



## What increases transparency and flexibility in the field level?

Field instrumentation with WirelessHART communication provides you with innovative and cost-effective solutions.

Answers for industry.

**SIEMENS**



# New possibilities in the process industry

Wireless products have fundamentally changed our lives – and are also playing an increasingly important role in the industrial environment.

Here too, the enormous potential of wireless technology opens up totally new perspectives.

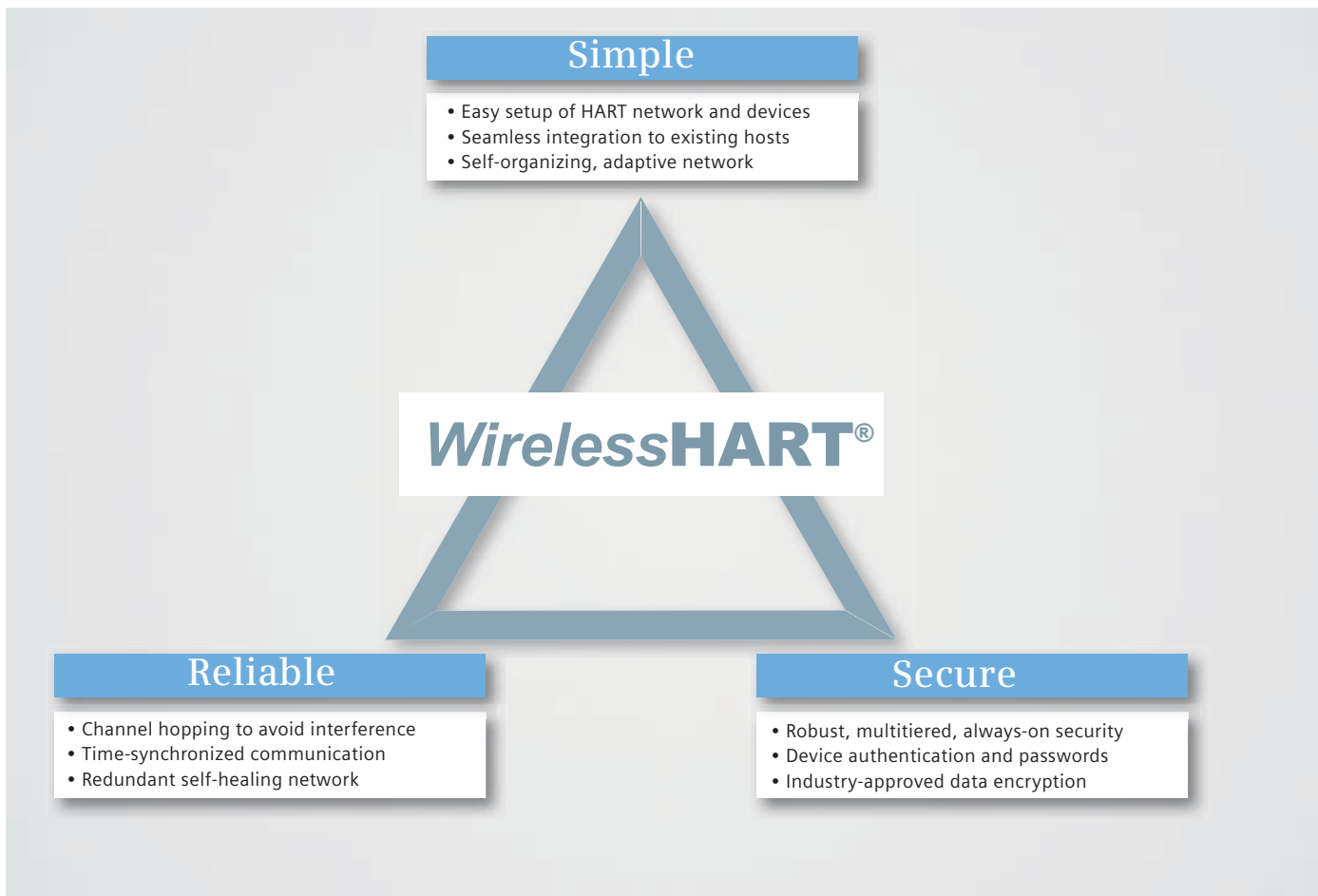
In addition to Industrial Wireless LAN (IWLAN) for local wireless networking, GSM and GPRS based Telecontrol systems are already widely used in the world of automation, as they are ideal for monitoring and controlling physically separated plants and facilities.

