Tailor-made field instrumentation, solutions and services

Discover your options

Endress+Hauser

People for Process Automation

The Endress+Hauser Group

For over 65 years, Endress+Hauser has been a reliable partner of the process industry. We help customers around the world to sustainably improve their processes, and thus their products.

Matthias Altendorf
CEO of the Endress+Hauser Group

Process measurement technology forms the core of our competence. With excellent products, solutions and services, we support our customers in making their processes safe, reliable, efficient and environmentally friendly – throughout the entire life cycle of a plant.

We are close to our customers worldwide. With a tight network of own sales centers and selected representatives, we safeguard competent support around the globe. We know our customers' applications and the special requirements of their industries. That's how, over many years, we have become what we are today: the People for Process Automation.

Production centers on four continents ensure that we can supply our customers fast and flexibly, wherever they are. The use of innovative technologies has advanced the development of our company from the very beginning. Step by step, we have strengthened our process analytical business by additional acquisitions. Our offering today is unique in variety and depth.

Unique corporate culture As a family-owned company, we act responsibly. We deal with customers, employees and shareholders on a basis of partnership. Our unique corporate culture characterizes these relationships. For us, profit is not the ultimate aim, but the result of good management, for which the basis is our financial solidity. Profits predominantly flow back into the company – thus helping us to secure our success and our independence for the long term.

Endress+Hauser was founded in 1953 by the Swiss Georg H. Endress and the German Ludwig Hauser. Since 1975 the company has been solely owned by the Endress family.

Discover your options

Tailor-made field instrumentation, solutions and services supporting you to sustainably improve your processes and products.

All industries strive to operate and optimize their processes to make them safe, reliable, efficient and environmentally friendly. However, each industry balances these goals differently and is subject to differing application and regulatory requirements. At Endress+Hauser, we know that the best support and industry partnerships are achieved through not only being experts in process measurement but also in your specific industry requirements. This is why we strive to continuously build on the knowledge we have gained over the decades through daily contact with our customers. What we learn about your industry trends, applications and regulations feeds back into our innovation process so that we further develop new and updated field instrumentation, services and solutions tailor-made for use in your industry.

Field instrumentation, system components and data managers Depending on your industry and application, field instruments are required to fulfill different demands whether it be precision, robustness, hygiene or efficiency. Endress+Hauser products measure and monitor flow, level, pressure and temperature. They analyze liquids and gases and visualize and record measured values. Our instruments use different measurement principles to operate reliably and accurately in any situation so that we can offer you a wide range of products for almost any requirement and specification.

Digital communication and software We also offer IIoT solutions and software tools for all industries and support the seamless integration of our field devices into many different automation systems. This guarantees you freedom of choice and the best possible functionality at optimal cost.

Solutions Dedicated solutions combine our offering for specific applications in your industry: inventory management, fluid metering, energy and analytical solutions including gas analysis. They are backed up by our field network engineering and plant asset management capabilities.

Services Whether you need support in emergency situations, services to complement your own capabilities or want to optimize your processes, we can help. Endress+Hauser provides competent, local service across our customer base the world over.

Browse this brochure, discover your options and get in touch with us. Our People for Process Automation will be delighted to support you in sustainably improving your processes and thus your products.

Food & Beverage

Chemical

Oil & Gas / Marine

Water & Wastewater

Primaries & Metal

Life Sciences

Power & Energy

Endress+Hauser
www.endress.com

Level

Continuous level measurement and point level detection in fluids and bulk solids

Visionary concepts in the development of new products produce innovative solutions that meet the challenges of tomorrow yet can be integrated into the new automation systems of today.

Since 1953, Endress+Hauser has been manufacturing level measurement devices for industrial use in fluids and bulk solids of all kinds. As a pioneer we developed new measuring principles like vibronic, established different methods for level measurement and point level detection and constantly optimized them.

Our complete level instrument portfolio amounts to several billion variants when you consider all the combinations of order options. You find the best fitting instrument for your specific needs with our online selection tools and our sales force. All instruments have trade-specific and safety-relevant certificates and approvals.

Level website:
www.endress.com/level

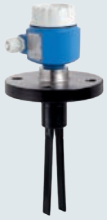
Radar
Continuous non-contact Time-of-Flight measurement in fluids and bulk solids, even under extreme conditions such as changes of medium, gas formation, vapor, vacuum.
Temperatures up to 450 °C; pressures up to 160 bar.

Ultrasonic
Continuous non-contact Time-of-Flight measurement in fluids and bulk solids. Independent of specific medium properties.
Temperatures up to 150 °C; pressures up to 4 bar.

Guided radar
Continuous Time-of-Flight measurement in fluids and bulk solids. Independent of product properties such as humidity, density, dielectric constant etc.
Reliable and safe interface measurement even with emulsion layers.
Temperatures up to 450 °C; pressures up to 400 bar.

Radiometry
Non-contact external measurement. For all extreme applications (e.g. toxic or highly aggressive media).
Any temperature, any pressure.

Vibronics for fluids
Point level switch for all fluids even in the presence of build-up, turbulence or air bubbles. Independent of the electrical properties of the medium.
Temperatures up to 280 °C; pressures up to 100 bar.



