

A photograph of two pharmaceutical workers in a factory setting. They are wearing blue scrubs, blue hairnets, and white face masks. The worker on the right is also wearing white gloves and is pointing towards a large, vertical stainless steel tank. The background shows various pieces of industrial machinery, including pipes, valves, and a large circular gauge. The lighting is bright and even.

Automation in the Bulk Drug Industry

Improving Plant performance & Reduce Operating Expenses

Topics



- Automation
 - Main blocks
 - Key Benefits of Automation
- Endress + Hauser
 - Value Proposition to the Process Industry
 - Capabilities to support the Process Industry
- Process measurements
 - Key measurement parameters and their types
- Summary

Process Automation : Main Blocks



Automation – Key Benefits



A photograph of two men in an industrial setting, likely a refinery or chemical plant. They are standing on a metal walkway with railings, looking at a large blueprint or technical drawing. The man on the left is wearing a white hard hat, safety glasses, and a dark blue jacket with "People for Process Automation" printed on the back. The man on the right is wearing a yellow hard hat, safety glasses, and a light blue button-down shirt. The background shows complex industrial piping and structures under bright sunlight.

Endress+Hauser

We help our customers to improve their processes

Partner of the process industry

Process engineering is our world

- Process and laboratory measurement technology
- Automation solutions and services

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countries with their own sales centers
and representatives



Complete portfolio and digital capabilities

Our customers make
better decisions thanks
to valuable insights into
their processes



Industry expertise and application knowledge

Our customers benefit from our experience when solving their challenges



From the region, for the region

Global production network

- Customer-specific manufacturing in major economic regions
- Partnerships with key suppliers
- Efficient transport logistics

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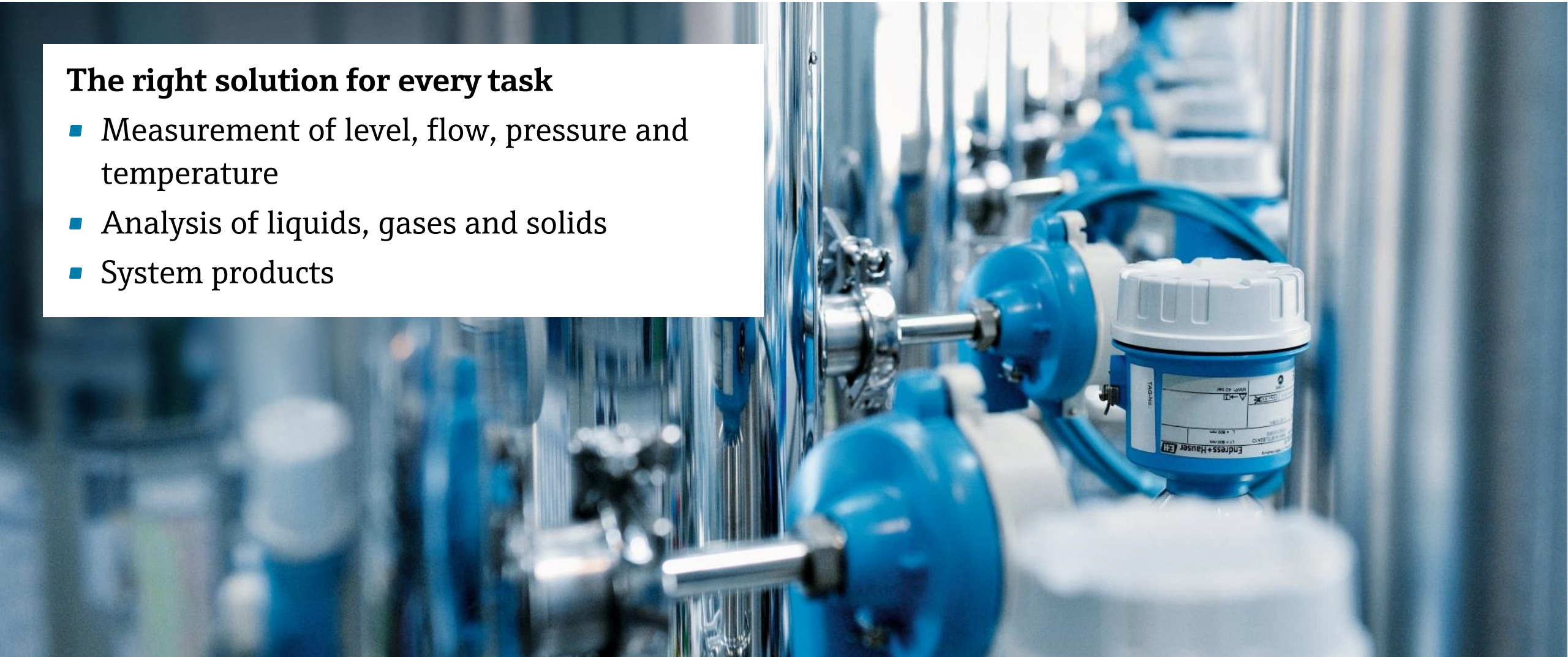
sites for production in 11 countries
and on four continents



The most complete portfolio in process instrumentation

The right solution for every task

- Measurement of level, flow, pressure and temperature
- Analysis of liquids, gases and solids
- System products



We offer services with added value

Improvement of plant performance

- Repair, commissioning, maintenance and calibration of devices
- Technical support and training
- Consultancy for optimization of maintenance, calibration and engineering



We support with digital capabilities

Better decisions based on data

- Heartbeat Technology for diagnostics, verification and monitoring
- Netilion cloud-based IIoT ecosystem for digital services









A photograph of two men, likely engineers or project managers, standing on a construction site. They are both wearing hard hats; the man on the left has a blue one, and the man on the right has a white one with the 'EH' logo. They are both smiling and looking towards the right. The man on the right is holding a large set of blueprints. They are standing behind a metal railing. In the background, there are green hills and a clear blue sky. The overall tone is professional and positive.