Now WirelessHART offers the first industrial standard for wireless field communication that fully meets the requirements of the process industry.

## **Success factor wireless communication**

To achieve lasting success in the face of global competition, companies need to permanently improve their productivity while minimizing the total cost of ownership. This calls for new measures and new concepts.

Wireless solutions offer far more benefits than just the elimination of cabling and installation costs. Users also profit from significantly faster commissioning and more efficient maintenance, as well greater flexibility and mobility. And wireless technology ensures improvement of production quality and safety in plants. In the end, all of these advantages add up to greater overall plant availability.



**WirelessHART: simple, reliable, secure**

With over 30 million devices installed worldwide, HART technology is the most widely used field communication protocol for intelligent process instrumentation.

WirelessHART is an intelligent advancement of the proven 4–20 mA HART technology released by the HART Communication Foundation (HCF) as part of Specification V7. WirelessHART is backward compatible with wired HART technology, and as such offers maximum protection for investments in hardware and software, tools and expertise.

WirelessHART is an open industrial standard developed to meet special requirements of wireless communication at field level in the process industry. It consistently fulfills all specific requirements for reliability, security, cost-efficiency and ease of use.

**Standard specifications at a glance**

Conformity with IEEE 802.15.4 guarantees interoperability of WirelessHART devices, regardless of vendor.

Radio standard	IEEE 802.15.4-2006 @ 250kbps
Frequency band	2.4 GHz
Frequency management	Frequency Hopping Spread Spectrum
Distance	Up to 200 m line of sight
Power supply	Battery-powered, line-powered, solar-powered
Topologies	Mesh, star, combined star and mesh
Number of devices	Limit not specified. Number of devices will depend on the application requirements and gateway constraints.
Based on	HART – IEC 61158 EDDL – IEC 61804-3

# Groundbreaking solutions for industrial wireless communication

Based on our in-depth experience in process automation and industrial wireless technology, we offer a range of first-class WirelessHART products as part of a unique portfolio for the process industry. This also includes wireless remote monitoring and control systems, Industrial Wireless LAN (IWLAN) products and systems, and a comprehensive instrumentation product portfolio.

