FLEXIM

Energy Efficiency - Green Building - Tenancy Rating

FLUXUS® Energy

Precision Ultrasonic Flow and Thermal Energy Meters

Chiller Plants

Heating Plants

HVAC

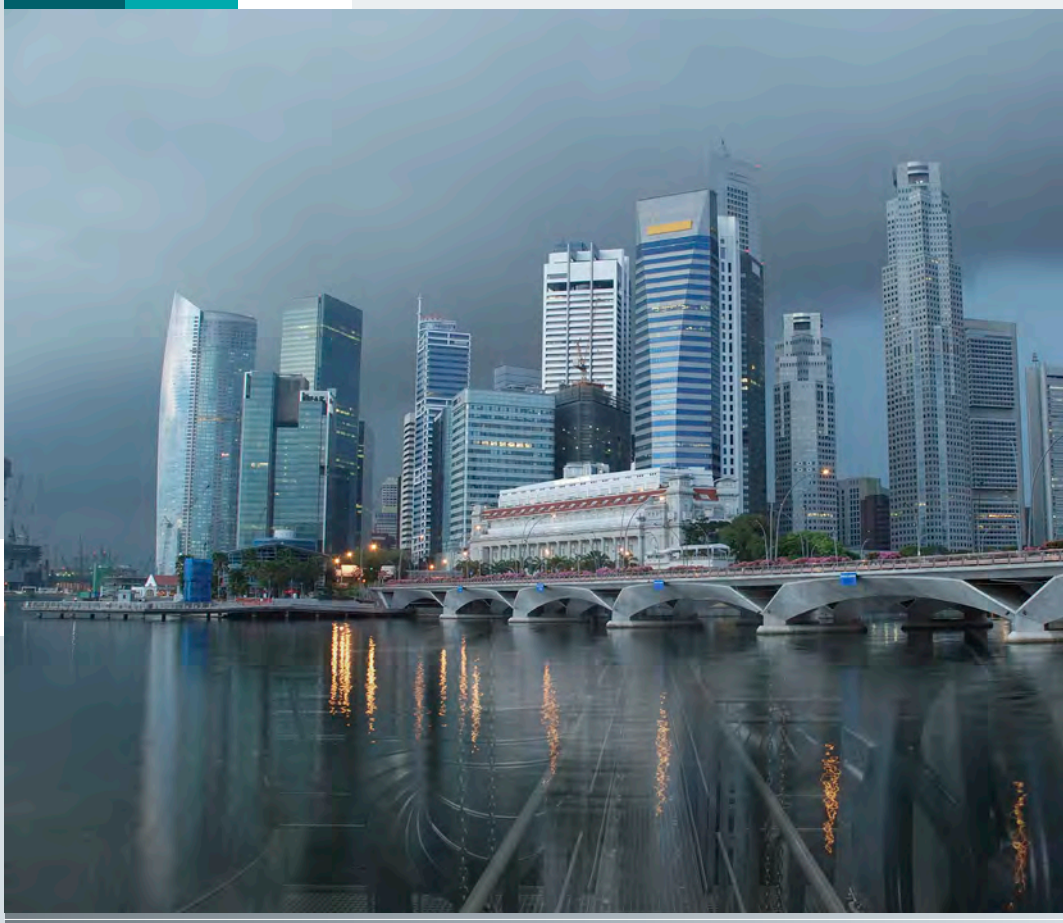
District Energy

Submetering

Energy Optimisation

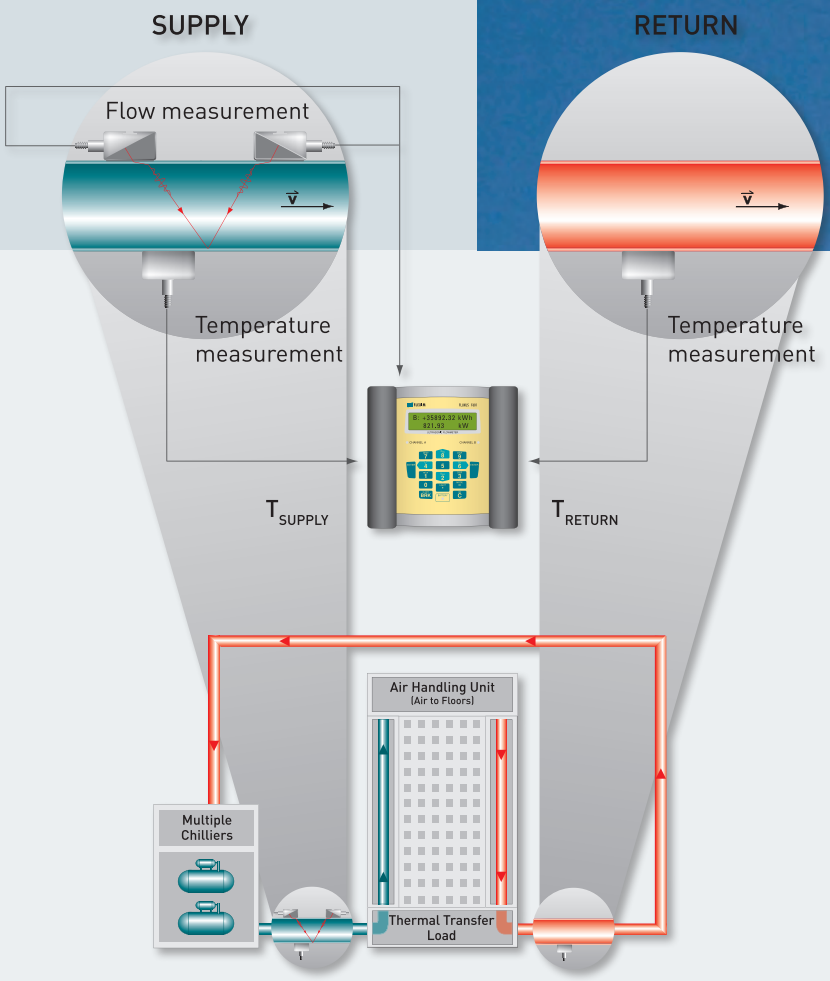
Energy Audits

Metering & Verification



FLUXUS Energy

Non-intrusive Thermal Energy Metering



Energy Optimisation

In times of rising energy prices, environmental regulations and financial benefits of energy efficient buildings, the controlling, balancing and monitoring of thermal energy flows is of utmost importance. FLEXIM's thermal energy meters are up to the task.

Integrated System

FLEXIM's energy meters combine the attributes of non-intrusive ultrasonic flow measurement with superior temperature monitoring into an integrated energy computer. All flow transducers and temperature sensors are connected to one unit. This eliminates errors associated with multiple devices and provides for a complete turn-key solution for your energy metering needs.