Vibronics for solids
Point level detection in all kinds of bulk solids up to a maximum grain size of approx. 10 mm. Calibrationfree, maintenance-free.
Temperatures up to 280 °C; pressures up to 25 bar.

Hydrostatic
Level optimized pressure sensor cell for measurement in fluids, pastes and sludges. Independent of foam formation and changing product properties.
Temperatures up to 400 °C; pressures up to 40 bar.

Differential pressure
Level measurement in closed, pressurized vessels. Not affected by dielectric constant, foam, turbulences or obstacles.
Temperatures up to 400 °C; pressures up to 420 bar.

Capacitance
Point level detection and continuous level measurement in fluids and bulk solids. Even with aggressive media and heavy build-up; condensate-proof.
Temperatures up to 400 °C; pressures up to 100 bar.

Conductive
Easy, cost-effective level limit detection in conductive fluids such as water, wastewater, liquid foodstuffs etc.
Temperatures up to 100 °C; pressures up to 10 bar.

Paddle switch
Low-cost point level switch for bulk solids of all kinds up to a grain size of 50 mm, solid weight > 100 g/l.
Temperatures up to 80 °C; pressures up to 0.8 bar.

Electromechanical level system
Robust, mechanical system for measurement in bulk solids for applications in high vessels (up to 70 m). Unaffected by heavy dust formation.
Temperatures up to 230 °C; pressures up to 3 bar.

Pressure

Process and differential pressure measurement in acids, sludges, gases or vapors

The fields of application for pressure measurement these days are varied, ranging from food and pharmaceuticals through to water and wastewater, chemicals, oil and gas, paper production and power generation. Pressure sensors ensure safety and supply important process data. In many cases pressure and differential pressure transmitters are used for level and flow measurement. This makes pressure one of the most important measured variables in process automation. For Endress+Hauser this is an incentive to forge ahead with advances and improvements in the development and production of high quality pressure instrumentation.

Endress+Hauser's wide range of devices for pressure measurement enables us to offer a pressure transmitter with ultra-modern technology and high quality materials for every application and every budget.

Whether acids, sludges, gases or vapors – a pressure device is generally located where all the action is. Sensors have to satisfy the high specific requirements of the applications from the initial development phase to final finished production. It takes more than just an understanding of physics to develop and produce the most important link with the process.

For more than 30 years, Endress+Hauser has been constantly developing and manufacturing pressure measurement and sensor technology for a wide variety of applications. Many of these solutions have set the standard and are unique to the market.

Pressure website:
www.endress.com/pressure

Transducer
A compact pressure transducer with preset measuring range. The Cerabar product family offers robust ceramic sensors up to 40 bar or metal sensors up to 400 bar for absolute and overpressure measurements.

Pressure switch
For safe measurement and monitoring of absolute pressure and overpressure in gases, vapors and fluids. Smooth operation with display and on-site operation as well as a modular adapter system for easy connection to all processes.

Analog and digital transmitters
Flexible device platform for universal application in your processes. This includes FDA-compliant materials and aseptic connections that are especially suitable for hygienic applications. The analog digital transmitters are available with the following electronics variants: analog, HART®, PROFIBUS® PA or FOUNDATION™ Fieldbus.

Digital transmitters
These high-end pressure transmitters offer you a comprehensive safety package and an intelligent operation and device concept. Reliable data management is provided in the form of HistoROM. The digital transmitters are developed, constructed and manufactured in compliance up to SIL 3/IEC 61508 (homogeneous redundancy).


TAG-No.:

Flow

High-performance flowmeters for liquids, gases and steam

Consistent product quality, safety, process optimization and environmental protection – these are only a few reasons why industrial flow measurement is becoming more important all the time. Water, natural gas, steam, mineral oil, chemicals or wastewater are only some examples of fluids that have to be measured day in, day out.

For over 40 years, Endress+Hauser has been providing one of the most comprehensive product portfolios for measuring the flow of fluids, gases and steam. During this time, over 3 million flowmeters have been installed successfully across a wide range of industry sectors.

A significant contribution to this success has been made by the Proline product family. The latest generation of Proline flowmeters offers numerous innovations, such as WLAN, WirelessHART, web server, HistoROM and Heartbeat Technology – offering added value for operational safety.

Flow website:
www.endress.com/flow

Electromagnetic
Universal measuring principle for all conductive liquids. Virtually independent of pressure, density, temperature and viscosity. Even liquids with solids can be measured, e.g. ore slurry or cellulose pulps.
Over 2 million Endress+Hauser magmeters installed since 1977!
Sizes: DN 2 to 3000.

Coriolis
Universal measuring principle for liquids and gases. Multivariable sensors: simultaneous and direct measurement of mass flow, density, temperature and viscosity.
Independent of the physical fluid properties.
Sizes: DN 1 to 400 (max. 4100 t/h).

Ultrasonic
Volume flow measurement of clean liquids, regardless of electrical conductivity with either clamp-on or inline sensor type.
Ultrasonic measurement enables cost-effective and economical flow metering anywhere in the process.
Independent of pressure, temperature and the physical fluid properties.
Special devices for measuring wet or dirty gases at low pressures, e.g. biogas or land fill gas.
Sizes: DN 15 to 4000.