## WirelessHART product family:

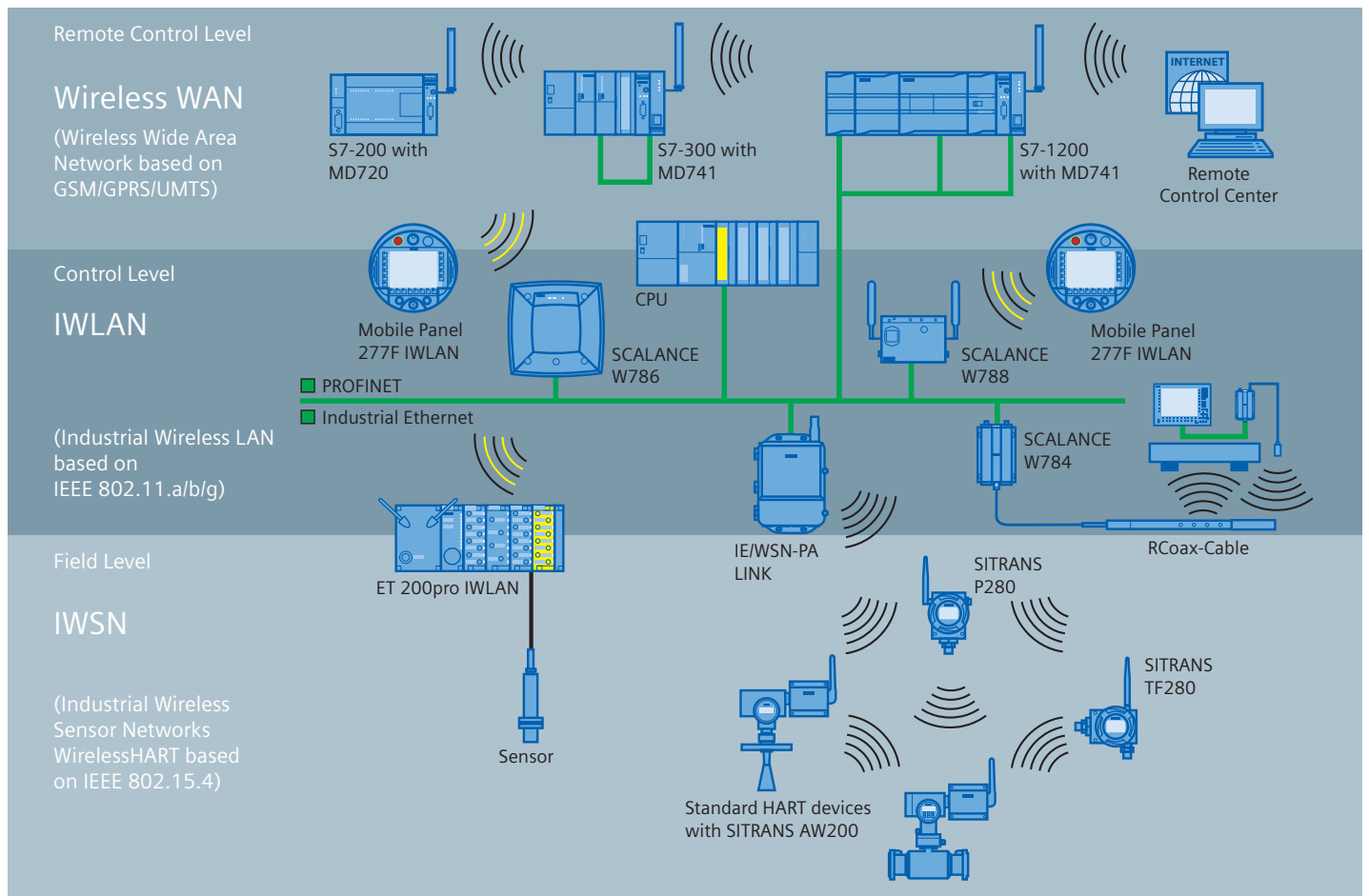
- **Battery-powered WirelessHART transmitters** are ideal for remote measurements, for deployment in harsh environments, for temporary ad hoc measurements and for the expansion and replacement of field devices.
- **WirelessHART adapters** provide wireless communication capability for existing wired HART devices.
- **The WirelessHART gateway** reliably gathers all field information, manages network and establishes connection to the higher level automation system – for example to the SIMATIC control system or to systems of third-party suppliers, etc.

## Industrial Wireless LAN:

**SCALANCE W** access points and client modules allow optimum configuration of IWLAN networks and feature a high degree of reliability, ruggedness and security in all applications, even in explosion hazard zone 2.

## Telecontrol:

**SINAUT** Telecontrol modems and routers for wire-less communication via GSM/GPRS/EGPRS monitor and control widely distributed process stations via private and public networks.



## WirelessHART answers your challenge

WirelessHART opens up new communication options which were not practical or simply not possible in the past due to the operating environment or for economic reasons.

- **Flexible** for installation, replacement or upgrading; ideal for temporary measurements and for measurements on rotating equipment.
- **Cost-efficient** for remote facilities and locations difficult to access due to the environmental or technical conditions: significant cost savings for cabling, commissioning and engineering, as well as reduced operating costs thanks to increased plant efficiency and lower maintenance expenditure.

- **Maintenance-friendly** thanks to access to valuable diagnostic information for enabling predictive maintenance strategies. Maintenance expenditure for cables and connections are a thing of the past, so too is the manual checking of the equipment status.
- **High plant availability and production quality** through optimized wireless installation, reduced black measurement points, higher transparency throughout the plant.

With our WirelessHART solutions, users profit not only from lower total cost of ownership, but also from significantly improved security, reliability and productivity.

# SITRANS TF280

The SITRANS TF280 is a WirelessHART temperature transmitter that provides all measured process values as well as diagnostic information, parameters and functions via radio. The device is powered by an internal battery and designed for ultralow power consumption. Its compact and rugged design makes it specially suitable for direct mounting on tanks and pipes in remote parts of plants, and on moving or rotating equipment for process monitoring or asset management applications.



