Energy-saving flowmeters and energy meters for HVAC
Reliable flowmeters and energy meters for HVAC applications

Siemens provides a breadth of product offerings and can offer a single, comprehensive solution for your HVAC applications; controlling comfort and efficiency in buildings worldwide.

Whether your application is new or existing, Siemens provides flowmeter and energy metering solutions to help ensure that your heating and cooling system performs flawlessly under the most rigorous conditions.

Siemens for building comfort
Siemens flow-, temperature- and energy-meters are used in a variety of interlaced cooling circuits. These applications include airports, hotels as well as office blocks, university facilities, shopping complexes, hospitals and even residential developments.

Imagine the opportunities
Cooling related costs can be as high as 30% of the operational costs of a building. By measuring the flow of water throughout a cooling system, SITRANS F flowmeters give you total control over your system, enabling you to dramatically reduce costs and keep them down. Reduced energy costs alone can pay for your investment in less than two years.

<table>
<thead>
<tr>
<th>Electromagnetic Flowmeter</th>
<th>Ultrasonic Flowmeter - SITRANS F US</th>
<th>Clamp-on</th>
<th>Energy Meter</th>
</tr>
</thead>
<tbody>
<tr>
<td>SITRANS F M</td>
<td>SITRANS F US Wetted</td>
<td>SITRANS F UE</td>
<td>FUE950</td>
</tr>
<tr>
<td>MAG 5000/5100 W</td>
<td>FUS380 w/data-logger</td>
<td>SONOKIT Retrofit/SONO 3300</td>
<td>FUEL1010 Clamp-on</td>
</tr>
<tr>
<td>MAG 8000 w/data-logger</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Sensor size</th>
<th>DN 25 – DN 1200 1” – 48”</th>
<th>DN 25 – DN 600 1” – 24”</th>
<th>DN 50 – DN 1200 2” – 48”</th>
<th>DN 100 – DN 4000 4” – 160”</th>
<th>6.4 mm – 9.14 m (0.25” – 360”)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process temp.</td>
<td>0 – 70 °C 32 – 158 °F</td>
<td>0 – 70 °C 32 – 158 °F</td>
<td>0 – 200 °C 32 – 395 °F</td>
<td>0 – 200 °C 32 – 395 °F</td>
<td>-40 – 120 °C (230 °C) -40 – 250 °F (450 °F)</td>
</tr>
<tr>
<td>Pressure rating</td>
<td>PN 10, PN 16, PN 40 Class 150 / 300</td>
<td>PN 10, PN 16, PN 40 Class 150</td>
<td>PN 10, PN 16, PN 40 Class 150 / 300</td>
<td>PN 40 Class 300</td>
<td>Limited only by pipe</td>
</tr>
<tr>
<td>Straight inlet</td>
<td>5 x DN 5 x pipe diameter</td>
<td>10 x DN 10 x pipe diameter 2-track</td>
<td>10 x pipe diameter up 5 x pipe diameter down</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power supply</td>
<td>Mains</td>
<td>Battery or mains</td>
<td>Battery or mains</td>
<td>Mains</td>
<td>Mains</td>
</tr>
<tr>
<td>Display</td>
<td>3 lines 20 characters</td>
<td>8 digits, index and icons for status information</td>
<td>3 Mains 20 characters</td>
<td>128 x 240 pixel LCD with backlight</td>
<td></td>
</tr>
<tr>
<td>Output</td>
<td>4-20 mA Pulse, relay</td>
<td>2 pulse outputs can be configured to volume, alarm and call-up</td>
<td>4 – 20 mA pulse</td>
<td>Current, frequency, voltage, status alarm</td>
<td></td>
</tr>
<tr>
<td>Accuracy</td>
<td>0.25% or 0.5%</td>
<td>0.2% or 0.4%</td>
<td>Dynamic range 1:20 0.5 %</td>
<td>Typical 1%</td>
<td>±0.5% – 1.0% of flow, over 0.3 m/s (1 ft/s)</td>
</tr>
<tr>
<td>Approvals and Standards</td>
<td>Designed to global standard OIML R49 and M1001</td>
<td>PTB Class C OIML R75 Class 4</td>
<td></td>
<td>FM, FMc, CE</td>
<td></td>
</tr>
</tbody>
</table>

Diff. temp.: Heating: 3 – 150 K Cooling: 2 – 20 K
Temperature probes Pt 500 / 2 wire
Battery or mains
8-digit display
Bus communication, energy and volume pulse
0.5%
Heat.: EN1434 Cool.: EN1434 pr.A1

Imagine the opportunities
Cooling related costs can be as high as 30% of the operational costs of a building. By measuring the flow of water throughout a cooling system, SITRANS F flowmeters give you total control over your system, enabling you to dramatically reduce costs and keep them down. Reduced energy costs alone can pay for your investment in less than two years.
You can’t control costs if you can’t measure. Siemens enable you to measure and control every aspect of your cooling systems – so you can better manage your facilities.