Thermal
Direct mass flow measurement of gases with low process pressure up to 40 bar.
Measuring principle with a high operable flow range (100:1) and an excellent low-end sensitivity.
Negligible pressure loss.
Sizes: DN 15 to 1500.

Differential pressure (DP)
Universally applicable for liquids, gases and steam up to 420 bar and 1000 °C.
Robust primary element as it is completely mechanical with no moving parts.
The transmitter can be replaced during operation, e.g. for maintenance or modernization of the measuring point without interrupting the process.
Sizes: DN 10 to 4000.

Vortex
Universally applicable for the measurement of liquids, gases and steam. Extremely robust with regard to external vibrations, dirt, water hammer and temperature shocks.
Largely independent of changes in pressure, temperature and viscosity.
High long-term stability, no zero point drift. Efficient steam plant operation thanks to the worldwide unique wet steam detection.
Sizes: DN 15 to 300.

Temperature

Sensors and transmitters for temperature measurement in the process industry

Temperature is the most frequently measured variable in process engineering. For years now Endress+Hauser has been at the forefront of leading international companies in industrial temperature measurement with its own development and production centers in Europe, the USA, Africa and Asia. Our products comply with international standards and specifications such as ATEX, FM, CSA, IEC, NEPSI, SIL, NAMUR NE 21, NE 43, NE 89, NE 107, GL, 3-A, EHEDG, ASME BPE and FDA. They are suitable for use in all sectors of industry.

As a full-range supplier for temperature measurement, we provide a high degree of quality, reliability and safety which – compared on an international level – only few producers can offer.
To this end we operate our own DAkkS/Accredia certified and EC accredited calibration and testing laboratories for temperature measurement.

Temperature website:
www.endress.com/temperature

Temperature transmitter Choose between transom, top-hat rail or field mounting among the freely programmable temperature transmitters with RTD thermometer or thermocouple entry. Whether analog output or HART® protocol, FOUNDATION Fieldbus™ or PROFIBUS PA interfaces, Endress+Hauser offers you the right solution for every application.

Head transmitters
Mounting in all connection heads form B.

DIN rail transmitters
Mounting on top-hat rail TH35.

Field transmitters
With on-site display (optional) for optimum safety and reliability requirements. Diverse housing versions for mounting directly in the field (at the process).

Temperature sensors With our broad, globally available portfolio of RTD thermometers and thermocouples for every application we as Endress+Hauser are one of the leading full-service providers in temperature for process automation. Innovative temperature sensors like iTHERM, TrustSens, iTHERM QuickSens and iTHERM StrongSens increase the economic efficiency of your processes. Our products convince with self-calibration technology, very fast response times and an extreme vibration resistance. Those advantages mean perfect conditions for an exact and safe process control.

Resistance thermometers
Modular or compact design for hygienic, industrial or heavy duty applications.

Thermocouples
For measurements at high temperatures even under the most difficult conditions.

Temperature switches
For monitoring, display and regulation of process temperatures. Available with various process connections (standard and hygienic).
The sensors can be used in measuring ranges from −50 to +200 °C.

Liquid analysis

Comprehensive product range for all analytical parameters

Environmental protection, consistent product quality, process optimization and safety – just a few reasons why liquid analysis is becoming increasingly important. Liquids such as water, beverages, dairy products, chemicals and pharmaceuticals have to be analyzed day in and day out. We support you in fulfilling all these measuring tasks with application know-how and cutting-edge technologies. Discover our comprehensive portfolio and choose the product best suited to your process needs.

From single measuring points composed of sensor, process connection and transmitter to fully automatic measuring systems and application-specific engineering combined with ultra-modern communication technology – all products are available from a single supplier.

The outstanding feature of these products is the innovative Memosens digital technology. With Memosens non-contact digital sensors, all calibration and operation data is stored in the sensor head, allowing offline calibration of sensors. This simplifies the maintenance process and extends sensor lifetime.

With Memosens sensors, our Liquiline transmitter platform and the Memobase Plus sensor and data management tool, we offer all you need to optimize your maintenance strategy, increase your process availability and streamline your work.

We constantly focus on research and development in close cooperation with customers, research institutes and universities to make liquid analysis as simple, reliable and safe as possible. Throughout our plants we employ state-of-the-art production technologies that feature a high level of automation. Our production philosophy, calibration concept and certification are standardized across all production facilities worldwide – so no matter where you are, you always get the same high quality, innovative devices.

Liquid Analysis website:
www.endress.com/analytics

pH/ORP
Glass and glass-free Memosens sensors, transmitters and assemblies for standard, hygienic and hazardous applications; fully automated measuring, cleaning and calibration systems.

Conductivity
Conductive and toroidal Memosens sensors and transmitters for all measuring ranges in standard, hygienic and hazardous applications; compact measuring devices, calibration and verification systems.

Turbidity/solids
Optical Memosens sensors and transmitters for all measuring ranges from lowest turbidity in drinking water to solids in wastewater applications; ultrasonic sludge level measurement.

Oxygen
Amperometric and optical Memosens sensors, transmitters and assemblies for all applications, including hazardous areas, hygienic processes and trace measurement.

Disinfection (chlorine)
Amperometric Memosens sensors for water treatment and swimming pools; flow assembly for simultaneous measurement of chlorine and pH/ORP.