FLEXIM's thermal energy meters support your efforts for a higher energy efficiency of buildings and facilities:

- FLEXIM offers portable meters for temporary measurements as well as stationary meters for long term flow and energy monitoring.
- With an accuracy of better than 1% on the flow velocity, they are the perfect instrument for:
  - The verification of built in meters,
  - the measurement of chilled and hot water supply,
  - as well as the measurement of the general water supply.
- Whether it is a Green Mark certification, a Green Star, a NABERS rating or another energy certification that you are pursuing, FLEXIM's thermal energy meters are the ideal tool for this task.
- Being non-intrusive, FLEXIM's thermal energy meters are free of wear and maintenance efforts are kept to an absolute minimum.

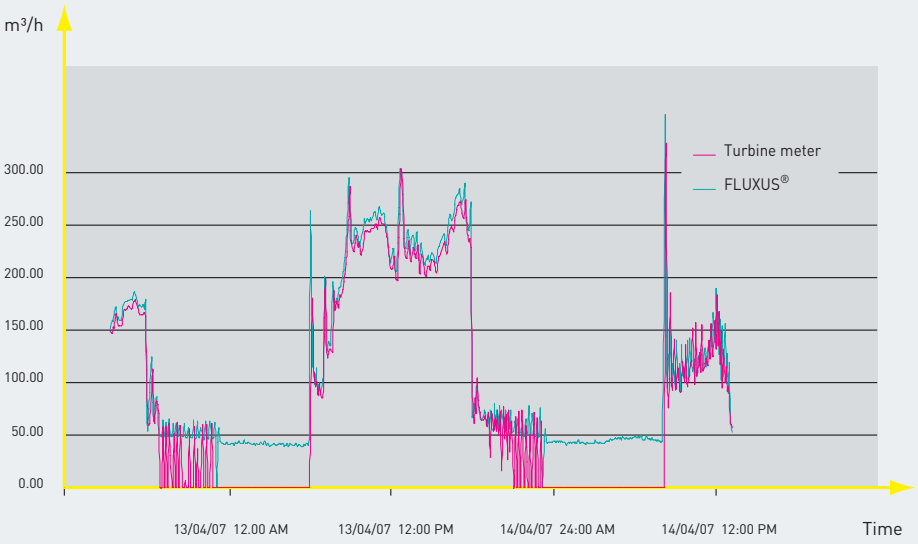
Unparalleled precision at high and marginal low flow rates

