Solutions for steam, compressed air, heating, cooling and industrial gases

Endress+Hauser

Tap to navigate

Energy savings in utilities

Saving energy »

Monitoring & measuring »

Key applications

Steam, boiler and heat exchanger

Compressed air systems

Heating systems

Cooling systems

Industrial gas plants

Always close at hand »

Saving energy in key utilities applications

Industrial energy efficient solutions for steam, compressed air, heating, cooling and industrial gases starts with proper instrumentation.

Often, a lack of data or comprehensive energy management system comes from the absence of process measurement. Companies looking to reduce operating costs and increase competitiveness need to consider saving energy.

Many opportunities exist for savings in steam, compressed air, heating, cooling and industrial gases utility networks. Comprehensive energy monitoring can cut energy consumption anywhere from 5 to 15%.

Endress+Hauser is an all-in-one provider with various instruments to meet your comprehensive energy monitoring from a single source.

Today, Endress+Hauser offers:

- Various solutions for multiple energy applications
- Professional energy monitoring system planning, commissioning and maintenance
- Project management and engineering for simple solutions, including boiler efficiency monitoring directly to system solutions
- Precise, robust and reliable measuring instruments
- Data logging and transfer with smart devices
- Accurate measurement — with calibrated instrumentation — for energy flows
- Expert advice
- A global service network

Monitoring and measuring – a symbiotic relationship

Gas, steam and water are vital for plant operations across every industry in utilities. Energy is used to produce, transport and distribute compressed air, steam, natural gas and cooling or hot water. With that said, efficiency is critical. Therefore, measuring equipment must objectively measure energy flows and consumption and process data and present those results as energy performance indicators (EnPI), according to ISO 50001/ ISO 50006. At Endress+Hauser, we have everything you need to complete these tasks with top-of-the-line measuring devices, system components and intelligent solutions to suit your application.

What is ...

... ISO 50001?

This standard specifies that organizations wishing to implement an energy management system must capture energy performance indicators. These indicators must be regularly reported, checked and compared against an energy baseline. Potential areas for savings are then evaluated and improvement measures are initiated in plans, buildings or factories.

... ISO 50006?

This standard provides step-by-step guidance to companies on establishing robust energy performance indicators and a solid energy baseline for later comparison. This standard also contains several real-life examples since it's often difficult to identify the relevant variables in an energy system and adequately factor them in when determining energy performance indicators. Variables include weather conditions, balance period, plant size, variations in production or the energy source.

Examples of energy performance indicators

- Total primary energy consumption
- Improvement in energy intensity for the baseline year
- Adjustment for primary energy demand
- Energy savings for the current year
- Energy savings since the baseline year
- Improvement in energy intensity for the current year
- Total consumed primary energy
- Electricity, water or fuel consumption (total values, peak loads, etc.)
- Specific energy consumption, i.e., energy consumption per quantity of produced medium: compressed air, steam, hot water
- Efficiency of steam boilers

How to measure material and energy flows for sustainable energy management

- Define the desired “functional area” (e.g., factory complex, building, floor, manufacturing department, process)
- Measure/evaluate the actual material and energy flows (raw materials, fuel, water, electricity, steam, compressed air, etc.)
- Analyze the values measured (data basis)
- Create energy performance indicators
- Define energy optimization measures (using the energy baseline)
- Control and monitor efficiency improvements achieved

Measurement for steam, boiler and heat exchanger quantity and quality

Efficiently transfer energy to industrial processes

Steam is routinely used for heating and power generation in turbines and cleaning purposes. However, boilers use 40% of fossil fuels for steam generation. Today, steam management covers more than just checking water levels, conductivity, pH value, temperature and pressure in the boiler. Fortunately, steam systems allow for numerous options for saving, re-using and reclaiming energy in terms of generation, distribution, billing and boiler efficiency.

Steam, boiler and heat exchanger

Endress+Hauser

Proline Prowirl F 200
(flow measurement)

Proline t-mass F 300
(flow measurement)

Cerabar PMP71B
(pressure measurement)

Liquiphant FTL64
(level measurement)

Levelflex FMP54
(level measurement)

TH13 Modular RTD thermometer
(temperature measurement)

Liquiline CM448
(liquid analysis measurement)

pH sensor Memosens CPS11E
(liquid analysis measurement)

Digital conductivity sensor Memosens CLS15E
(liquid analysis measurement)

Memograph M RSG45
(data manager)

Proline Prowirl F 200

(flow measurement)

- Multivariable vortex meter for direct mass and energy / heat measurement of saturated or superheated steam with best-in-class integrated flow computer
- Optionally available with integrated pressure and temperature compensation for mass, energy and delta heat outputs
- Optionally available with integrated compensation of dryness fraction for highest accuracy in mass and energy outputs
- Maximum accuracy thanks to “PremiumCal” calibration
- Optional version with integrated diameter reduction by one- or two-line sizes with the same installation length

Additional information

Web Brochure (PDF) Video

Proline t-mass F 300

(flow measurement)

- Flanged version available with integrated flow conditioner for shortest inlet runs, or insertion version for larger pipelines
- High turndown (≥100:1)
- Direct mass flow measurement without external pressure and temperature compensation
- Reliable monitoring—measurement or detection of reverse flow
- Easy maintenance—removable sensor
- Full access to process and diagnostic information—numerous, freely combinable I/Os and fieldbuses
- Reduced complexity and variety—freely configurable I/O functionality

Additional information

Web Brochure (PDF) Video

Cerabar PMP71B

(pressure measurement)