Analyzers
Colorimetric analyzers as well as optical and ion-selective sensors for monitoring of nutrients, organic load and metals; Liquiline System analyzers and sample preparation systems available with Memosens technology.

Transmitters
Liquiline transmitters featuring all common fieldbuses; suitable for all applications including hazardous areas and hygienic processes; multichannel and multiparameter devices for field or DIN rail installation.

Process photometers
Process photometers for accurate concentration measurement by determining UV absorption, NIR absorption, color, turbidity and cell growth; suitable for hygienic applications and hazardous areas.

Samplers
Portable and stationary samplers with Memosens technology for automatic sampling, defined distribution and safe preservation of liquid samples.

Interface level measurement

Suitable measuring principles for your individual interface application

Your application is of prime significance because the instrument serves the application and is only selected once the general setting is known. You get the optimum interface measurement solution in relation to your process requirements from us.

Precise interface measurement is important in continuous and dynamic processes. Is the overall level constant or variable, and if so, in which range? Should the overall level be available as a measured value in addition to the interface measurement. Does emulsion occur during measurement?
The answers to such questions have a strong influence on the correct selection of instrumentation. We offer you transparency in relation to options, application limits and commissioning of the individual measuring principles.

Radiometry
The gamma source emits radiation which is attenuated as it penetrates the container wall and the medium. On the opposite side of the container, a detector converts the radiation received into an electric signal. Different interfaces absorb the radiation differently. If the transmitter has been calibrated to the media by wet calibration once, a correlation to the measurement of the interface results automatically, unaffected by process temperature and pressure.

Guided radar
As the pulses impact the medium surface, only part of the sending pulse is reflected. The other part penetrates the medium. As the signal enters the lower medium with a higher dielectric constant (dc) it is reflected once more. Taking the delayed Time-of-Flight of the pulse through the upper medium into consideration the distance to the interface is determined in addition. Applications up to 450 °C /400 bar.

Multiparameter
The name of the innovation in interface measurement is FMP55 Multiparameter. This instrument combines the advantages of the capacitance and guided radar measuring principles. Emulsion layers may cause signal losses in interface detection in guided radar measurements. Only Levelflex FMP55 Multiparameter can guarantee safe measured values for both the interface and the overall level with this unique, redundant measuring system. Applications up to 200 °C /40 bar.

Capacitance
Media with a small dielectric constant (dc) cause very small changes of the capacitance value. Media with a high dc produce large capacitance changes. In many interface applications, the medium with the smaller dc value is on top, e.g. in hydrocarbon on water. The upper medium merely provides a minimum contribution to the overall capacitance value – the issued level thus only refers to the water level (the interface). Applications up to 200 °C /100 bar.

Density and concentration

Quality measurement in liquids

Blending of preliminary, interim and final products, determining the exact density or concentration, monitoring quality and controlling process – all these activities constitute a reason for the density measurement of the fluid. Endress+Hauser offers the process-approved vibronic principle with an individually developed electronic for density measurement. This provides you with the possibility of determining density and concentration in a simple and fast manner across industries.

Vibronic – Liquiphant
Suitable for hygienic applications with a large number of process connections to choose from. Units of density: norm density, °Brix, °Baumé, °Plato, % volume, concentration, etc. with 2D and 3D tables. Formula editor to calculate customer-specific units. Up to five Liquiphant density sensors can be connected to the density computer FML621. Direct installation in tanks and pipes.

Coriolis – Promass
Maximum process dependability, because density, concentration, temperature and mass flow are all measured simultaneously. Approval for custody-transfer applications.
No maintenance necessary. Units for density: standard density, standard volume flow and totalizing, % mass, % volume, alcohol tables (for mass and volume), target flow and carrier flow, °Brix, °Plato, °Baumé, °API, etc. Direct measurement in the pipe.

Surface acoustic waves – Teqwave
The smart and flexible concentration measurement device

Teqwave can be used to measure multiple liquid parameters simultaneously by means of surface acoustic waves:
- Constant monitoring of product quality without sampling
- Flexible range of application: Inline version (pipes), insertion version (vessels, large pipes) and portable device versions (for various measuring points)

Radiometric – Gammapilot
Straightforward retrofitting without process interruption; the pipes do not have to be opened.
No maintenance necessary. Units of density: g/cm^3, g/l, lb/gal, concentration, % mass, °Brix, °Baumé, °API, etc. Installation from outside through the pipe, in the bypass or tank.

System components and data managers

Visualize, process and monitor measured values

Nowadays the requirements on measurement technology go far beyond the mere recording of measurement values.

Thus the measuring devices are to be supplied with power and to be protected against overvoltage, the measurement value is to be visualized or processed, limit values have to be monitored as well as the data has to be tamper-proof archived. These tasks are covered by the system components and data managers from Endress+Hauser.

System components and data managers website
www.endress.com/systemcomponents

Benefits

- Easy installation and user friendly setup and operation
- Real-time plant information on-site
- Increased plant availability due to proactive diagnostics and protection of the measurement devices
- Flexibility in application based on various housing versions, all important communication protocols and worldwide approvals
- Safe and tamper-proof data handling
- Complete portfolio around the measurement point from one supplier

System components

Indicator portfolio
Loop powered indicators are powered via the current measuring loop. They improve the process overview, since measured values are indicated where they are needed.

