 3.
- Fail-safe high-level detection with alarm.
- Integrated automated proof-test procedure
- For manual operated and automated plants
- Alarm data available to external systems for remote monitoring
- Seamless network integration in supervisory systems via EtherNet/IP

#### Benefits

- Increased safety integrity and reliability
- Reduced operational risk
- Reduced engineering and commissioning time
- Reduced maintenance expenses
- 12 years without recurring test of the overfill protection through SIL3 approach with Liquiphant Failsafe

#### Solution

A preconfigured overfill prevention system with independent safety certification for the entire safety loop, from measurement and control to element correction.

The system provides unparalleled compliance to API 2350, IEC 61511 and German WHG safety regulations, leveraging an open control and information system from Rockwell Automation and industry leading instrumentation from Endress+Hauser.



Oil storage tanks.

### Tank Safety Challenges

The role of storage tanks used for fine chemicals, oil and gas is significant and complex. They serve as large containers for powerful and volatile fluids, and they have the potential to cause damage if not properly monitored and managed. A faulty fuel gauge can fail to alert operators at an oil storage depot that a fuel storage tank is being filled to a dangerously high level. Eventually, large quantities of petrol will overflow from the tank, causing a vapor cloud to form and ignite, followed by a series of massive explosions and a fire that can last days.

As a result of recent incidents, systematic overhauls to overfill prevention systems have taken place, and industry best practices for managing storage tanks now combine the previously followed API 2350 prescriptive standards and the IEC 61511 functional standards.

In addition to meeting these standards and mitigating risk, tank farms continue to face typical industry pressures, such as maximizing productivity, lowering maintenance costs and developing an engaged and empowered workforce. These challenges are compounded by stagnant operating expense budgets, knowledge gaps and increasingly stringent ROI requirements. That is why it is more important than ever that an overfill prevention system offer cost-saving benefits, such as condensed commissioning time and reduced maintenance expenses.

Endress+Hauser 

People for Process Automation

LISTEN.  
THINK.  
SOLVE.

 Allen-Bradley • Rockwell Software

**Rockwell  
Automation**

## Overfill Prevention System Application

Overfill prevention systems regulate storage-tank fluid levels to avoid spill over and dangerously high pressure levels that can damage tanks and cause explosions. Custom-built approaches to overfill prevention are costly because they take longer to implement and are more complicated to maintain. Further, the risk of fault at the interface between the different supplier's parts is typically higher. A pre-packaged system on the other hand, is based on repeatable designs that have been tested and documented. This standard approach helps reduce project costs and lower implementation risk.

Because Endress+Hauser was able to develop its pre-configured overfill prevention system with full access to the Rockwell Automation system and safety competence, the result goes far beyond simply supplying the components customers need to prevent overfill incidents. By leveraging the open control platform of the Rockwell Automation Integrated Architecture™ system and process instrumentation from Endress+Hauser, this overfill prevention system provides a complete, integrated solution that addresses the entire safety loop, from measuring and controlling to correcting elements.

### A Preconfigured Solution

As a solution package, the overfill prevention system drastically reduces commissioning time and maintenance expenses.

- Tanks remain in service during installation as the Rockwell Automation products and Endress+Hauser devices are pre-integrated and only require on-site parameterizing
- Rockwell Automation offers best-in-class, 24/7 on-site and remote support services for overfill prevention systems

## Integrated and Scalable Control

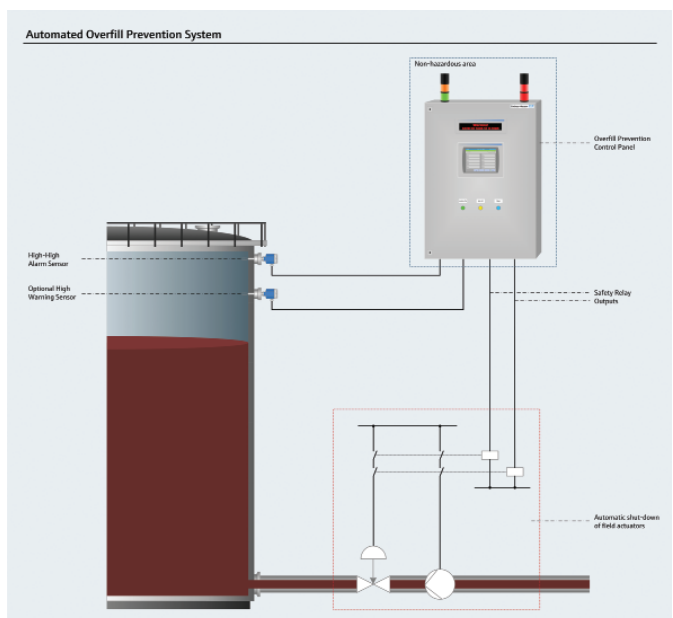
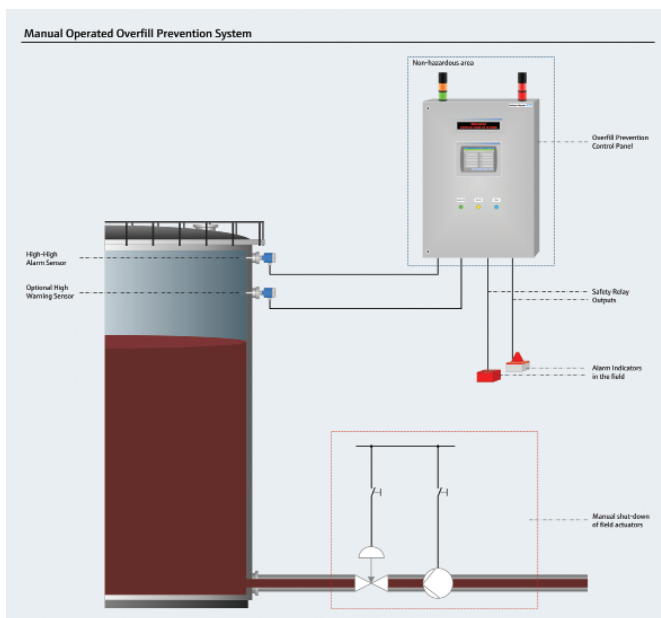
The overfill prevention system incorporates an integrated safety solution leveraging the Allen-Bradley Compact GuardLogix® safety controllers.