- Simplicity and reduced time for commissioning associated with Bluetooth, SmartBlue and Commissioning Wizard
- For reliable monitoring of steam pressure at the boiler outlet or in the main steam line
- Minimize systematic faults with remote SIL locking and monitoring of safety relevant parameter settings using a guided software assistant
- Fitted with shut off valve and siphon (accessories)
- Large display with backlight for excellent readability

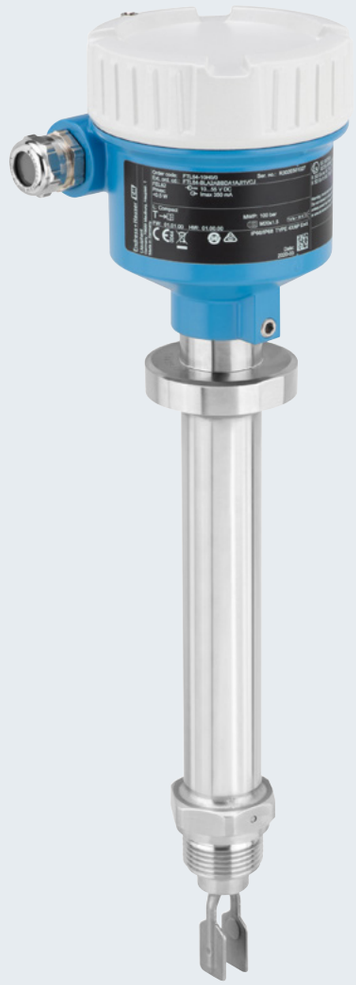
Additional information

Web Brochure (PDF) Video

Liquiphant FTL64

(level measurement)

- Developed according to IEC 61508 for highest safety – SIL2/3 application and WHG certified
- Simple and quick periodic proof-testing with guided wizards via SmartBlue app or via test button or magnetic pin
- Possible initiation of the device via digital communication for a fast and easy testing of the safety loop
- Heartbeat Technology allows safe, continuous diagnostics and a simple verification without process interruption
- Centralized asset management with easy online access to all device information thanks to digital communication
- Second line of defense to protect the environment
- For process temperatures up to 280 °C (536 °F)



Additional information

Web Brochure (PDF) Video

Levelflex FMP54

(level measurement)

- Gas phase compensation for high temperature and pressure applications
  Process temperature: –196 to +450 °C (–320 to +842 °F)
  Process pressure: –1 to +400 bar (–14.5 to +5800 psi)
- Heartbeat Technology allows safe, continuous diagnostics and a simple verification, without process interruption
- Easy proof-testing for SIL and WHG
- Reliable steam drum / boiler water level measurement
- International explosion protection certificates, overfill protection WHG, SIL, marine and boiler approvals

Additional information

Web Video

TH13 Modular RTD thermometer

(temperature measurement)

- Robust device with a bar-stock thermowell
- Ready for use with various housing transmitter heads to meet the application and space requirement needs
- A variety of process connections, dimensions and materials (like 316L SS and Hastelloy C276)
- offer flexible application possibilities
- Unit offers enhanced measurement accuracy and reliability
- Designed for use in all types of process industries, including heavy industries, due to its rugged design
- Maximum process pressure at 20 °C: 100 bar (1.450 psi)
- Temperature range for PT100 WW: -200 °C to 600 °C (-328 °F to 1,112 °F); StrongSens: -50 °C to 500 °C (-58 °F to 932 °F); PT100 TF: -50 °C to 200 °C (-58 °F to 392 °F)
- Provides long-term stability: ≤0.05% per year
- Comparable to the T13 explosion proof PT100 thermometer

Additional information

Web

Liquiline CM448

(liquid analysis measurement)

- One controller for all parameters and applications, intuitive user interface, automatic sensor recognition, hot plug & play with pre-calibrated Memosens sensors
- Eight channels in one device provide the highest flexibility for every measuring task
- Unique portfolio of communication standards suits every distributed control system (DCS)
- Saving configuration on SD card enables fast set-up on duplicate installations
- Integrated optional web server that allows the operator to remotely view diagnostic data, perform configurations, or access device parameters in any web browser — even via smartphone

Additional information

Web Brochure (PDF) Video

pH sensor Memosens CPS11E

(liquid analysis measurement)

- Extended storage of calibration and process data, enabling better trend identification and providing a future-proof basis for predictive maintenance and enhanced IIoT services
- Lab calibration and quick sensor exchange in the process result in minimized process downtime and longer sensor lifetime
- Long poison diffusion path or optimized ion trap prevent poisoning of the electrode reference. Large, dirt-repellent PTFE junction protects from soiling by the medium
- Process glass is suitable for the full pH range and pressure-stable up to 17 bar (246.5 psi) absolute
- Improved optional salt storage ensures reliable measurement in low conductivity applications such as boiler feed water
- Maximum process integrity through non-contact, inductive signal transmission

Additional information

Web

Brochure (PDF)

Video

Digital conductivity sensor Memosens CLS15E

(liquid analysis measurement)

- Designed for low maintenance and a long operating life, the sensor offers best value for money
- Thanks to its electrode geometry, Memosens CLS15E provides reliable and accurate measured values at low conductivities (e.g., make-up water or feedwater)
- A quality certificate stating the individual cell constant enables perfect adjustment of the measuring point
- IIoT ready
- Non-contact inductive signal transmission ensures maximum process safety

