



SIEMENS

Ingenuity for life



You can't manage what
you don't measure

Accurate solutions for District Energy,
HVAC and Energy Efficiency

[siemens.com/sensors/industries](https://www.siemens.com/sensors/industries)

Instrumentation that puts you in control

Energy is at the heart of life and economic activity. Measurement of critical process parameters is key for process management and sustainability throughout all phases of the plant life cycle.

HVAC and industrial auxiliary installations have great potential to improve energy efficiency. From cogeneration energy production, district heating and cooling systems to compressed-air and steam applications, relatively small measures can maximize energy conservation and optimize the cost effectiveness of every process.

Highly accurate and reliable process instrumentation from Siemens delivers the information you need to optimize your operations. Take advantage of:

Optimized energy savings

- For every type of energy from heating and cooling to compressed air and steam
- Greater visibility into individual tenant consumption for more accurate billing

The perfect fit for new and retrofit projects

- Flexible, space-saving and cost-effective installation options, even for systems already in operation
- Portable clamp-on metering solutions available for energy audits

Comprehensive certificates and approvals

- Custody transfer-approved for billing (e.g. MI-004, PTB K7.2 and OIML R75)
- International and local certificates and approvals

Seamless integration into any automation system

- Compatible with all main communication standards (HART, Modbus and PROFIBUS)

Proven in use

Our broad installed base is proven around the world and includes a variety of infrastructure and building automation projects such as:

- Industrial production facilities
- Commercial and data centers
- Hotels
- Airports and train stations
- Hospitals
- Universities
- Public buildings



PIA Life Cycle Portal

The PIA Life Cycle Portal is a web-based application for easy and convenient product selection.

How to get access

You can access the PIA Life Cycle Portal around-the-clock at www.siemens.com/piaportal. It offers you active support to find the best solution from the extensive Siemens portfolio of sensors and process analytical products. The portal can be used to see how different solutions can be put to use in process and factory automation.

You can choose between several selection access options to find the appropriate product solution for your specific requirements:

- Direct access sends you straight to a specific configuration if you know the product you are seeking.
- “Guided selection” allows you to select the appropriate application, technology or industry and specify the measurement task based on the various relevant parameters for your particular application.

Advantages at a glance

- Convenient product selection support with answers to typical questions
- A variety of selection possibilities: see the sample processes and simply select from the recommended process instrumentation and analytics products
- Project lists for an order enquiry can be quickly created
- Different possibilities for processing data and information
- No separate installation needed
- Product selection for spare parts
- The latest product data and information for Siemens process instrumentation and analytics



www.siemens.com/piaportal

Level measurement

Ultrasonic



Level detection



| | SITRANS Probe LU240 | SITRANS LU150/180 | Pointek CLS100/200 | Pointek ULS200 |
|-----------------------|--|--|--|--|
| Brief description | Ultrasonic level transmitter with HART, 4 to 20 mA is ideal for level, volume, and volume flow measurements. It works with the combination of liquids, slurries, and bulk material; up to 12 meters (40 feet). By using Process Intelligence, Auto False Echo Suppression for fixed obstruction avoidance, and accuracy of 0.15% of range or 6 mm (0.25 inch) the Probe LU240 provides unmatched reliability. | Short-range, 2-wire, 4-to-20 mA, loop-powered ultrasonic level transmitters ideal for liquids, slurries and bulk materials in open or closed vessels to 5 m (16.4 ft). SITRANS LU180 includes certifications for intrinsically safe applications. | Inverse frequency shift capacitance level switches with optional rod/cable choices and configurable output. They are ideal for detecting liquids, solids, no slurries, foam and interfaces in demanding conditions where high pressures and temperatures are present. | Ultrasonic non-contacting switch with two switch points for level detection of bulk solids, liquids and slurries in a wide variety of industries. |
| Features and benefits | <ul style="list-style-type: none"> • Continuous level measurement up to 12 m (40 ft) range • Easy installation and simple startup • Programming using 4-button HMI or SIMATIC PDM • Communication using HART • ETFE or PVDF transducers for chemical compatibility • Process Intelligence signal processing • Auto False Echo Suppression for fixed obstruction avoidance | <ul style="list-style-type: none"> • Easy to install, program and maintain • Accurate and reliable level data with temperature compensation • Patented Sonic Intelligence echo processing algorithm discriminates between true and false echoes from acoustic or electrical noises • Transducer is available in PVDF copolymer, making the device suitable for use in a wide variety of applications • Approvals: CE, CSA, CSA: IS/Class 1 Div. 1, FM: IS/ Class 1 Div. 1, ATEX III/IECEx/NEPSI: 1G Ex ia IIC T4 Ga | <ul style="list-style-type: none"> • Provides accurate and repeatable measurement, even in dusty, turbulent, and vapor-filled environments or situations with product buildup • Self check and diagnostic alarms available allow better maintenance schedules and improve asset management • PROFIBUS PA communication • Requires little or no maintenance, despite the extreme process conditions | <ul style="list-style-type: none"> • 2 switch outputs for high-high, high, low and low-low level alarms or pump up/pump down control • Integral temperature compensation • AC or DC power supply • Electronics provided with fail-safe function • Threaded and sanitary fitting clamp process connections • Polycarbonate or aluminum enclosures, Type 6/NEMA 6/IP67 • Easy, two-button programming |
| Typical applications | Heavy fuel, water level, sump level, simple chemical tank level, water treatment. | Continuous level and volume monitoring of liquids and slurries in anaerobic clarifiers, storage and process vessels in water and wastewater treatment plants. | High-/low-level detection e.g. filters, coal, fly ash, chemicals and water. | Bulk solids, liquids and slurries in a wide variety of industries. The transducer, available in ETFE or PVDF copolymer, is inert to most chemicals. This means the device can be used in the chemical, petrochemical, water and wastewater industries. |