1. Chiller
   - Water flow for chiller loading optimisation
   - Water flow for balancing
   - Energy flow for chiller performance monitoring
   - Energy flow for system optimisation
   - Water consumption monitoring
   - Chemical rate control

2. Heat exchanger
   - Primary and secondary exchanger

3. AHU/FCU - Air Handling and Fan Coil Units
   - Energy flow for billing
   - Water flow for heat exchanger

4. Cooling tower
   - Energy flow to monitor tower performance
   - Water flow for tower load sharing
   - Water required to replace evaporation losses
   - Water required to reduce dissolved solids concentration by dilution
   - Chemical addition rate control

5. Control room (BMS)
   - Building Management System

6. Flow transmitter
7. Flow sensor
   - Measuring and control of water flow
8. Energy calculator
9. Variable speed drive
   - Pump and fan control
10. Temperature transmitter
11. Pressure transmitter

Helping you get the most of your investment
Flowmeter and energy meter selection - What’s right for you?

The choice of products has to be right from the start and adaptable to change. That’s why consultants, contractors, facilities managers and building owners turn to Siemens for their system needs.

SITRANS F M
Electromagnetic flowmeters
For the vast majority of chilled water applications the electromagnetic flowmeter is the best choice and this high accuracy flowmeter is used to replace conventional mechanical meters when greater functionality is required. A robust design means no or only limited maintenance. An integral self-monitoring circuit surveys all functions and gives an alarm in the event of any malfunction.

SITRANS FUE950 Energy meter
SITRANS FUE950 is a universal thermal energy calculator which is designed for cooling and heating systems. The 8-digit LCD display has associated pictograms for the various functions. The energy calculator has extremely high accuracy. It is especially well suited for cooling applications with low differential temperature.

SITRANS F US
Ultrasonic flowmeters
In combined heating and cooling applications the ultrasonic flowmeter is the best choice. It provides high accuracy energy measurements and measures all water qualities like special treated water with low electric conductivity and magnetite. In buildings where the air-conditioning can’t be turned off, SITRANS F US enables retrofitting of transducers under pressure with clamp-on or hot-tap technology - very cost effective solutions.

“Plug & Play”
Communication modules
The flow meters and energy meters can easily be equipped with modules which allow data transmission to the SCADA system for monitoring, control and recording, so you are always up-to-date.

Main features:

SITRANS F M
Electromagnetic flowmeter
- Flexible installation
- Maintenance free
- Accurate
- Verification on site

SITRANS F US
Ultrasonic flowmeter
- Maintenance free
- Accurate
- Hot-Tap installation

SITRANS FUE950 Energy meter
- Pt 500
- 2 wire
- Accurate
- Approved

SITRANS FUE1010 Clamp-on ultrasonic transit-time flowmeter
- Installs without interrupting flow
- Maintenance free
- Dedicated & portable survey models
World famous hotel, Shangri-La in Singapore goes ultrasonic with SITRANS F US
As a six star hotel, the Shangri-La knew it couldn’t compromise its reputation. The hotel set a target to reduce its energy bill without compromising its comfort for customers. Therefore 12 sets of SITRANS F US ultrasonic flowmeters for retrofitting from Siemens manage the efficiency of the air conditioning system. The SITRANS F US flowmeter was chosen because of its high accuracy and the ability to be installed without disrupting the normal running of the hotel, the so-called hot-tap installation.

Greater flexibility
• Wide product program
• Compact or remote installation
• Data communication modules for easy integration
• Hot-tap or clamp-on installation possible

Easier to commission
• User settings automatically stored in the SENSORPROM

Easier to operate & service
• No moving parts
• Robust construction and materials
• Uniform user interface
• Transmitter replacement requires no programming using SENSORPROM technology

Room for growth
• Add-on communication modules allow for future upgrades without investing in a new flowmeter

Verification & diagnostics
• Long term accuracy and system verification with MAGFLO Verifier
• Built-in diagnostic facility

Biopolis - a leading centre for biomedical sciences in Asia specifies Siemens
Biopolis Phase 1 is a 2.0 million sq ft biomedical complex. More than 400 SITRANS F M flowmeters and 340 energy meters were installed for 7 buildings to measure the flow from each chiller for load optimization, chilled water main header to individual buildings to achieve proper flow balance. For the fan coil units (FCU) at each floor level feed water is measured. Combined with energy meters the solution calculates the energy load based on actual usage for billing purposes.

Copenhagen Airport
150 SITRANS F M electromagnetic flowmeters from Siemens secure precise billing of heat for the customers of Copenhagen Airport, typically being airline companies. Due to water with a high conductivity and only limited build-in space, the electromagnetic flowmeter made the best choice for the application. Despite the SITRANS F M meters being a little more expensive, both airport and airline companies agreed on the electromagnetic solution because as they put it; with an accuracy of 0.25% instead of 3% offered by other meter types, the additional price for the electromagnetic flowmeter is easily recovered.

Save more with Siemens energy-saving solutions for HVAC
Siemens flowmeters help you do an easier job of managing flow. Whether it is installation, managing operations or verifying continuous accuracy, customers rely on SITRANS F M and SITRANS F US flowmeters to improve their entire value chain of activities.

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Your Siemens partner worldwide

Find a Siemens contact in your area at:
www.siemens.com/processinstrumentation

For additional information, visit:
www.siemens.com/flow