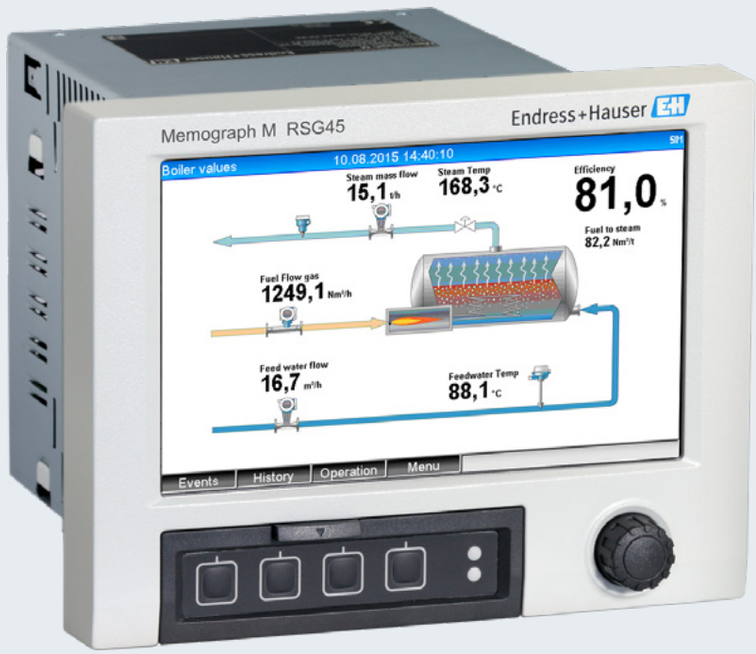
Additional information

Web Video

Memograph M RSG45

(data manager)

- Tamper-proof data storage and personalized access authorization with electronic signature (FDA 21 CFR 11)
- Sensors directly connected provide accurate process values for calculation and logging
- Optional stainless-steel front with touch operation: trouble-free operation in demanding environments
- DIN rail version: compact device with small dimensions for cabinet mounting or remote field applications
- Supports common fieldbuses (Modbus, PROFIBUS DP, PROFINET, EtherNet/IP) for fast integration into diverse systems
- Remote access to device operation and visualization for lower maintenance costs
- Files saved on SD card transmitted directly to a PC via HTTP without any additional software



Additional information

Web

Video

Measurement for compressed air systems

Active reduction of energy loss and leakage

Nearly 10% of industry electricity consumption is used to generate compressed air using compressors. Unfortunately, approximately 95% of that is lost due to unproductive waste heat. Furthermore, 30% of the compressed air generated is lost due to leakages in the supply network. However, proper measurement can reduce this by up to 10%, lower power consumption, and save you tens of thousands of dollars each year. Endress+Hauser instrumentation allows you to reliably identify weaknesses and improve your savings potential in your compressed air system.

Proline t-mass I 300/500
(flow measurement)

Proline Prowirl F 200
(flow measurement for wet compressed air)

TH13 Modular RTD thermometer
(temperature measurement)

Cerabar PMP71B
(pressure measurement)

Cost Effective Cerabar PMP21
(pressure measurement)

Proline t-mass I 300/500

(flow measurement)

- Monitoring/warning function if drops of condensate form on the sensor or pulsating flow occurs
- High turndown (≥100:1)
- Flexible, convenient programming based on 21 standard gases or freely definable gas mixtures
- High level of process control — premium measuring accuracy and repeatability
- Reliable monitoring — detection of process disturbances and reverse flow
- Flexible installation — suitable for large dimensional range and circular pipes or rectangular ducts
- Full access to process and diagnostic information — numerous, freely combinable I/Os and fieldbuses
- Reduced complexity and variety — freely configurable I/O functionality
- Integrated verification
- Optional bidirectional measurement

Additional information

Web Brochure (PDF) Video

Proline Prowirl F 200

(flow measurement for wet compressed air)

- Easy energy management — integrated temperature and pressure measurement for steam and gases
- Space-saving engineering — inlet run compensation
- Same accuracy down to Reynolds number 10 000 — most linear Vortex meter body
- Long-term stability — robust drift-free capacitive sensor
- Convenient loop-powered device wiring — separate connection compartment
- Safe operation — no need to open the device due to display with touch control, background lighting

Additional information

Web Brochure (PDF) Video

TH13 Modular RTD thermometer

(temperature measurement)

- Robust device with a bar-stock thermowell
- Ready for use with various housing transmitter heads to meet the application and space requirement needs
- A variety of process connections, dimensions and materials (like 316L SS and Hastelloy C276)
- offer flexible application possibilities
- Unit offers enhanced measurement accuracy and reliability
- Designed for use in all types of process industries, including heavy industries, due to its rugged design
- Maximum process pressure at 20 °C: 100 bar (1.450 psi)
- Temperature range for PT100 WW: -200 °C to 600 °C (-328 °F to 1,112 °F); StrongSens: -50 °C to 500 °C (-58 °F to 932 °F); PT100 TF: -50 °C to 200 °C (-58 °F to 392 °F)
- Provides long-term stability: ≤0.05% per year
- Comparable to the T13 explosion proof PT100 thermometer

Additional information

Web

Cerabar PMP21

(pressure measurement)

- Cost-effective and time-saving installation and set up within the plant due to very compact construction and factory customizable measuring ranges
- Designed to withstand the harsh conditions in the process industry with ingress protection grades up to IP 68 and high-quality materials like 316L
- Can be used in most areas as it offers various certifications like hazardous area or marine certificates
- Analogue 4-20 mA or IO-Link communication options
- Process temperature: -40 to +100°C (-40 to +212°F)
- Process pressure: 400mbar to +400bar (6 to 6,000psi)
- Accuracy: ±0.3% of span