## Features:

- LCD display with functional display items and icons, English and German display selectable
- Practical push buttons: Three push buttons for maximum efficiency for setup, diagnostics, communication and security settings with no additional devices or tools
- Maintenance-friendly backlight function
- Sleep mode for efficient battery life management
- Battery status display on LCD and in network overview
- Precise measurement accuracy for more productivity
- 90 and 180 degree display turnable
- Configurable with standard tools which support EDD – e. g. with SIMATIC PDM
- Extension cable for separate installation of the sensor
- Physical HART maintenance port for commissioning

## Technical data:

Input	
Sensor type	Pt100 (IEC 60751)
Characteristic	Temperature-linear
Connection type	2-, 3- or 4-wire circuit
Accuracy incl. hysteresis and repeatability	Typical $\pm 0.25^\circ\text{C}$ , max $\pm 0.5^\circ\text{C}$
Ambient temperature effect	$\pm 0.1^\circ\text{C} / 10\text{K}$
Sensor current	100 mA
Measuring range	$-200^\circ\text{C} \dots +850^\circ\text{C} /$ $-328^\circ\text{F} \dots +1562^\circ\text{F}$
Measurement unit	$^\circ\text{C}$ or $^\circ\text{F}$
Output	
WirelessHART radio in 2.4 GHz	
Power supply	
Power source	Lithium thionyl battery D-cell 3.6V
Supply voltage	3.6VDC
Maximum current (IMAX)	100 mA
Battery life	5 years with 1 update per minute
Approvals	
Please ask your regional Siemens representative for details	





# SITRANS P280

The SITRANS P280 is a WirelessHART pressure transmitter that provides all measured process values as well as diagnostic information, parameters and functions via radio. The device is powered by an internal battery and designed for ultralow power consumption. The compact and rugged design makes it specially suitable for direct mounting on tanks and pipes in remote parts of plants, and on moving or rotating equipment for process monitoring or asset management applications.

## Features:

- Various pressure ranges available (2,10, 50, 200, 400 bar selectable)
- LCD display with functional display items and icons, English and German display selectable
- Practical push buttons: Three push buttons for maximum efficiency for setup, diagnostics, communication and security settings with no additional devices or tools
- Maintenance-friendly backlight function
- Sleep mode for efficient battery life management
- Battery status display on LCD and in network overview
- Precise measurement accuracy for more productivity
- 90 and 180 degree display turnable
- Configurable with standard tools supporting EDD – e. g. with SIMATIC PDM
- Physical HART maintenance port for commissioning

## Technical data:

Input	
Sensor type	Ceramic
Characteristic	Linear
Connection type	G 1/2" or 1/2"-14NPT
Accuracy incl. hysteresis and repeatability	Typical $\pm 0.25\%$ of full scale; max $\pm 0.35\%$ of full scale
Ambient temperature effect	$\pm 0,025\%$ of full scale / K
Sensor current	N/A
Measuring range	0...2, 0...10, 0...50, 0...200, 0...400 bar
Measurement unit	mbar, bar, m4H <sub>2</sub> O, i4H <sub>2</sub> O, ATM, TORR, Gcm <sup>2</sup> , KGcm <sup>2</sup> , MPa, KPa, Pa, Psi, mmHG, mmH <sub>2</sub> O, FTH <sub>2</sub> O, inHG, inH <sub>2</sub> O
Output	
WirelessHART radio in 2.4 GHz	
Power supply	
Power source	Lithium thionyl battery D-cell 3.6V
Supply voltage	3.6 VDC
Maximum current (IMAX)	100 mA
Battery life	5 years with 1 update per minute
Approvals	
Please ask your regional Siemens representative for details	

# SITRANS AW200

The SITRANS AW200 is a WirelessHART adapter which allows standard wired HART/4...20 mA devices to be connected to a WirelessHART network. By installing the SITRANS AW200 on an existing analog-wired HART device, users can utilize all diagnostic information at the maintenance station without any risk of impairing operation. In the case of a new installation, various proven HART transmitters can be used in combination with SITRANS AW200 for efficient measurement implementation.