more information:
siemens.com/sitransprobelu240

more information:
www.siemens.com/sitranslu150

more information:
www.siemens.com/pointek

more information:
www.siemens.com/pointek

Flow measurement

Electromagnetic



SITRANS F M MAG5100W



SITRANS F M MAG5000/6000/6000I

Inline ultrasonic



SITRANS FUS/FUE380

Vortex



SITRANS FX330

| | SITRANS F M MAG5100W | SITRANS F M MAG5000/6000/6000I | SITRANS FUS/FUE380 | SITRANS FX330 |
|------------------------------|--|---|--|---|
| Brief description | Electromagnetic flow sensor in a rugged, fully welded design, can be upgraded to IP68 on site to be buried and flooded. Designed for the water and wastewater industry. | Electromagnetic flow transmitters for flow and volume measurement in combination with any electromagnetic flow sensor. | Ultrasonic flowmeter for heat or cold measurement with built-in sound transducers in 2-path arrangement. Available with MID004 approval for custody transfer flow measurements. | Vortex flowmeter that provides accurate volumetric and mass flow measurement of steam, gases and liquids, with integrated temperature and pressure compensation. |
| Features and benefits | <ul style="list-style-type: none"> • Hard lining guarantees consistent accuracy throughout the entire pressure and temperature range • Integrated grounding and measuring electrodes • Increased low flow accuracy for water leak detection • Built-in length according to ISO 13359 • Designed for patented in-situ verification of the whole flowmeter using the SENSORPROM fingerprint • Easy commissioning, SENSORPROM unit automatically uploads calibration values and settings • 0 DN of straight pipe required upstream and downstream from the sensor • Approvals: According to regional and national standards, CT, OIML R49, MI-001, PTB K 7.2, BEV OE 12/CO40, MCERTS, WRAS, NSF/ANSI Standard 61, DVGW 270, ACS, and BelgAqua | <ul style="list-style-type: none"> • Superior signal resolution for optimum turndown ratio • Automatic reading of SENSORPROM data for easy commissioning • User-configurable operation menu with password protection • Flow rate in various units • Totalizer for forward, reverse and net flow plus additional information • Multiple functional outputs for process control, minimum configuration with analog, pulse/frequency and relay output (status, flow direction, limits) • Comprehensive self-diagnostic for error indication and error logging • Compact or remote version • Communication: HART®, Modbus RTU, PROFIBUS PA/DP, DeviceNet, FF | <ul style="list-style-type: none"> • 115/230 VAC mains powered with battery option up to 6 years and back up battery. • Fast measuring frequency 15 Hz/0.5 Hz (230 V AC/Battery) • New remote system using one single cable with a quick J type connector • Long term stability sensor with no pressure drop and no conductivity dependence • Two galvanically isolated digital outputs for easy connection to a calculator (potential-free) • Easy one-button straightforward display • Designed for precise, high-resolution energy measurement • Bidirectional measurement, with 2 totalizers and outputs • Uncompromising high performance for water applications with high flow rate • Approval according to MID guidelines, design and approval for custody transfer | <ul style="list-style-type: none"> • Compact or remote design (max. 15 m/49 ft) • Flow, pressure and temperature reading at one single point • Accuracy: ± 0.75% ... 2.5% (depending on media) • Fully welded stainless-steel construction; high corrosion, pressure and temperature resistance • Isolation valve to protect pressure sensor during pressure/leak testing in the pipe • Communication: HART® • Approvals: FM, ATEX, IEC Ex |
| Typical applications | For all water applications such as groundwater, drinking water, cooling water, wastewater, sewage and sludge applications. Installation in water networks for leak detection and billing. | For all electrically conductive liquids and slurries. The rugged die-cast aluminum housing of the SITRANS F M MAG6000 I provides exceptional protection, even in the most rugged environment. | District heating plants, local networks, boiler stations, secondary stations, cooling-water systems as well as other general water applications. | Consumption measurement in compressed-air systems and other industrial gases or steam installations. |