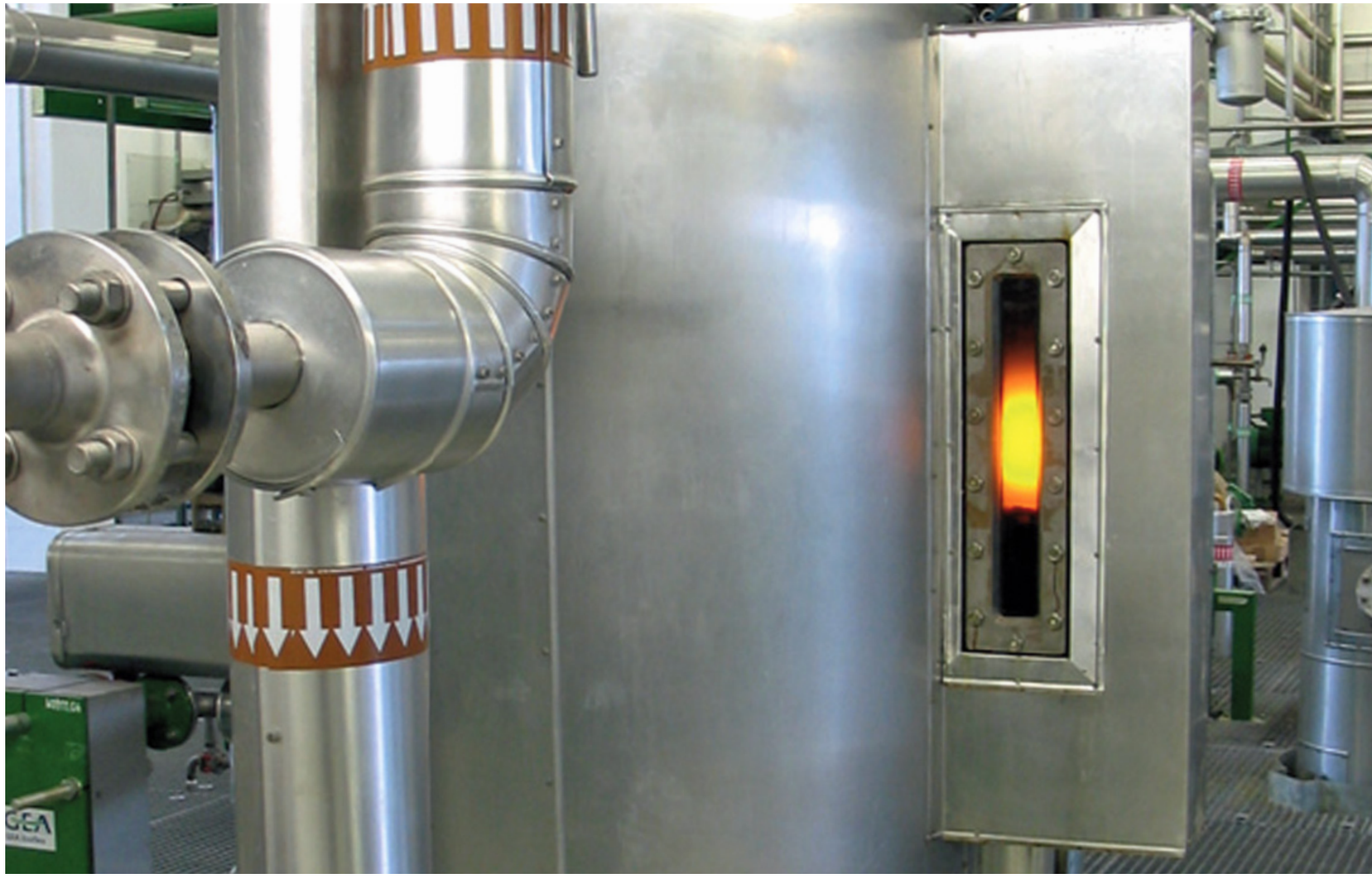
Additional information

Web

Measurement for heating systems

Lower heating costs with efficient energy management

Energy loss is relatively high in boilers and furnaces, leading to inefficient combustion, incorrect operation or poor maintenance and servicing. Efficiency measurement is the simplest way to gauge losses and learn what actions need to be taken. Monitoring fuel consumption, combustion air, flue gas temperature or the transmission rate of thermal energy allows users to obtain clarity of heat generation efficiency. Proper measurement in heating systems can cut energy consumption by up to 55%.