- Scalable for one to 16 tanks per system
- Consistent network communication via EtherNet/IP™
- Seamless integration with the Rockwell Automation PlantPAx™ process automation system

## Advanced Sensors and Supervisory Control

Endress+Hauser Liquiphant Failsafe point level switch provides accurate fluid-level measurement for overfill prevention independent of other gauging systems installed on the tank. Supervisory control and data acquisition capabilities provided through the Allen-Bradley PanelView™ human-machine interface can be programmed so the measurement device directly shuts down system valves and pumps or directs fluid movements to prevent overfill.

- Liquiphant Failsafe point level switches provide:
  - Easy integration via the switching unit with a two-channel output (safety contacts) and locking function or direct integration into a safety programmable logic controller (PLC)
  - A proof testing interval of up to 12 years
  - Simplified slave device testing available at the press of a button
  - Permanent self-monitoring/internal redundancy
- Allen-Bradley PanelView Plus graphic terminals provide operators with real-time, detailed pressure and fluid-level reports, status and alarm information to facilitate quick decision making



### Industry-Leading Safety Protocol

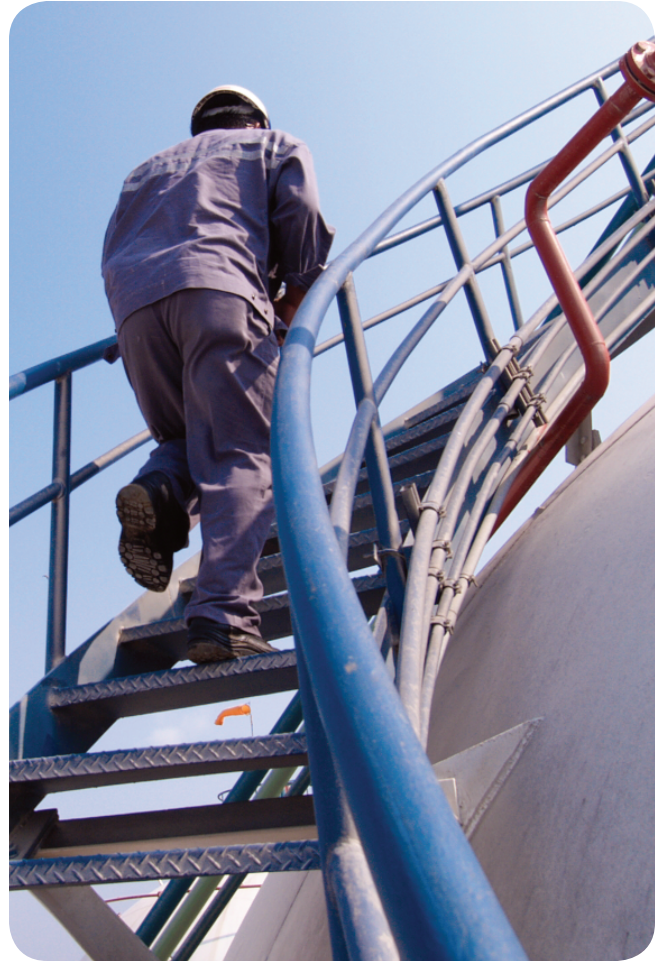
The overfill prevention system is compliant with industry best practices and can be independently safety certified. Further, it improves the functional operations of the plant while simultaneously helping increase safety, efficiency and productivity. The system also allows for implementation of distributed safety solutions without any limitations in the safety integration level.

- Certified according to IEC 61511 up to SIL 3
- Compliant to API2350 (Draft 5) and German WHG
- Failsafe high-high level alarm detection
- Rockwell Automation GuardMaster® Safety Relays provide fail-safe shutdown of pumps and valves
- Integrated, automated proof-test procedure
- UPS for 30 minutes autarkic operation

### Why We Partner

Rockwell Automation and Endress+Hauser are committed to helping meet the needs of customers for complete process automation solutions. Drawing from the core competencies of both companies, together we are able to deliver pre-engineered, pre-tested, supported and maintained integrated instrumentation and control and information solutions.

Today we focus our combined efforts around tools for integration, plant-wide advanced diagnostics, and overall helping you manage your process system lifecycle.





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*Endress+Hauser is trusted by more than 100,000 customers to make their processes safe, efficient and environmentally friendly. We offer a range of measurement products, including level, flow, pressure, temperature, analytical and complete engineered solutions designed to help customers acquire, transmit, control and record process information needed to manage operations in a safe, reliable and profitable manner.*

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