➤ more information:
www.siemens.com/mag5100

➤ more information:
www.siemens.com/sitransfm

➤ more information:
www.siemens.com/fus380
www.siemens.com/fue380

➤ more information:
www.siemens.com/fx330

Energy calculation



SITRANS FUE950

Clamp-on ultrasonic



SITRANS FS220

SITRANS FS230

Pressure measurement



SITRANS P200/210/220



SITRANS P320

| | SITRANS FUE950 | SITRANS FS220 | SITRANS FS230 | SITRANS P200/210/220 | SITRANS P320 |
|------------------------------|--|---|---|---|---|
| Brief description | Universal custody transfer-approved energy calculator with the option for battery or mains power. | Cost-efficient digital clamp-on ultrasonic flowmeter for straightforward liquid measurement. | Advanced, highly accurate digital clamp-on ultrasonic flowmeter for measurement of virtually any liquid application. | Compact single range transmitters for measurement of process, absolute and hydrostatic pressure. Available in a ratio-metric version for the MAG 8000 GSM. | Universal flow measurement for liquids, gases and vapors. Differential pressure measurement with orifices always provides accurate results even with large bores, high temperature and extreme pressure. |
| Features and benefits | <ul style="list-style-type: none"> • Can be combined with the SITRANS FUE380, MAG 5000/6000/6000I and several other flowmeters • MID directive approval for custody transfer for water energy metering • Suitable for 2- and 4-wire temperature sensor connection • Delivered with heat/cooling-approved PT500 sensor set (incl. sensor pockets) • Optical M-Bus data reading in accordance with EN 1434 • Instantaneous values for energy and volume flow • Flexible input/output option modules | <ul style="list-style-type: none"> • High 1% accuracy and 0.25% repeatability according to ISO 11631 • Exceptional zero stability • Low maintenance and cost of ownership as sensors have no moving parts and never make contact with the fluid • Convenience graphic display to support operation and diagnostic with a easy wizard set up • Easy installation in most pipe materials • Communication: Modbus RTU; compatible with SIMATIC PDM • Approvals: UL, ULC, CE | <ul style="list-style-type: none"> • High 0.5–1% accuracy and 0.25% repeatability according to ISO 11631 • 100 Hz data update rate • Advance settings for special installation conditions and high end diagnostic via graphic display • Removable SensorFlash® microSD card for unique data analysis and servicing • Ease of use with fully graphic display, simple menu navigation and multiple setup wizards • Multiple sensor options for diverse applications and pipe materials for large sizes • Approvals: UL, ULC, CE, FM, ATEX, IECEx (Zone 0, 1, and 2) • Communication: HART® 7.5 or Modbus; compatible with SIMATIC PDM | <ul style="list-style-type: none"> • Piezoresistive measuring cell with ceramic diaphragm (P200) or SS diaphragm (P210/220) • Fixed-range transmitter • Measuring range starting at 100 mbar up to 600 bar • For aggressive and non-aggressive gases, vapors and liquids • High measuring accuracy < 0.25% • Rugged stainless steel enclosure • Compact design • EPDM gaskets for drinking water • Ingress protection up to Fully IP67 • Available in explosion-protected design according to ATEX | <ul style="list-style-type: none"> • Very robust and available in a wide range of nominal diameters • Suitable for a wide range of temperatures and pressures • No calibration required as the process is standardized • Clear display with diagnostic icons according to NAMUR NE 107 and 4 push buttons • Reduced response time for high-accuracy flow measurement • Extended diagnostic functions with trend log and up to 1500 points • Communication: HART® 7 |
| Typical applications | Used in combination with a flowmeter in applications such as heat metering, chilled water and combined cooling/heating. | Water leak detection and monitoring, wastewater influent and effluent, processed sewage and sludge. | Water leak detection and monitoring, wastewater influent and effluent, processed sewage and sludge. | Compressors, steam lines from boiler, chemical storage tanks, pump suction and discharge pressure in booster pumping stations. | Air, compressed air, biogas, steam flow measurement. |