Proline t-mass I 300/500
(flow measurement of natural gas)

Proline Prosonic Flow E 100
(flow measurement of hot water)

Cerabar PMC71B
(pressure measurement)

TH13 Modular RTD thermometer
(temperature measurement)

Turbimax CUS52D
(liquid analysis measurement)

pH sensor Memosens CPS11E
(liquid analysis measurement)

Optical oxygen sensor Memosens COS81E
(liquid analysis measurement)

Conductivity sensor Memosens CLS82E
(liquid analysis measurement)

EngyCal RH33
(energy computer)

Cost Effective Cerabar PMP21
(pressure measurement)

Proline t-mass I 300/500

(flow measurement of natural gas)

- Monitoring/warning function if drops of condensate form on the sensor or pulsating flow occurs
- High turndown (≥100:1)
- Flexible, convenient programming based on 21 standard gases or freely definable gas mixtures
- High level of process control — premium measurement accuracy and repeatability
- Reliable monitoring — detection of process disturbances and reverse flow
- Flexible installation — suitable for large dimensional range and circular pipes or rectangular ducts
- Full access to process and diagnostic information — numerous, freely combinable I/Os and fieldbuses
- Reduced complexity and variety — freely configurable I/O functionality
- Integrated verification

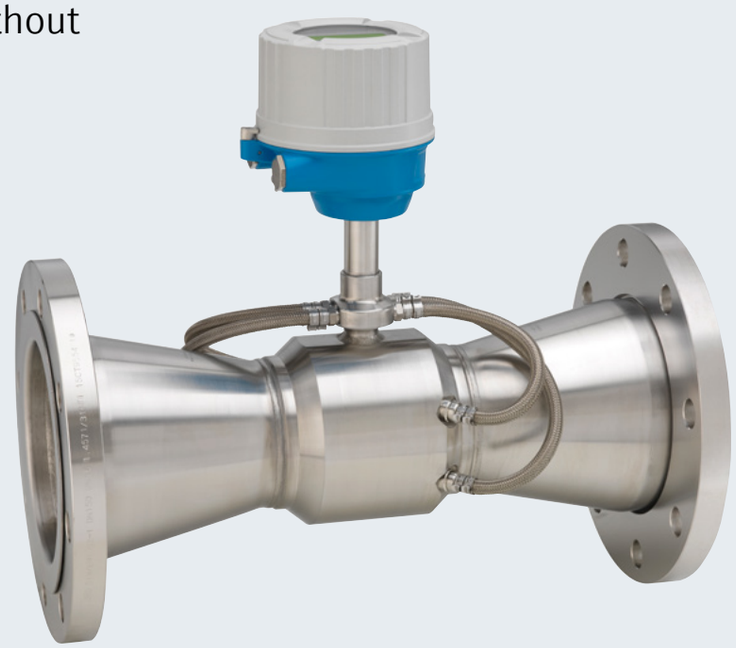
Additional information

Web Brochure (PDF) Video

Proline Prosonic Flow E 100

(flow measurement of hot water)

- Long-term stability — reliable, robust sensor
- Reducing further measuring point — multivariable device
- Dependable flow measurement — high turndown (200:1)
- Time-saving local operation without additional software and hardware — integrated web server
- Extended calibration intervals — integrated device verification
- Easy commissioning — brief parameter explanations
- Prosonic Flow E Heat with optional custody transfer approvals
- Prosonic Flow W 400 for clamp-on measurement, installations without process interruption



Additional information

Web

Brochure (PDF)

Cerabar PMC71B

(pressure measurement)

- Easy to use with smart technology and productivity enhancements
- With Heartbeat Verification you can verify the health of the device while the process is running
- Simple indication of device status and displays changes from green to red when diagnostic messages occur
- Reduce systematic failures with error-free SIL commissioning and instrument guided proof testing
- Wireless control of the device in hard-to-reach process areas
- Large display with backlight for excellent readability

Additional information

Web Video

TH13 Modular RTD thermometer

(temperature measurement)

- Robust device with a bar-stock thermowell
- Ready for use with various housing transmitter heads to meet the application and space requirement needs
- A variety of process connections, dimensions and materials (like 316L SS and Hastelloy C276)
- offer flexible application possibilities
- Unit offers enhanced measurement accuracy and reliability
- Designed for use in all types of process industries, including heavy industries, due to its rugged design
- Maximum process pressure at 20 °C: 100 bar (1.450 psi)
- Temperature range for PT100 WW: -200 °C to 600 °C (-328 °F to 1,112 °F); StrongSens: -50 °C to 500 °C (-58 °F to 932 °F); PT100 TF: -50 °C to 200 °C (-58 °F to 392 °F)
- Provides long-term stability: ≤0.05% per year
- Comparable to the T13 explosion proof PT100 thermometer

Additional information

Web

Turbimax CUS52D

(liquid analysis measurement)

- Highly accurate and reliable monitoring of your water quality — even at the lowest turbidity
- Intelligent design and practical accessories enable sophisticated self-cleaning capabilities and minimize maintenance
- One sensor for all measuring points and all installation environments (inline or immersion)
- Individually adaptable sensor response time

Additional information

Web

Brochure (PDF)

pH sensor Memosens CPS11E

(liquid analysis measurement)

- Extended storage of calibration and process data, enabling better trend identification and providing a future-proof basis for predictive maintenance and enhanced IIoT services
- Lab calibration and quick sensor exchange in the process result in minimized process downtime and longer sensor lifetime
- Long poison diffusion path or optimized ion trap prevent poisoning of the electrode reference. Large, dirt-repellent PTFE junction protects from soiling by the medium
- Process glass is suitable for the full pH range and pressure-stable up to 17 bar (246.5 psi) absolute
- Improved optional salt storage ensures reliable measurement in low conductivity applications such as boiler feed water
- Maximum process integrity through non-contact, inductive signal transmission

Additional information

Web Brochure (PDF) Video

Optical oxygen sensor Memosens COS81E

(liquid analysis measurement)

