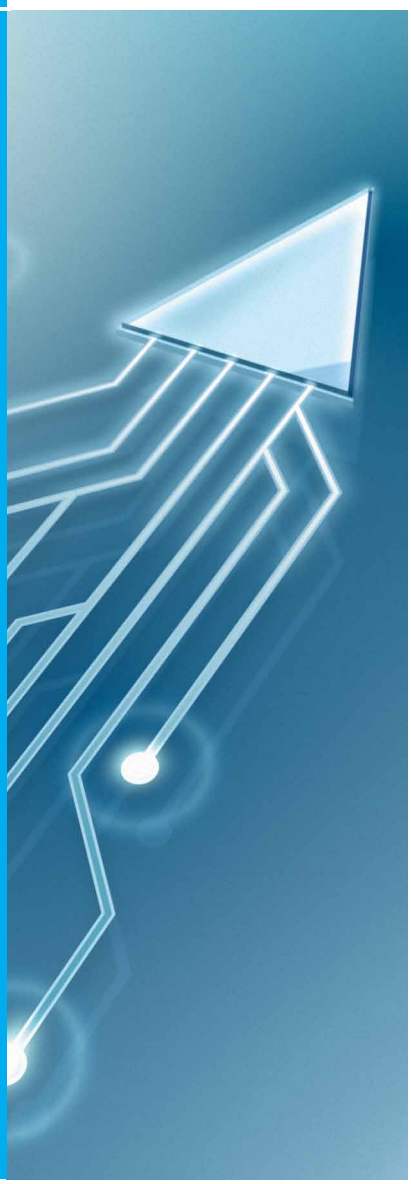
Overfill Prevention System

Safe and reliable prevention of hazardous overflow in tanks



Endress+Hauser
People for Process Automation

Monitoring a tank safely

Detecting, indicating and preventing overfill easy with IEC 61511 certified system fulfilling API 2350

Requirements The API 2350 specification can be met by using a Safety Instrumented System (SIS) designed in accordance with IEC 61511.

As a result of recent incidents, there have been systematic overhauls to overfill prevention systems. Industry best practice for managing storage tanks now combines the existing API 2350 prescriptive standards with the IEC 61511 functional safety standards. Our Automated Overfill Prevention System (AOPS) is a facility to detect, indicate and prevent hazardous overflow in your chemical or petrochemical storage tank.

Complete system independently SIL 2/3 certified

The API 2350 standard prescribes methods by which owners and operating personnel can prevent tank overfills. It requires the use of a risk assessment system. Functional safety itself can only be applied to complete functional loops. Claiming a product is SIL means only that the product is suitable for use in a safety function and does not automatically mean that the complete safety loop is functional safe. Therefore we have our complete automated overfill prevention system SIL 2/3 certified by independent, globally operating safety inspectors to address your entire safety loop.

Automated proof tests According to IEC 61511 and API 2350, the safety function of a device must be tested at appropriate intervals by proof tests. These demonstrate the functionality of the safety instrumented system in relation to the safety requirements. The proof test procedure from our system checks all safety relevant devices such as the level switch, signal horn and flashing beacon with a single push button. This significantly reduces your effort for proof tests and brings substantial cost savings during commissioning, operation and maintenance of the system. For example, proof testing of 16 tanks takes less than 5 minutes.