➤ more information:
www.siemens.com/fue950

➤ more information:
www.siemens.com/fs220

➤ more information:
www.siemens.com/fs230

➤ more information:
www.siemens.com/p200

➤ more information:
www.siemens.com/sitransp320

Temperature

Communication and software

Temperature measurement



Remote displays



| | SITRANS TS sensors | SITRANS TH/TR/TW/TF transmitters | SITRANS RD100/200 | SITRANS RD300 |
|------------------------------|--|--|---|--|
| Brief description | Temperature sensors for a wide range of temperature applications. | Portfolio of temperature transmitters for head, rail or field mounting, for connection to many different thermocouples, resistance thermometers, as well as mV and resistance sensors. | SITRANS RD100 is a loop-powered remote display and RD200 is a universal remote digital display for many products including Probe LU, providing easier access to process measurements. | Dual-line, panel mount, remote digital display for process instrumentation for Probe LU, Probe LR, SITRANS P MPS to install at areas with easier access. |
| Features and benefits | <p>SITRANS TS100</p> <ul style="list-style-type: none"> Cable thermometers with different electrical connection options Ideal for unfavorable space conditions <p>SITRANS TS200</p> <ul style="list-style-type: none"> Compact thermometer with misc. plugs Ideal for unfavorable space conditions <p>SITRANS TS300</p> <ul style="list-style-type: none"> Hygiene-based design for in-pipe or clamp-on measurement <p>SITRANS TS500</p> <ul style="list-style-type: none"> Modular system of tubular or barstock thermowell, extension, connection head with optional transmitter and display Approvals: ATEX, IECEx | <ul style="list-style-type: none"> Two inputs, hot backup, 2x 4-wire RTD connection with drift detection and monitoring (predictive maintenance) Long-term stability of <0.05% per year Hot backup: Automatic switch to second sensor <p>SITRANS TH</p> <ul style="list-style-type: none"> Compact design for installation in connection head form B <p>SITRANS TR/TW</p> <ul style="list-style-type: none"> Rail-mount version <p>SITRANS TF</p> <ul style="list-style-type: none"> Waterproof dual-chamber enclosure or low-cost single-chamber enclosure in aluminum or stainless steel 316L Conforms with C5M corrosion-protective paint standards according to ISO 12944 Clear display with diagnostic icons according to NAMUR NE 107 and 4 push buttons Communication: HART® | <ul style="list-style-type: none"> Make measurement data visible and accessible from a remote location Compatible with all types of field instruments in varying process conditions Easy to set up and program SITRANS RD200 includes freely available logging and monitoring software, allowing multiple displays to be monitored from one PC SITRANS RD200 has optional large display with 35 mm (1.2") high LED | <ul style="list-style-type: none"> Easy-to-read, dual-line display with eight brightness levels Flexible outputs with up to eight relays and eight digital I/Os for process control alarming |
| Typical applications | For all temperature applications, e.g. surfaces, bearings, machinery, equipment, in vessels and pipes. | For all temperature applications. | Remote process monitoring. | Remote process monitoring. |

➤ more information: www.siemens.com/sitrans

➤ more information: www.siemens.com/sitrans

➤ more information: www.siemens.com/sitransrd

➤ more information: www.siemens.com/sitransrd

3 BILLING-GRADE HEAT METERING

Custody transfer metering systems guarantee highly accurate billing based on actual heat consumption.

Inline flow solution ideal for new installations
Preferred devices: **SITRANS FUE380 ultrasonic energy meter***

- CT approved according to MI-004
- High accuracy of $\pm 0.5\%$
- Medium temperatures up to $200\text{ }^{\circ}\text{C}/392\text{ }^{\circ}\text{F}$
- DN 15 to DN 600/1/2" to 24"
- Minimal maintenance costs due to no moving parts
- No pressure drop for greater efficiency

Clamp-on flow solution perfect for retrofitting
Preferred devices: **SITRANS FS220/FS230 ultrasonic energy meter***

▶ [siemens.com/sensors/districtenergy3](https://www.siemens.com/sensors/districtenergy3)

CUSTODY TRANSFER APPROVED AS DESIGNATED BY INTERNATIONAL ENERGY METER STANDARDS

4 OPTIMAL STEAM BOILER SYSTEM OPERATION

Precise flow monitoring that remains stable despite fluctuating process conditions is crucial for efficient operation of a steam boiler system.