- Precalibrate the sensor in your lab and then swap it into your process with plug & play. It does not need polarization time and is immediately ready to measure
- A built-in reference LED compensates for the ageing of the measuring LED, ensuring precise measured values
- Memosens COS81E does not have a difficult-to-handle electrolyte or sensitive membrane. Just exchange the sensor cap, perform a calibration and you are done
- Perfectly suited for inertization processes thanks to its approvals for hazardous and dust-explosive areas
- Memosens 2.0 offers extended storage of calibration and process data, enabling better trend identification and providing a future-proof basis for predictive maintenance and enhanced IIoT services

Additional information

Web Video

Conductivity sensor Memosens CLS82E

(liquid analysis measurement)

- Absolute loop safety thanks to Memosens and unique detection of build-up on electrodes
- The broad measuring range enables monitoring of core processes and final rinse with one sensor, saving costs
- Its compact design makes the sensor suitable for small pipe diameters and narrow, space-limited installations
- Quality certificate stating the individual cell constant allows precise adjustment of the measurement
- Non-contact, inductive signal transmission ensures high process and data integrity
- IIoT ready

Additional information

Web Video

EngyCal RH33

(energy computer)

- Certified BTU meter suitable for custody transfer measurement
- Wide range of calculation functions: e.g., power, volume, density, enthalpy, enthalpy differential, mass, temperature differential, energy, deficits or total amounts
- Electronic pairing of temperature sensors using CvD (Callendar-van-Dusen) coefficients

Additional information

Web

Cerabar PMP21

(pressure measurement)

- Cost-effective and time-saving installation and set up within the plant due to very compact construction and factory customizable measuring ranges
- Designed to withstand the harsh conditions in the process industry with ingress protection grades up to IP 68 and high-quality materials like 316L
- Can be used in most areas as it offers various certifications like hazardous area or marine certificates
- Analogue 4-20 mA or IO-Link communication options
- Process temperature: -40 to +100°C (-40 to +212°F)
- Process pressure: 400mbar to +400bar (6 to 6,000psi)
- Accuracy: ±0.3% of span

Additional information

Web

Measurement for cooling systems

Enhance your cooling water process

The production of cooling energy requires a significant amount of energy, accounting for roughly 10% of electricity consumption across all industries. The slightest reduction in energy consumption can deliver substantial cost savings. However, an efficient cooling system requires more than simply efficient components. With smart energy solutions, systems and processes can be optimized to ensure cooling systems are energy efficient.

Cooling systems

Endress+Hauser

Proline Promag P 10
(flow measurement)

Proline Prosonic Flow E 100
(flow measurement)

TH13 Modular RTD thermometer
(temperature measurement)

Cerabar PMC71B
(pressure measurement)

Optical oxygen sensor Memosens COS81E
(liquid analysis measurement)

Conductivity sensor Memosens CLS82E
(liquid analysis measurement)

Turbimax CUS52D
(liquid analysis measurement)

pH sensor Memosens CPS11E
(liquid analysis measurement)

Chlorine dioxide sensor Memosens CCS50D
(liquid analysis measurement)

Silica analyzer Liquiline System CA80SI
(liquid analysis measurement)

EngyCal RH33
(energy computer)

Cost Effective Cerabar PMP21
(pressure measurement)

Proline Promag P 10

(flow measurement)

- Diverse applications — wide variety of wetted materials
- Energy-saving flow measurement — no pressure loss due to cross section constriction
- Maintenance-free — no moving parts
- Optimum usability — operation with mobile devices and SmartBlue app or display with touch screen
- Simple, time-saving commissioning — guided parameterization in advance and in the field
- Integrated verification with Heartbeat Technology
- Optional 0 x DN full bore (no inlet/outlet, no pressure drop)
- Multivariable: Optionally integrated calibrated conductivity measurement

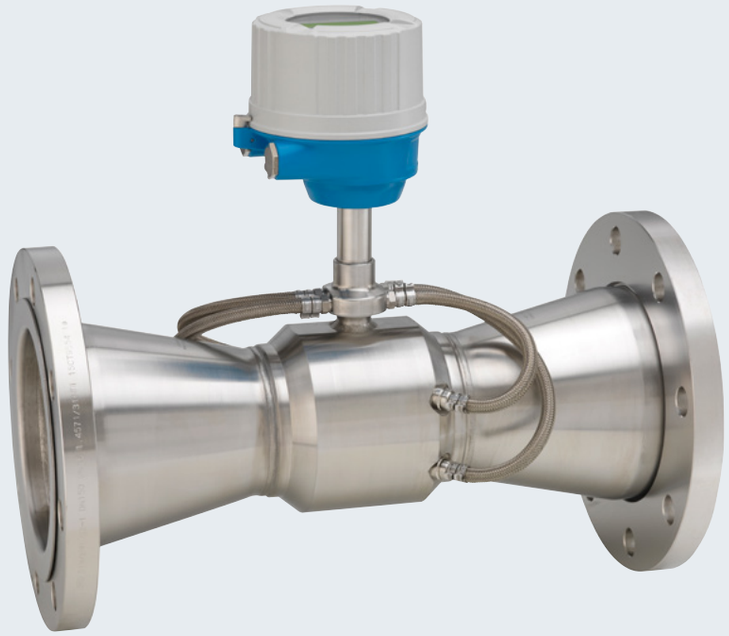
Additional information

Web Brochure (PDF) Video

Proline Prosonic Flow E 100

(flow measurement)

- Long-term stability — reliable, robust sensor
- Reducing further measuring point — multivariable device
- Dependable flow measurement — high turndown (200:1)
- Time-saving local operation without additional software and hardware — integrated web server
- Extended calibration intervals — integrated device verification
- Easy commissioning — brief parameter explanations
- Prosonic Flow E Heat with optional custody transfer approvals
- Prosonic Flow W 400 for clamp-on measurement, installations without process interruption