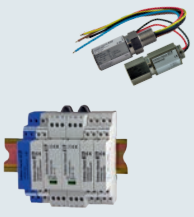
Process indicators with control unit combine several functionalities in one device like an active barrier, transmitter and relay. Fieldbus indicators display the values that are communicated by PROFIBUS PA or FOUNDATION Fieldbus devices.

System components

WirelessHART Adapter and Gateway
Endress+Hauser's WirelessHART Adapter and Gateway are suitable for applications, such as: inventory monitoring or energy monitoring tasks, collection of process information from rotating or mobile installations and applications with environmental limitations to cabling, e.g. electromagnetic fields or limited accessibility.

Isolators/power supply
For safe isolation of 4 to 20 mA standard signal loops, with international approvals (ATEX, FM, CSA, SIL).

Process transmitter with control unit
With quick setup and simple on-site operation via three keys, LC display for limit values as well as bargraph and pluggable screw terminals.



Overvoltage protection
For limitation of excess voltage in signal and supply lines in Ex and non-Ex versions, as a module or module carrier or screw-in direct.

Fieldgates
Gateways with Ethernet interface to HART, HART over PROFIBUS and to PROFIBUS signals allow plant access to device parameters. Applications include monitoring, device diagnostics and Plant Asset Management.

Data managers

Data logger
Measured data collector Minilog B with analog and digital input for acquisition and storage of analog and digital values, measurement of store room and transport temperatures, recording of operating times, unit number and quantity recording. The robust IP65 housing is suitable for field use.

Universal data manager
Ecograph T is a state-of-the-art solution to multi channel displaying, recording, monitoring and communication needs. The unit is easy to use and comes with a host of convincing features to save costs and simplify data acquisition. It offers an unbeatable price/performance ratio. Manipulation-proof archiving of measured values with 100% recall/retrace function.

Advanced data manager
The Memograph M is perfectly suitable to memorize, visualize, analyze and communicate process values. The innovative device is impressive because of its high functionality, modular construction and its intuitive operator concept.
As a stand-alone system or as an efficient system component, Memograph M is the ideal solution for every task. Common fieldbuses (MODBUS, PROFIBUS DP, PROFINET, EtherNet/IP) for fast integration into different systems are supported.

Special application packages are available: mathematics package, tele alarm, batch, wastewater and storm overflow and energy software.

Digital communication and software

Optimum integration of field measurement technology into your system world

Endress+Hauser is a pioneer of fieldbus technology and works actively in various technology organizations and standardization committees. We continuously strive to simplify these technologies in order for our customers to retrieve the optimal benefits.

We support the seamless integration of our field devices into the automation systems of many manufacturers. This guarantees our customers freedom of choice and the best possible functionality at optimal cost.

Apart from all relevant measuring and system technologies, we also offer appropriate software tools for all branches of industry. Our comprehensive portfolio spans a range of software solutions

- for inventory management optimizing your inventories and supply chain,
- for device calibration and configuration through to condition monitoring by providing valuable asset information over the entire life cycle,
- for energy management and monitoring to reduce costs.

Software website:
www.endress.com/software

Fieldbus technology
Endress+Hauser is a leading supplier of fieldbus instrumentation. Practically all of our instruments can be equipped with a HART®, PROFIBUS® or FOUNDATION Fieldbus™ interface, selected ones with a serial MODBUS, IO-Link or EtherNet/IP interface. As intelligent instruments, fieldbus devices carry additional information from the field, e.g. instrument status, maintenance and diagnostics. They save operational costs by increasing plant availability and are significantly cheaper to install and commission.

WirelessHART
For applications where accessibility or installation costs rule out the use of a fieldbus as communication medium, WirelessHART offers an economical solution.

Fieldbus technology
www.endress.com/fieldbus-technology

Field Data Manager
Field Data Manager (FDM) is a software package offering central data management and visualization of stored data. This allows complete documentation of the data from a measuring point, e.g.:
- Measurement values
- Diagnostics events
- Protocols

Your benefits
- Secure management and visualization of historical process data
- Automatic services for easy data handling
- Visualization of instantaneous values

FieldCare
FieldCare is a state-of-the-art configuration software for configuration out of a central location. There is no need to spend a lot of time in the field anymore.
You can either remotely access your devices from your maintenance station or prepare the configuration changes in advance and transfer them point-to-point fast and easily.

Your benefits
- One tool to access all field devices regardless of FDT or EDD technology
- All major communication protocols supported
- Fast commissioning and device replacement
- Open for 3rd party drivers and hardware
- Performs device configuration management when combined with life cycle management
- Diagnosis of devices according to NAMUR NE 107

Field Xpert
Field Xpert* is an industrial Tablet PC for mobile device configuration. It allows efficient configuration of Endress+Hauser and third-party devices using common protocols. Everything comes out of the box, which makes the Field Xpert unique. The Field Xpert is always up-to-date regarding DTM's and the software application. In combination with our IIoT offering and the cloud connection the Field Xpert is the best solution for Plant Asset Management. The well-known OS Windows allows also the installation of 3rd party software.