Inline flow solution ideal for new installations
Preferred devices: **SITRANS FX300 vortex flowmeter or SITRANS FO orifice flowmeter/DP transmitters combined with RTD sensors**

- Volumetric and mass flow measurement of saturated and superheated steam
- Accuracy of $\pm 1\%$ for steam and gases
- Built-in calculation of energy and mass flow

▶ [siemens.com/sensors/districtenergy4](https://www.siemens.com/sensors/districtenergy4)

INTEGRATED PRESSURE AND TEMPERATURE SENSORS FOR DIRECT COMPENSATION AND REDUCED CABLING

1 COOLING PLANT PERFORMANCE MONITORING

Monitoring process variables provides greater control over cooling plant performance for increased efficiency and cost savings. Advanced maintenance and self-diagnostic features facilitate better operational decisions regarding maintenance scheduling, load balancing of equipment, and much more.

Temperature and pressure solution
Preferred devices: **SITRANS TH and SITRANS TS temperature transmitters and sensors**

- Cost-competitive temperature measurement
- Complete portfolio of RTD sensors

Preferred devices: **SITRANS P and dP pressure transmitters**

- Wide range of easy-to-use transmitters
- Excellent cost-performance ratio

Inline flow solution ideal for new installations
Preferred devices: **SITRANS F M MAG5100W/MAG6000 electromagnetic flowmeter system***

- High accuracy of up to $\pm 0.2\%$
- Medium temperatures up to $80\text{ }^{\circ}\text{C}/176\text{ }^{\circ}\text{F}$
- DN 15 to DN 2000/1/2" to 80"
- 4–20 mA and pulse outputs, with additional communications options including M-Bus, RS 232 and RS 485 (FUE950)

Clamp-on flow solution perfect for retrofitting
Preferred devices: **SITRANS FS220/FS230 ultrasonic flowmeter***

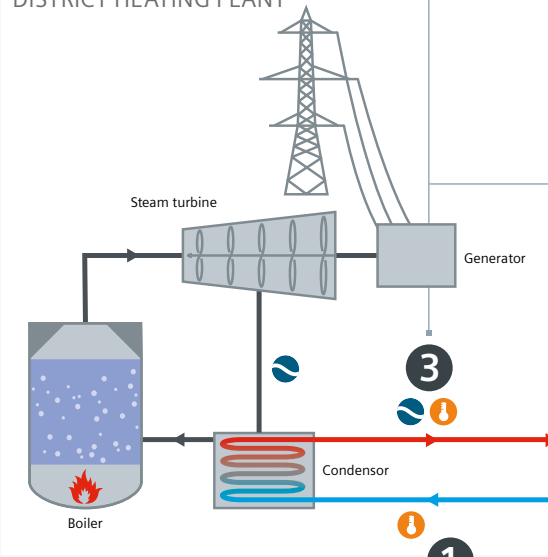
- Non-intrusive sensors with no flow interruption
- Accuracy of $\pm 0.5\text{--}1\%$
- Medium temperatures up to $230\text{ }^{\circ}\text{C}/446\text{ }^{\circ}\text{F}$
- DN 6 to DN 9000/1/8" to 360"
- Communication options include BACnet MSTP, Modbus RTU and VT100 RS 232

▶ [siemens.com/sensors/districtenergy1](https://www.siemens.com/sensors/districtenergy1)