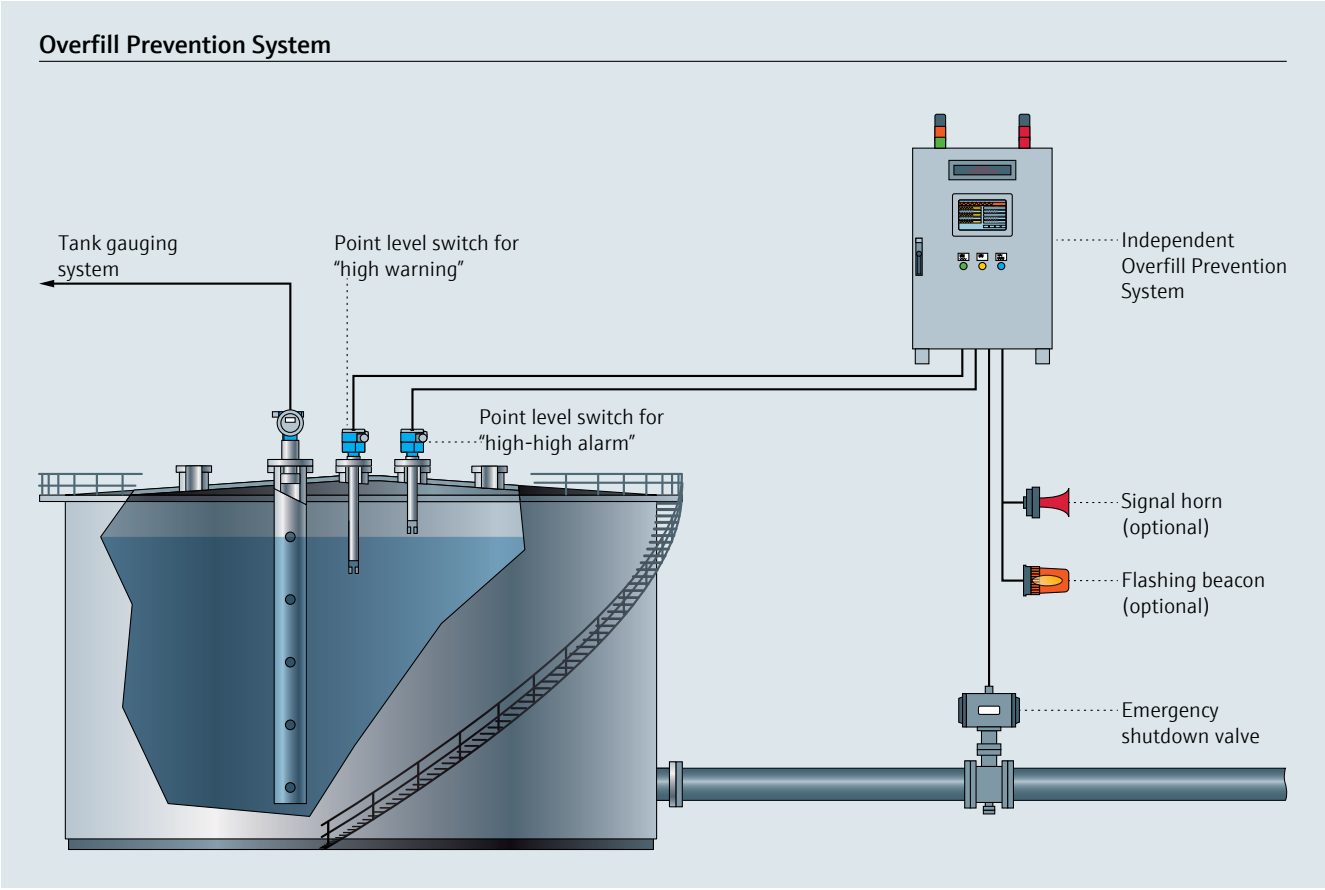
Independent Safety Instrumented System (SIS) In order to ensure safe functionality and meet the highest safety standards, every SIS must be independent of all other control systems controlling the equipment. All control elements including level devices, controls and alarming devices must be dedicated exclusively to the SIS. Our Automated Overfill Prevention System is completely independent of all other process control systems and devices. Additionally it is equipped with an uninterruptible power supply (UPS) with an on-battery runtime of minimum 30 minutes.

HMI screen overview

Oil storage and transportation

Improve efficiency and safety:

- A complete independent SIL 2/3 certified solution provides a high level of confidence in its reliability
- The remote automated proof test procedure significantly reduces commissioning and maintenance time
- A Safety Instrumented System independent from all other control systems ensures safe functionality
- Detailed warning and alarm messages support the operator in taking immediate decisions and remedial measures
- Standard interfaces such as EtherNet/IP enable seamless integration in supervisory systems for remote monitoring
- The modular, scalable and extensible design provides investment protection for the future



Example of the Overfill Prevention System layout design

Increase tank capacity

With the Automated Overfill Prevention System a response time of less than one minute can be reached. Considering the maximum inlet flow rate the high-high level alarm and the corresponding maximum working level can be set nearer to the critical high.

This way the tank capacity can be increased without major mechanical upgrades.

This saves money by increasing the tank working capacity. Instead of constructing a new tank it might be sufficient to install an Automated Overfill Prevention System.

Overfill Prevention System SOP600

Safety by choice – not by chance

- Best-in-class safety up to SIL 3 according to IEC 61511
- API 2350 compliant system for manually operated and automated overfill prevention
- Available in single and redundant architecture with point level switch and radar instrumentation
- Overfill prevention according to German WHG
- Complete solution, certified by independent, globally operating safety experts provides a high level of confidence in its reliability
- Completely independent Safety Instrumented System ensures highest safety standards
- Automated proof tests guarantee that the safety instrumented system functions perfectly

SIL 3 capable, safety-oriented instrumentation from Endress+Hauser

Supplementary documentation

- Functional Safety – SIL
  Competence Brochure – CP01008Z/11/EN

Additional information

Web:
www.endress.com/aops
www.endress.com/sil

www.addresses.endress.com

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