*Field Xpert SMT70 (safe areas and Class 1 Div 2) and Field Xpert SMT77 (Class 1 Div 1 area)

eSight
Create transparency and save energy costs. eSight is a comprehensive and intuitive software package offering you professional methods for the management of energy-related data. Although it is fully web based for making it available online, the software can also be installed to a client. Data can be automatically imported from data loggers, BMS and SCADA systems, production systems, electronic billing and spreadsheets. It interfaces for system integration with the most important system manufacturers making integration of existing systems very easy. The tool is scalable and suitable for applications in all industries and companies of any size.

SupplyCare
SupplyCare is a web-based information system for remote monitoring of tank and silo inventory at multiple site locations. Current measurement values of on-site assets can be accessed via fieldgates company-wide in the Intranet or worldwide via public telephone networks and the Internet. SupplyCare software for the collection and processing of data can either be installed on your premises or hosted by Endress+Hauser. Conventional web browsers allow information to be called up by authorized materials administration and logistics personnel – at any time and from any workplace. Secure access via the Internet can be provided for external partners and service providers. As an alternative or supplementary option, measured data can be integrated into existing systems at logistics, enterprise and management levels.

Best-fit solutions to improve your process productivity

The combination of reliable products and long-standing expertise

Optimize your systems and processes with solutions combining our complete offering. Our application based solutions such as Inventory Management, Flow Metering, Energy and Analytical Solutions integrate instruments, systems and services.
We offer you our help over the whole life cycle of your project from consulting, shared requirements analysis over commissioning to service during operation.

With our field based solutions such as Field Network Engineering and Plant Asset Management we make use of existing information effectively and integrate your data consistently into your IT systems to support the optimization of your processes.

Inventory Management Solutions

Reduce inventory costs and increase productivity with complete inventory visibility around the clock, 24/7

Your advantages:
- Increase customer satisfaction by improving delivery performance and avoiding product run-outs or emergency deliveries
- React fast and efficiently to supply chain volatilities thanks to the optimization of your company's supply and value chain
- Lower inventory management costs by integrating data in your systems, facilitating fast and effective data exchange with your partners and systems
- Increase productivity with higher accuracy of your inventory monitoring and better planning capabilities

Read more about
- Inventory monitoring
- Terminal management
- Supply chain solutions
- Overfill prevention systems
- Density profiling systems

www.endress.com/ims

Flow Metering Solutions

Reliable custody transfer loading solutions and pipeline measuring systems for liquids and gases

Your advantages:
- API (American Petroleum Institute) or MID (Measuring Instrument Directive) conform custody transfer metering skids
- Enhanced accuracy and correct mass delivery or volume provided by our high quality instrumentation
- Smooth project handling thanks to our experience and close collaboration with calibration authorities
- Irregularities detected immediately by online/real-time density measurement
- Single point of contact for the project ensures reduced response time

Read more about
- Custody metering
- Bunker fuel metering systems
- Leakage detection systems

www.endress.com/fms

Energy Solutions

Reduce your energy costs from measured value to energy usage

Your advantages:
- Sustainably reduce energy costs
- Implement energy management system according to DIN EN ISO 50001
- Track your energy use via accurate measurement technology
- Automatically generate and analyze energy reports
- Optimize production processes and improve equipment efficiency

Read more about
- Smart scale energy solutions for
  - heating systems
  - cooling systems
  - compressed air systems
  - steam systems
  - electrical systems
  - waste water treatment
- Smart scale energy solutions connectivity and integration
- Energy consulting services

www.endress.com/ems

Analytical Solutions

Complete turnkey solutions for your analytical measuring requirements

Your advantages:

- Competent engineering support from conceptual design to realization
- Perfect adaptation to your requirements and environmental conditions thanks to individual tailoring
- Easy commissioning due to integration of all necessary components from sample preparation to data transfer
- Higher plant availability thanks to modern plug & play devices with Memosens and Heartbeat Technology
- Optimized processes due to automated load-dependent control based on reliable measurement data
- Application dashboard for visualization and optimized maintenance of your measuring points

Read more about

- Monitoring stations ranging from panels over cabinets to completely equipped containers for water and wastewater applications and steam-water circuits
- Automation solutions ranging from aeration control or phosphate dosing in wastewater treatment plants to fully automated measuring, cleaning and calibration systems for pH and ORP sensors in the chemical and life sciences industries

www.endress.com/analyticalsolutions

Field Network Engineering

Projects with intelligent devices are simpler than you think – with the right partner

Your advantages:

- Reduced project costs resulting from the deployment of fieldbus technology and intelligent devices installed by fieldbus project experts
- Rapid and risk-free device integration into the DCS or PLC system of your choice
- Valuable information provided by intelligent devices to optimize performance and reduce maintenance costs
- Proper knowledge transfer throughout the project by customized trainings, combining practice and theory

Read more about

- Field network design & engineering
- Field network startup & commissioning
- Field network audit & maintenance
- Education & training
- Fieldbus technology

www.endress.com/fne

Plant Asset Management

We understand field devices – and how to manage them over their life cycle

Your advantages:

- Bringing plant assets quickly into operation and keeping them fit during the operation phase to maintain/improve plant performance
- Reducing maintenance cost, e.g. by enabling efficient, paperless work flows
- Increasing plant availability and reliability, e.g. through diagnostics and optimization of scheduled events (such as calibrations)
- Supporting compliance with standards and regulations (e.g. for quality management)