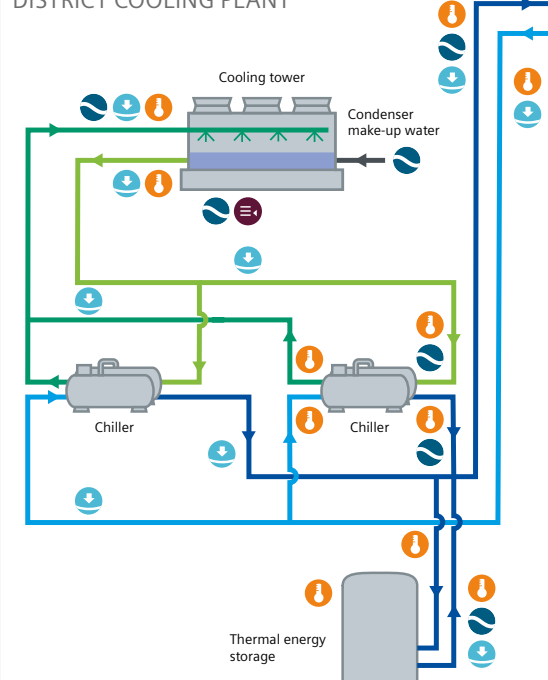
FLEXIBLE INSTALLATION OPTIONS FOR MINIMAL IMPACT ON SYSTEMS IN OPERATION

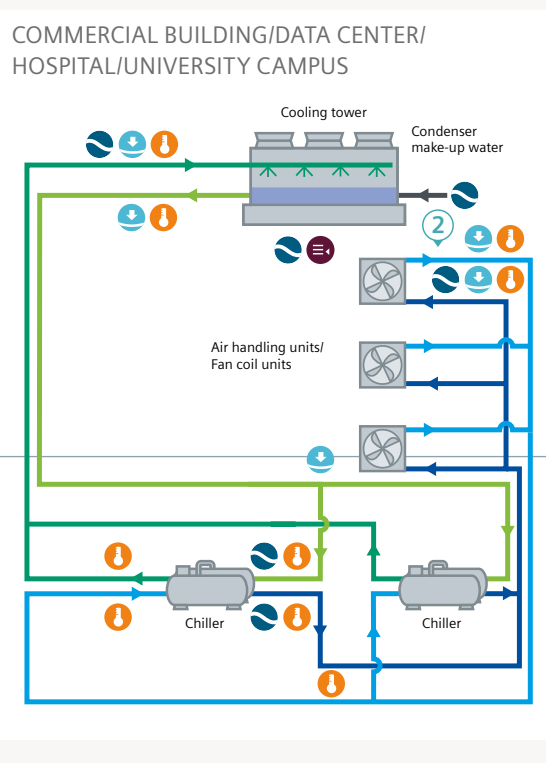
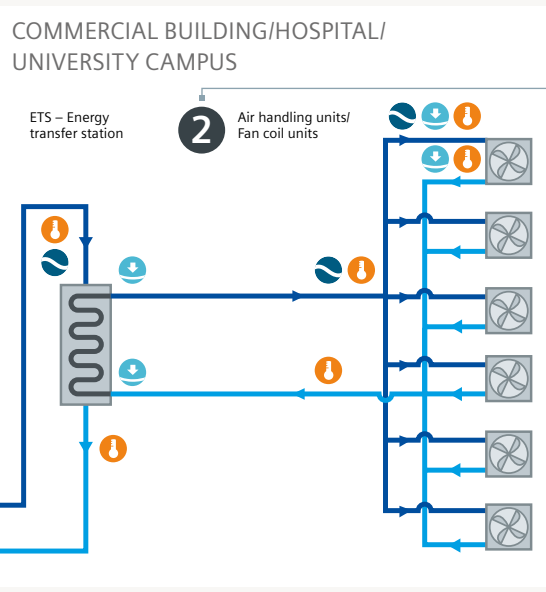
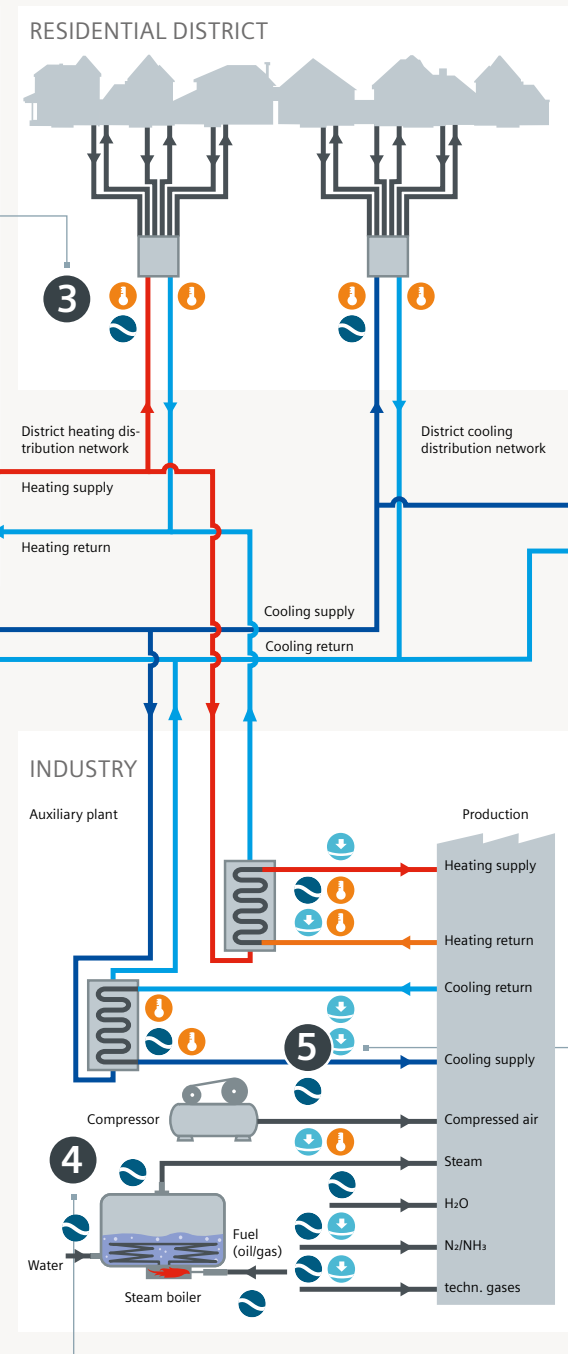
* paired with SITRANS FUE950 energy calculator and RTD sensors