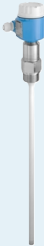








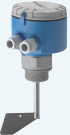






Important process measuring parameters

Helping you provide valuable insights into your process


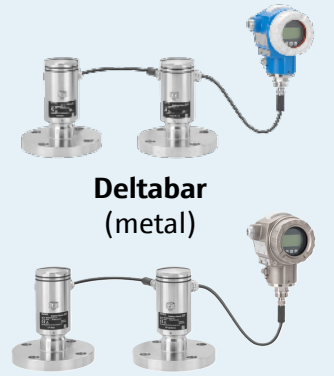



Flow Measurement – Varieties

Mass flow / volume flow						
Liquids			 <p>Promag (electromagnetic) <i>conductive liquids only</i></p>			
Gases	 <p>Promass (Coriolis) <i>dry steam only</i></p>	<p>t-mass (thermal)</p>		 <p>Prowirl (vortex)</p>	<p>FLOWSIC (ultrasonic)</p>	<p>Prosonic Flow (ultrasonic)</p>
Steam						

Level Measurement – Varieties

	Point level detection	Continuous level measurement
Liquids	<div><p>Liquiphant (vibronic)</p></div> <div><p>Liquicap (capacitance)</p></div> <div><p>Liquipoint (conductive)</p></div> <div><p>Gammapiilot (radiometric)</p></div>	<div><p>Micropilot (radar)</p></div> <div><p>Levelflex (guided radar)</p></div> <div><p>Prosonic (ultrasonic)</p></div> <div><p>Micropilot (radar)</p></div>
Solids	<div><p>Soliphant (vibronic)</p></div> <div><p>Soliwave (free space radar)</p></div> <div><p>Soliswitch (electromechanical)</p></div> <div><p>Solicap (capacitance)</p></div> <div><p>Gammapiilot (radiometric)</p></div>	<div><p>Micropilot (radar)</p></div> <div><p>Levelflex (guided radar)</p></div> <div><p>Prosonic (ultrasonic)</p></div> <div><p>Gammapiilot (radiometric)</p></div>














Pressure measurement – Varieties

	Pressure	Differential pressure	Hydrostatic pressure
Liquids	 <div>Cerabar (metal & ceramic)</div> <div>Cerabar (metal)</div> <div>Ceraphant (metal & ceramic)</div>	 <div>Deltabar (metal)</div> <div>Deltabar (metal & ceramic)</div>	 <div>Waterpilot (metal & ceramic)</div> <div>Deltapilot (metal)</div>
Gases		 <div>Deltabar (metal)</div>	 <div>Deltapilot FMB50 (metal/Contite)</div>

Temperature measurement – Varieties

		Invasive						Non-invasive		
Sensors	Liquids									
	Gases & steam	Compact (industrial + hygienic)		Modular (industrial + hygienic)		Cable probes			SurfaceLine	SkinPoint (customized solutions)
	Solids						MultiSens (multipoint)			
Transmitters		Integrated								

Analytical Measurement - Varieties

	pH/ORP	Conductivity	Dissolved oxygen	Disinfection (Chlorine, Bromine, Ozone)	Turbidity, PAH Sludge level	Sum parameters, Metals, Nutrients, Color	Automatic water samplers	
Sensors	 Process sensors Lab sensors	 Process sensors Lab sensor	 Process sensors Lab sensor	 Process sensors	 Process sensors	 Process sensors		
Integrated transmitter		 Compact device				 Analyzers	 Stationary Portable	
Transmitters	 Handheld						 Field transmitters	 DIN-rail transmitters

Product and system integration

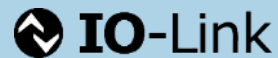
Wide range of digital communication



Ethernet/IP



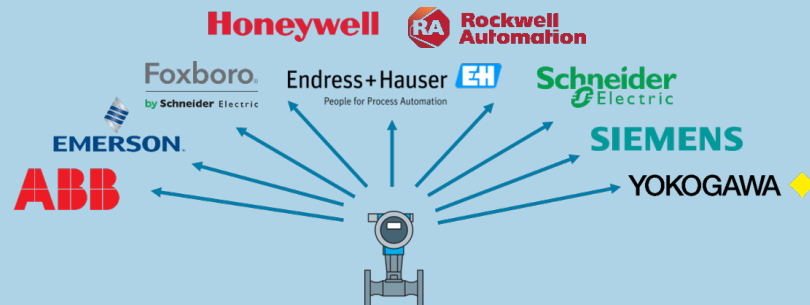
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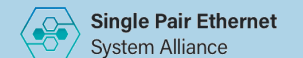
Relevant integration technologies



Tested with all major control and asset management systems



Active participation in organizations for the development of open standards



Digital Data Chain Consortium

Summary

- Investments in automation quickly pays-off in the form of savings due to process and product improvement
- Choose a trusted supplier-partner with not just quality products but also
 - Comprehensive portfolio
 - Industry expertise and application knowledge
 - Offering services with added value
 - Delivering innovations to meet changing needs (e.g. digitalization, IIoT)
 - Closer to customer for delivery and support (pre-sales and post-sales)
- Instruments with wide-variety of technologies and types available.
 - Choosing the right one that suits best is important.

A low-angle shot of two rock climbers on a steep, craggy rock face. The climber on the right, wearing a grey jacket and helmet, is reaching out to assist the climber on the left, who is wearing a dark green shirt and helmet. The sun is shining brightly from the upper right, creating a lens flare effect. The background is a clear blue sky.

#TeamUpToImprove

Thank you very much for your attention.