Read more about

- Asset information management
- Device configuration management

www.endress.com/pam

Gas analysis solutions

Expanded process analysis capabilities and possibilities

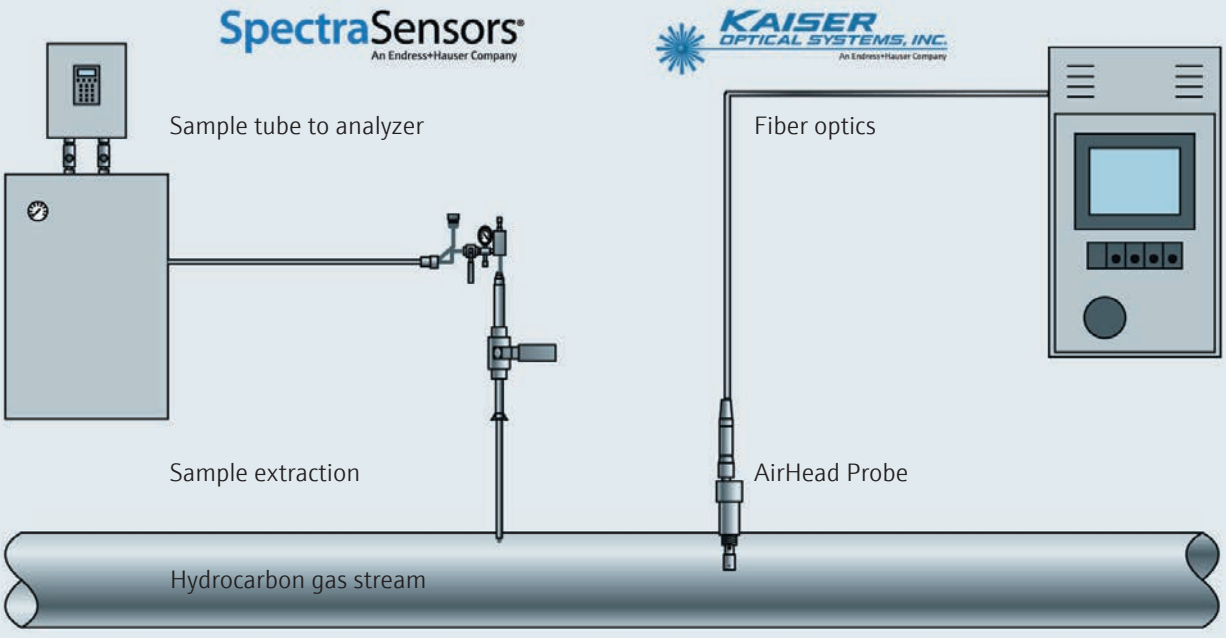
Laser based gas analyzers apply Tunable Diode Laser Absorption Spectroscopy (TDLAS) to measure moisture, carbon dioxide, hydrogen sulfide, ammonia, acetylene and oxygen. The gas analyzers are used in the natural gas, natural gas processing, LNG, refining and petrochemical industries as well as atmospheric weather measurement.

Process Raman Spectroscopy measures multiple components and is an alternative to Gas Chromatographs (GC) in syn-gas related industries.

Gas analysis website:
www.endress.com/gasanalysis

Extractive: single-component – TDLAS

In-line: multi-component – Process Raman Spectroscopy



Natural gas
Monitoring contaminants to protect pipelines from corrosion, blockage by hydrate formation and assure quality specifications for custody transfer.

Moisture H_2O in natural gas pipelines
SpectraSensors Tunable Diode Laser – Absorption Spectroscopy (TDLAS): The rugged solution used in natural gas pipelines with very little maintenance, no interference, and with no detrimental effects from glycol, methanol, amines, H_2S, moisture slugs, etc.

Gas processing
Monitoring contaminants is critical for process optimization and gas quality.

Hydrogen sulfide H_2S in amine scrubber outlet
High resolution SpectraSensors TDLAS technology eliminates errors from interferences encountered with other spectroscopic techniques.

Liquefied natural gas (LNG)
Monitoring impurities in gas feed to the cold box to ensure reliable liquefaction and on-time shipments.

Moisture H_2O in molecular sieve outlet
SpectraSensors non-contact laser is immune to damage and has no wet-up or dry-down delays even when the concentration changes dramatically.

Petrochemicals / olefins / ethylene
Measuring impurities in C_2 streams fraction to prevent C_2 splitter contamination and prevent going to flare due to not meeting ethylene product specifications.

Acetylene C_2H_2 in C_2 ethylene
SpectraSensors TDL analyzers respond to concentration changes in seconds versus minutes, with repeatability comparable to GC.
They optimize H_2 utilization.

Refinery
Measuring composition and impurities in refinery gases to optimize process efficiency and hydrogen quality.

H_2S in refinery fuel gas
Accurate measurements by SpectraSensors' unique "Differential TDLAS Spectroscopy" helps address changing fuel gas composition with automated 2-point daily validation.

Syngas-related industries
Measuring composition for optimizing syngas production, process intermediates and end products.

Raw syngas in primary reformer outlet
Continuous measurement using a Raman Optograf Analyzer and the OptoDRS sample conditioning.