Additional information

Web

Brochure (PDF)

TH13 Modular RTD thermometer

(temperature measurement)

- Robust device with a bar-stock thermowell
- Ready for use with various housing transmitter heads to meet the application and space requirement needs
- A variety of process connections, dimensions and materials (like 316L SS and Hastelloy C276)
- offer flexible application possibilities
- Unit offers enhanced measurement accuracy and reliability
- Designed for use in all types of process industries, including heavy industries, due to its rugged design
- Maximum process pressure at 20 °C: 100 bar (1.450 psi)
- Temperature range for PT100 WW: -200 °C to 600 °C (-328 °F to 1,112 °F); StrongSens: -50 °C to 500 °C (-58 °F to 932 °F); PT100 TF: -50 °C to 200 °C (-58 °F to 392 °F)
- Provides long-term stability: ≤0.05% per year
- Comparable to the T13 explosion proof PT100 thermometer

Additional information

Web

Cerabar PMC71B

(pressure measurement)

- Easy to use with smart technology and productivity enhancements
- With Heartbeat Verification you can verify the health of the device while the process is running
- Simple indication of device status and displays changes from green to red when diagnostic messages occur
- Reduce systematic failures with error-free SIL commissioning and instrument guided proof testing
- Wireless control of the device in hard-to-reach process areas
- Large display with backlight for excellent readability

Additional information

Web Video

Optical oxygen sensor Memosens COS81E

(liquid analysis measurement)

- Precalibrate the sensor in your lab and then swap it into your process with plug & play. It does not need polarization time and is immediately ready to measure
- A built-in reference LED compensates for the ageing of the measuring LED, ensuring precise measured values
- Memosens COS81E does not have a difficult-to-handle electrolyte or sensitive membrane. Just exchange the sensor cap, perform a calibration and you are done
- The sensor can be used in process applications as well as benchtop fermenters. Providing you with 100% measuring consistency from the first lab trials to the final scaled-up process and your process lab
- Perfectly suited for inertization processes thanks to its approvals for hazardous and dust-explosive areas
- Memosens 2.0 offers extended storage of calibration and process data, enabling better trend identification and providing a future-proof basis for predictive maintenance and enhanced IIoT services

Additional information

Web Video

Conductivity sensor Memosens CLS82E

(liquid analysis measurement)

- Absolute loop safety thanks to Memosens and unique detection of build-up on electrodes
- The broad measuring range enables monitoring of core processes and final rinse with one sensor, saving costs
- Its compact design makes the sensor suitable for small pipe diameters and narrow, space-limited installations
- Quality certificate stating the individual cell constant allows precise adjustment of the measurement
- Non-contact, inductive signal transmission ensures high process and data integrity
- IIoT ready

Additional information

Web Video

Turbimax CUS52D

(liquid analysis measurement)

- Highly accurate and reliable monitoring of your water quality even at the lowest turbidity
- Intelligent design and practical accessories enable sophisticated self-cleaning capabilities and minimize maintenance
- One sensor for all measuring points and all installation environments (inline or immersion)
- Individually adaptable sensor response time

Additional information

Web

Brochure (PDF)

pH sensor Memosens CPS11E

(liquid analysis measurement)

- Extended storage of calibration and process data, enabling better trend identification and providing a future-proof basis for predictive maintenance and enhanced IIoT services
- Lab calibration and quick sensor exchange in the process result in minimized process downtime and longer sensor lifetime
- Long poison diffusion path or optimized ion trap prevent poisoning of the electrode reference. Large, dirt-repellent PTFE junction protects from soiling by the medium
- Process glass is suitable for the full pH range and pressure-stable up to 17 bar (246.5 psi) absolute
- Improved optional salt storage ensures reliable measurement in low conductivity applications such as boiler feed water
- Maximum process integrity through non-contact, inductive signal transmission

Additional information

Web Brochure (PDF) Video

Chlorine dioxide sensor Memosens CCS50D

(liquid analysis measurement)

- The right sensor version for every application: From trace measurement up to chlorine dioxide concentrations of 200 mg/l
- Fast response time provides accurate process view and enables prompt reaction to process changes as well as efficient process control
- Increased process safety: precise and long-term stable measurement ensures consistent process monitoring and allows for lowest disinfectant concentration
- More process up-time thanks to fast sensor exchange: precalibrate the sensor in your lab and then swap it into your process with plug & play

Additional information

Web

Brochure (PDF)

Silica analyzer Liquiline System CA80SI

(liquid analysis measurement)

- Protection of expensive plant equipment: The silica analyzer monitors trace levels of silica
- Early online detection of critical silica levels ensures efficient plant performance and optimizes maintenance and blowdown cycles by early counter measures
- Standard heteropoly blue method allows direct comparability to lab results
- Best reliability: Unique combination of peristaltic and high-precisions dispenser pumps ensures stable operation and low maintenance
- Optimized investment: The option of up to six sample channels meets changing process needs at any time, and connection of Memosens sensors allows an easy upgrade to a complete measuring station
- Seamless integration into process control systems thanks to digital field buses such as Modbus, EtherNet/IP or PROFIBUS
- Advanced diagnostics and remote access via web server enable fast remedy in case of errors

Additional information

Web

Brochure (PDF)

EngyCal RH33

(energy computer)