DISTRICT HEATING PLANT



DISTRICT COOLING PLANT





2 CONTROL OF COOLING COSTS

Measuring the flow of energy throughout a cooling system provides full transparency into the consumption pattern of each tenant in a building. Energy costs can be reduced by adjusting the number of chillers to meet actual cooling demand, while users can be billed according to actual energy use.

Inline flow solution ideal for new installations
 Preferred devices: **SITRANS F M MAG5100W/MAG5000 electromagnetic flowmeter system***

- Easy integration into leading building automation systems via M-Bus RS 232/RS 485, pulse or 4–20 mA
- CT approvals including MI-004 and PTB K 7.2
- High accuracy of ± 0.2 – 0.4%
- DN 15 to DN 2000/1/2" to 80"

Clamp-on flow solution perfect for retrofitting
 Preferred devices: **SITRANS FS220/FS230 ultrasonic flowmeter paired with SITRANS FUE950 energy calculator and RTD sensors**

- No flow interruption required
- Performs basic measurement tasks
- Integrated data logger
- Accuracy of ± 0.5 – 1%

➔ [siemens.com/sensors/districtenergy2](https://www.siemens.com/sensors/districtenergy2)

HIGH MEASUREMENT SENSITIVITY EVEN IN PERIODS OF POOR LOAD OR LOW FLOW

5 BETTER TRANSPARENCY FOR LOWER COMPRESSED AIR COSTS

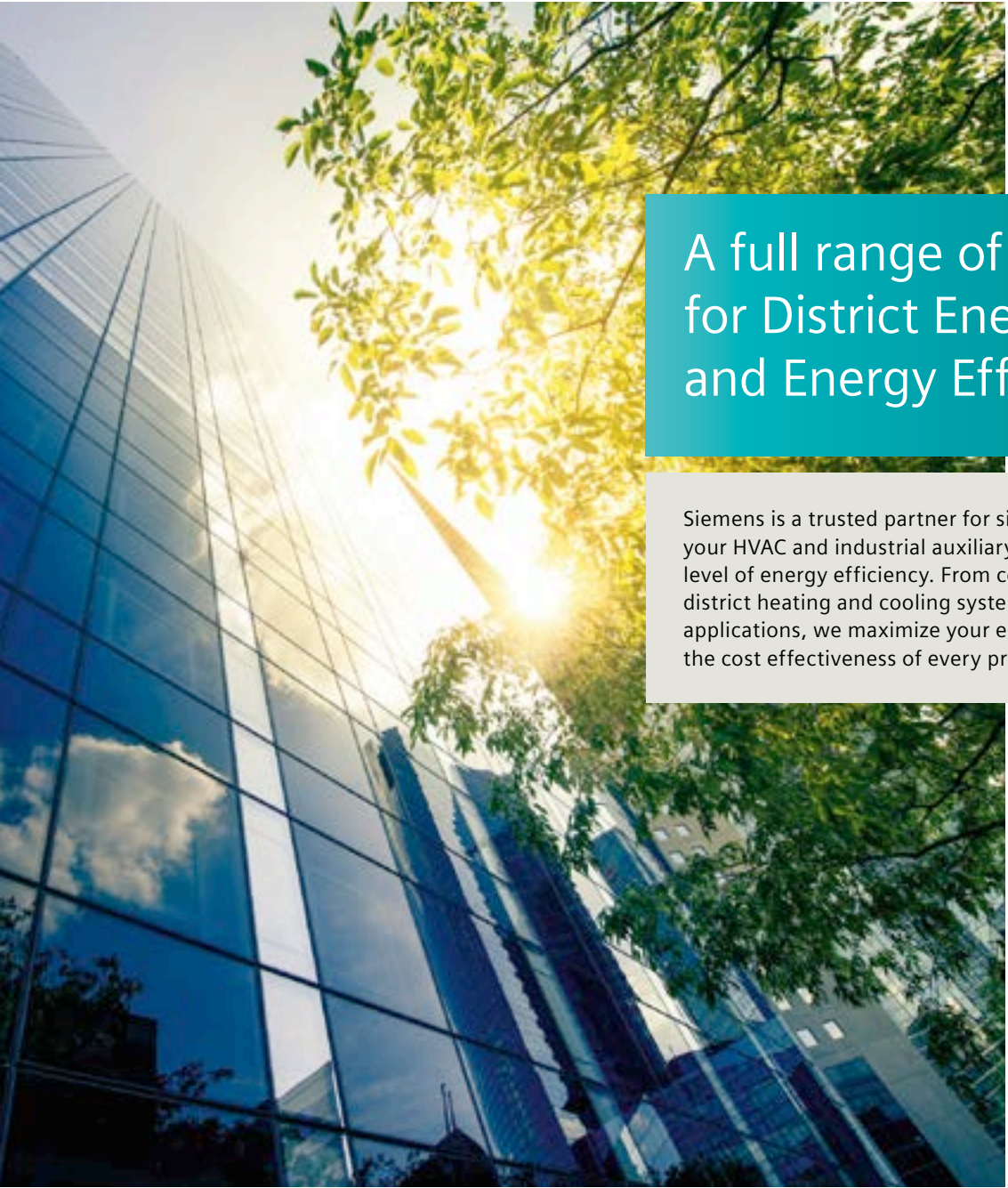
Monitoring compressor operation and eliminating leaks can significantly reduce energy usage and expenses.

Preferred devices: **SITRANS P DSIII differential pressure transmitter with SITRANS FO orifice flowmeter**

- Universal air/gas flow measurement
- Extreme pressures up to 4570 psi/315 bar
- DN 10 to DN 1000/3/8" to 40"
- Accredited to international DIN standard
- Comprehensive diagnostic and simulation functions

➔ [siemens.com/sensors/districtenergy4](https://www.siemens.com/sensors/districtenergy4)

RELIABLE MEASUREMENT OF A WIDE PRESSURE RANGE REGARDLESS OF FLUCTUATING PROCESS CONDITIONS