Services by your side

Our firm commitment to your business, for improved plant performance

Our commitment to you is to support, to service and to optimize your process. Whatever your location or your industry, we are always by your side. Our global service force of over 1000 experts is strategically located worldwide ensuring active local presence to help you reach your goals.
Based on our process knowledge and technical expertise, a uniform approach through clear procedures ensures that the work we conduct for you is done properly.
Only a clear picture and detailed knowledge of the installed instrument base can act as a solid foundation for a predictive maintenance and optimizing strategy for your plant. Services combined with W@M Life Cycle Management can provide outstanding benefits.

Services website:
www.endress.com/services

Supporting Need quick response to support you in emergency situations? We are near you – ready and willing to provide you with the appropriate support.

Diagnostic and repair services for process instrumentation
Our teams of dedicated process control experts are always on hand for breakdown fix and on-site repair. Armed with special tools and meticulous procedures, they will provide fast and efficient diagnostic and repair. We offer call-out times dependent upon your level of urgency as part of our service level agreement.

Support services
With Endress+Hauser Support Services, remote support keeps your instruments, software, and/or automated solutions running smoothly over time. The support level is tailored to your needs and available worldwide around the clock. Direct access to an expert with a guaranteed response time allows you to minimize downtime cost.

Servicing Looking for expertise? We offer a variety of services to complement the capabilities of your staff: Engineering, commissioning, maintenance, calibration and tailor-made training sessions:

Calibration services
Regular calibration is essential to keep the instrumentation controlling your quality-critical processes in spec. Endress+Hauser provides timely, traceable, and cost-effective services that are accompanied by clear and concise calibration certificates. From in-situ testing to fully accredited laboratory calibration, we carry out and advise on every aspect of calibration.

Commissioning services
Proper commissioning of your process instrumentation is essential. During the start-up phase, time, resource availability and access to specific skills could become critical factors. Utilizing Endress+Hauser's commissioning services allows you to achieve long-term operational benefits. The worldwide presence of our expert technicians ensures your project is commissioned efficiently while meeting your requirements.

Maintenance services of field instrumentation
Ensure maximum process availability while optimizing OPEX. You determine the maintenance scope required, from inspection to preventative services including replacement parts or specific reaction time.

Training
Increase your knowledge to improve your business. Your production and maintenance staff play an important role in your company's overall performance and production process.
Endress+Hauser's instructors apply years of expertise in the field to ensure your staff learns how to produce more and higher quality products in a safe and profitable way. We can customize our training to meet your needs at a location convenient for you:
- at your site or online
- at your local Endress+Hauser training facility
- at specialized training centers

Engineering services
For new or renovationed plant projects, our engineering service allows you to ensure optimum performance from the engineering to operation phase with efficient and sustainable solutions. With state-of-the-art engineering tools, we complete the planning and design of the application and offer a flexible choice of system components. Our recommendations are based on over 60 years of expertise in the field.

Optimizing Need help to reduce costs while maintaining compliance? We offer effective ways to optimize your processes, enabling you to increase productivity and reach your business goals.

Maintenance optimization
Solve your maintenance worries and focus on your core business – with total peace of mind! We offer an extensive portfolio of maintenance functions. Our program optimizes maintenance costs and improves quality to turn routine maintenance activities into a profit source.

Calibration optimization
Productive metrology leads to sustainable savings! Using innovative methods (patents pending), Endress+Hauser consultants will optimize your metrology functions and calibration activities to reduce downtime, labor, product variability and save raw materials and energy. This service improves quality while cutting costs, allowing you to optimize productivity over the long term.

W@M Life Cycle Management – Improved productivity with information at your fingertips

Data relevant to a plant and its components is generated from the first stages of planning and during the asset's complete life cycle. W@M Life Cycle Management is a flexible information concept, supporting online tools available to Endress+Hauser customers.

Instant access for your staff to current, in depth data shortens your plant's engineering time, speeds up procurement processes and increases plant uptime. From easier selection of best fit instrumentation over detailed product documentation including 3D models and wiring data up to specific information all around the exact field device in your plant, Endress+Hauser has the information you need and when you need it.

W@M Life Cycle Management boosts productivity in every phase by giving you transparency and traceability over your devices and all services Endress+Hauser performs for you.

W@M Life Cycle Management website:
www.endress.com/wam

Value across the full life cycle of an asset

Engineering

- Record engineering data from the beginning stages of project for later reference
- Efficient specification, planning and documentation via electronic data exchange
- Complete traceability of your instruments throughout its entire life cycle

Procurement

- Reduce procurement costs
- Personal consultancy to find your ideal e-procurement solutions
- Reduce unnecessary waiting times by eliminating manual processing
- Standardization of products and simple handling of your documents

Installation

- Product documentation and information in different languages
- Record of reports and certificate, e.g. test reports, Ex-certificates
- Shorten commissioning time and realize cost savings by getting it done right the first time

Commissioning

- Optimal parameterization of the device according to application requirements
- Correct commissioning and improved instrument and plant performance
- Complete and secure document management including certificate generation

Operations

- Up-to-date device data around-the clock and through the entire life cycle of your installed base
- Minimized plant downtime and errors with effective monitoring of your installed base
- Comprehensive asset information for reliable planning

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Endress+Hauser

People for Process Automation