- Certified BTU meter suitable for custody transfer measurement
- Wide range of calculation functions: e.g., power, volume, density, enthalpy, enthalpy differential, mass, temperature differential, energy, deficits or total amounts

Additional information

Web

Cerabar PMP21

(pressure measurement)

- Cost-effective and time-saving installation and set up within the plant due to very compact construction and factory customizable measuring ranges
- Designed to withstand the harsh conditions in the process industry with ingress protection grades up to IP 68 and high-quality materials like 316L
- Can be used in most areas as it offers various certifications like hazardous area or marine certificates
- Analogue 4-20 mA or IO-Link communication options
- Process temperature: -40 to +100°C (-40 to +212°F)
- Process pressure: 400mbar to +400bar (6 to 6,000psi)
- Accuracy: ±0.3% of span

Additional information

Web

Measurement for industrial gases

How to enhance cost-effectiveness and accuracy in industrial gas plants

Process industry utilities use copious amounts of hydrogen, carbon dioxide, oxygen, nitrogen, argon and many other industrial gases for welding, shielding, purging and modified atmosphere packaging. Therefore, avoiding energy loss in industrial gas plants is critical. However, there's more to it than just measuring the total industrial gas consumption. Gases must be monitored efficiently by measuring flow in the distribution line or directly at the consumer. Instruments such as thermal flowmeters are effective submeters and allow for a detailed allocation of costs to buildings, floors, departments, production processes and more.

Industrial gas plants

Endress+Hauser

Proline Promass F 500
(flow measurement)

Proline t-mass I 300/500
(flow measurement of industrial gases)

Cerabar PMC71B
(pressure measurement)

TH13 Modular RTD thermometer
(temperature measurement)

Proline t-mass A 150/ B 150
(flow measurement in submetering)

Cost Effective Cerabar PMP21
(pressure measurement)

Proline Promass F 500

(flow measurement)

- For highly accurate measurement of mass flow, density and volume flow of cryogenic liquefied gases such as nitrogen, argon or liquefied natural gas
- Applicable down to −196 °C (−321 °F)
- No straight inlet runs required
- Suitable for custody metering
- Multivariable: including monitoring of density

Additional information

Web

Proline t-mass I 300/500

(flow measurement of industrial gases)

- Monitoring/warning function if drops of condensate form on the sensor or pulsating flow occurs
- High turndown (≥100:1)
- Flexible, convenient programming based on 21 standard gases or freely definable gas mixtures
- High level of process control — premium measurement accuracy and repeatability
- Reliable monitoring — detection of process disturbances and reverse flow
- Optional bidirectional flow measurement
- Flexible installation — suitable for large dimensional range and circular pipes or rectangular ducts
- Full access to process and diagnostic information — numerous, freely combinable I/Os and fieldbuses
- Reduced complexity and variety — freely configurable I/O functionality
- Integrated verification
- Suitable for the measurement of air, CO_2, nitrogen and argon

Additional information

Web Brochure (PDF) Video

Cerabar PMC71B

(pressure measurement)

- Easy to use with smart technology and productivity enhancements
- With Heartbeat Verification you can verify the health of the device while the process is running
- Simple indication of device status and displays changes from green to red when diagnostic messages occur
- Reduce systematic failures with error-free SIL commissioning and instrument guided proof testing
- Wireless control of the device in hard-to-reach process areas
- Large display with backlight for excellent readability

Additional information

Web Video

TH13 Modular RTD thermometer

(temperature measurement)

- Robust device with a bar-stock thermowell
- Ready for use with various housing transmitter heads to meet the application and space requirement needs
- A variety of process connections, dimensions and materials (like 316L SS and Hastelloy C276)
- offer flexible application possibilities
- Unit offers enhanced measurement accuracy and reliability
- Designed for use in all types of process industries, including heavy industries, due to its rugged design
- Maximum process pressure at 20 °C: 100 bar (1.450 psi)
- Temperature range for PT100 WW: -200 °C to 600 °C (-328 °F to 1,112 °F); StrongSens: -50 °C to 500 °C (-58 °F to 932 °F); PT100 TF: -50 °C to 200 °C (-58 °F to 392 °F)
- Provides long-term stability: ≤0.05% per year
- Comparable to the T13 explosion proof PT100 thermometer

Additional information

Web

Proline t-mass A 150/B 150

(flow measurement in submetering)

- For direct mass/corrected volume measurement of industrial gases without pressure or temperature compensation
- Negligible pressure loss compared with mechanical flowmeters
- High turndown (up to 100:1), ideal for identifying leaks
- No moving parts
- Low-cost insertion version (t-mass B 150) or in-line version
- Suitable for the measurement of air, CO_2, nitrogen and argon

Additional information

Web (t-mass A 150)

Web (t-mass B 150)

Brochure (PDF)

Cerabar PMP21

(pressure measurement)

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- Can be used in most areas as it offers various certifications like hazardous area or marine certificates
- Analogue 4-20 mA or IO-Link communication options
- Process temperature: -40 to +100°C (-40 to +212°F)
- Process pressure: 400mbar to +400bar (6 to 6,000psi)
- Accuracy: ±0.3% of span

Additional information

Web

Always close at hand

Endress+Hauser

Did you know?

Endress+Hauser guarantees high measuring accuracy and operational safety — around the clock and for the entirety of your plant's life cycle — for each of its devices. With a dedicated team of sales and customer service representatives spread across the world, Endress+Hauser ensures you are always up and running and have optimal solutions for energy management.

No matter where you are in the world, Endress+Hauser is always close at hand.

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