A full range of solutions for District Energy, HVAC and Energy Efficiency.

Siemens is a trusted partner for single-source solutions that bring your HVAC and industrial auxiliary installations to a whole new level of energy efficiency. From cogeneration energy production, district heating and cooling systems to compressed air and steam applications, we maximize your energy conservation and optimize the cost effectiveness of every process.

Learn more at:
[siemens.com/pi](https://www.siemens.com/pi)



SITRANS P320



SITRANS TH

SITRANS TS500



SITRANS FX300



SITRANS FUS/FUE380



SITRANS FS230



SITRANS FS220



SITRANS MAG5100W



SITRANS FUE950



SITRANS P200



Your all-in-one solution:

[siemens.com/sensors/industries](https://www.siemens.com/sensors/industries)

Discover in detail how Integrated Drive Systems boost your competitive edge and improve your time to profit.

Follow us on:

www.twitter.com/siemensensors

www.youtube.com/thinksiemens

facebook.com/siemensensors

Published by
Siemens AG

Digital Industries
Process Automation
Östliche Rheinbrückenstr. 50
76187 Karlsruhe, Germany

For the U.S. published by
Siemens Industry Inc.

100 Technology Drive
Alpharetta, GA 30005
United States

Article No.: DIPA-B10025-00-7600
Dispo 27900
Printed in Germany
WS 07190.5
© Siemens 2019

Subject to changes and errors. The information provided in this brochure contains descriptions or performance characteristics which, in case of actual use, do not always apply as described or which may change as a result of further development of the products. The desired performance characteristics are only binding if expressly agreed in the contract. Availability and technical specifications are subject to change without notice.

All product designations may be trademarks or product names of Siemens AG or supplier companies, the use of which by third parties for their own purposes may violate the rights of the owners.