## Features:

- HART/4...20 mA signal transmission via wireless
- Up to 4 devices can be connected in multidrop mode
- Configurable with standard tools support EDD – e. g. SIMATIC PDM, HART handheld communicator
- Supports burst mode and event notification for adapter and subdevices
- Power-up single connected device with battery or devices can be powered externally
- Antenna position adjustable in vertical position
- Direct mounting on the field device or separate mounting with mounting kit

## Technical data:

Input	
One-device input channel	One point-to-point with HART device or 4...20 mA device Up to four externally powered HART devices can be operated in multidrop mode
Communication type	HART communication in multi-drop mode (compatible with HART V7.0 or previous version), 4...20 mA current signal in point-to-point connection
Output	
	WirelessHART radio in 2.4 GHz
Power supply	
Power source	Special long-life lithium thionyl chloride battery pack
Supply voltage	5 VDC to 7.2 VDC
Battery life	5 – 7 years with 1 update per hour, depending on the configuration
Approvals	
	Please ask your regional Siemens representative for details



# IE/WSN-PA LINK

The IE/WSN-PA LINK is a WirelessHART gateway for connecting a WirelessHART network to a plant host application. With the integrated network manager it is easy to configure WirelessHART networks and optimize network performance and security settings.



## Features:

- High level of security for wireless data communication
- Open TCP/IP communication
- Open standardized user interface through use of the HART OPC server from HART Communication Foundation
- Simple network configuration and monitoring using Web interface
- Connection of up to 100 WirelessHART devices
- Simple connection to SIMATIC PCS 7, SIMATIC S7, and host systems of third-party providers
- Optional remote antenna
- Installation possible in explosion hazard zone 2
- Housing of protection type IP65

## Interfaces:

- 2x Ethernet, 10base-T/100base-TX Ethernet communication
- RS 485

## Configuration:

Configuration of network and monitoring is performed using web browser generated by IE/WSN-PA LINK.

## Power supply:

24 VDC, 500 mA

# SITRANS MDS

The SITRANS MDS (Maintenance and Diagnostic Station) is a Windows-based application for retrieving and managing maintenance information from field devices.

## Features:

- Use SIMATIC PDM retrieves maintenance information from field devices
- Device list is shown in tree form, with properties and maintenance information in a column on the right-hand side
- Selectable update interval for all devices
- Visualization of the maintenance status with SIMATIC-specific icons or NAMUR (NE 107) icons
- Archiving of recent events for each device
- User-editable report



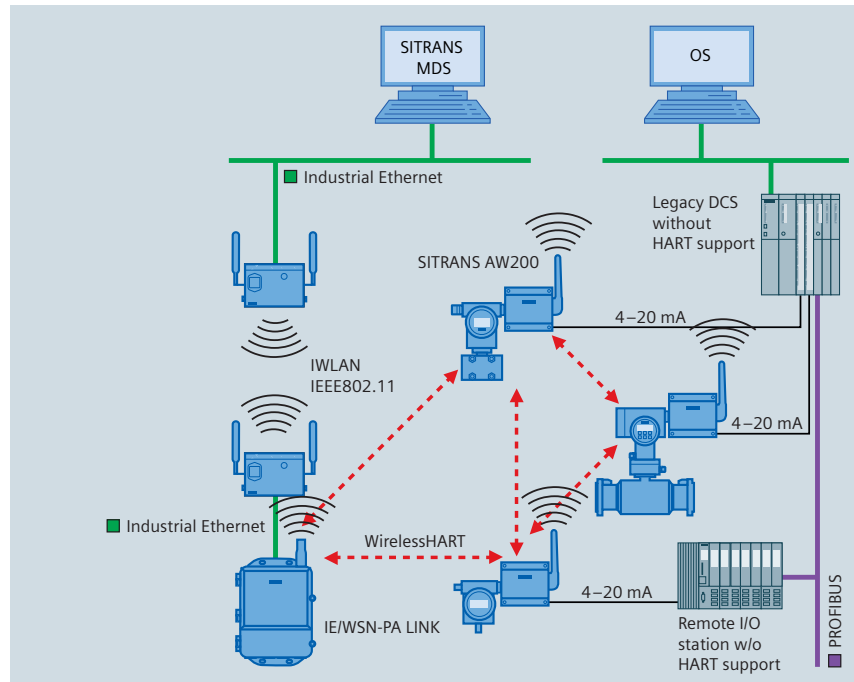
# Applications

The use of WirelessHART products in process

industry applications can be classified as follows:

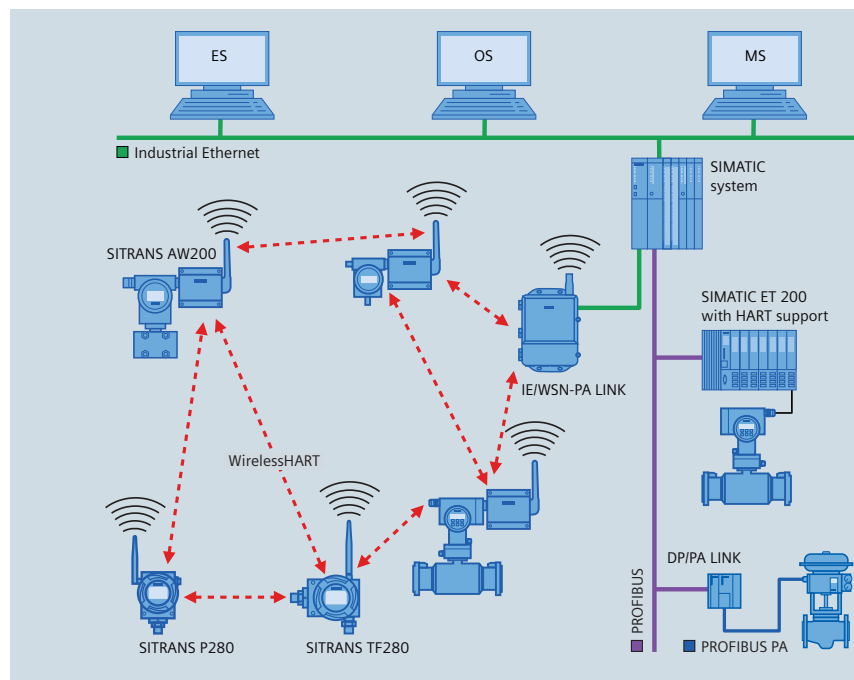
## Application type 1: Wireless makes available stuck information airborne

In many plants, HART devices are analog wired in a distributed control system (DCS). This means that a great deal of valuable diagnostic information is not accessible in the field, and devices must be maintained manually at regular intervals. This leads in turn to high maintenance cost and the risk of unscheduled downtimes. Installation of a WirelessHART adapter on existing 4–20 mA HART instruments means that equipment information is accessible from maintenance station without changing the system that is running. Access to valuable diagnostic and device information offers a wide range of advantages, including higher process performance and reliability, improved maintenance approaches, etc.



## Application type 2: Wireless instead of wired communication

WirelessHART solutions are considerably more cost-efficient and flexible than conventional concepts for improving production quality, plant safety or process transparency through the addition of new measuring points. Problems with the physical wiring or cabling are a thing of the past when you use WirelessHART solutions. So too are high cabling costs for remote measuring points. The optimum use of wired and wireless devices in one system creates the best basis for a new standard of performance in automation.





# Examples of use

WirelessHART opens up new possibilities for data transmission with wireless access to information in intelligent HART devices. The advantage for users lies in a significant increase in plant transparency, productivity and performance.

The list below shows a number of typical, industry-neutral applications for WirelessHART devices.

## Process monitoring and control

- Supervisory and noncritical process control
- Process efficiency calculations
- Tank level gauging
- Plants expansion and instrument replacement

## Asset Management

- Maintenance
  - Calibration
  - Recording of valve signatures
  - Radar echo
- Diagnostics
  - Valve position feedback
  - Device health status

## Health safety and environmental monitoring

- Area gas detectors
- Water effluent
- Gas emissions
- Relief valves
- Steam traps
- Oil pressure
- Safety showers

## Temporary measurement

- Test measurement
- Ad hoc measurement
- Redundant measurement



## Get more information

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