Typical HVAC applications run less than 8 hours peak flow while the remaining 16 hours are usually off-peak low flow beyond the threshold of other metering technologies.

FLEXIM's unparalleled flow range and zero sensitivity allow the system to measure accurately the extremely low flow rates associated with trickle or low flow intervals.

This high accuracy is reached by a sophisticated process of matching and pairing the ultrasonic transducers, by caring for a proper temperature compensation to rule out drifting, and by the implementation of powerful correction algorithms within the flow computer to eliminate possible false readings caused by disturbances.

Capturing low flows can give valuable hints on possible leaks within the infrastructure as well as help in the right balancing of pumps and whole plants.



Temperature Accuracy

In situations with small temperature differentials such as at chilled water applications, the temperature measurement is critically important.
As FLEXIM's temperature measurement systems (RTD's) are matched and paired according to IEC 751 Class A, a differential supply and return uncertainty of better than 0.05 K can be reached. Moreover, they can be supplied with a traceable laboratory calibration certificate according to DIN EN 1434-1 for energy measurement.

Applications

Application fields for FLUXUS Energy:

- HVAC tasks
- District Energy
- Chilled and hot water plants in:
  - Universities,
  - Corporate and governmental complexes,
  - Commercial buildings,
  - Shopping malls,
  - Hospitals,
  - Sport arenas,
  - Airports and more
- Industrial cooling and heating
- Industrial processes

University gains total control over chiller

The Nova Southeastern University in Florida, home to 28.000 students, boasts the fourth largest ice conversion chiller facility in the US.

Ice conversion saves power, as ice is build up at night when power costs less and then "melts" during the day to cool the water flows.

A superior flow monitoring capability to run these chillers at peak efficiency is a must.

Previously used Differential Pressure flow meters could not meet these requirements in terms of accuracy, especially at low flows, thus giving away free energy.

Together with a Green Star certified contractor, the HVAC managers at Nova identified FLEXIM's flow meters as the ideal solution for the task. Not only can they be retrofitted to existing pipe works, they also feature an accuracy within 1% of the flow rate.

Moreover, due to their high turndown range and fast response to changing flow rates, the ultrasonic meters are used for controlling the frequency drive pumps, saving energy and especially considerable wear and tear on the pumps.

Advantages:

- High accuracy on low and high flow rates
- Easy retrofitting on existing pipes without any pipe works
- High turndown and quick response rate for total flow control

Our Presence and References in Singapore

As a pioneer market for setting up standards and meeting global energy savings, Singapore can be seen as a lighthouse for an emerging energy awareness in the S.E.A. region.

With green incentive schemes to encourage building owners and developers to achieve water and energy efficient buildings, the Building and Construction Authority of Singapore (BCA) has set high targets.

An accurate energy monitoring involves the measurement of the flow of chilled water as well as the temperature components at the inlet and outlet and forwarding this information to the Building Management System (BMS).

FLEXIM is one of a few companies, which are able to meet the requirements set by the BCA. By partnering with Hisotech Pte Ltd., an established HVAC Energy Metering company, we have been able to successfully apply our Ultrasonic Flow and Energy Meters into many buildings in Singapore – some of being such important installations as within the Integrated Resorts or the Changi Airport Budget Terminal.

Advantages:

- High accuracy heat quantity measurement through matched and paired Pt100/1000 temperature sensors and an integrated flow computer
- Two flow channels and four temperature inputs for highest accuracy, reliability and optimal monitoring capabilities

Improve the energy efficiency of your building with FLUXUS Energy

There are many reasons to invest into energy optimisation efforts, such as primarily decreasing the overall power consumption, improving the workload of the technical HVAC infrastructure, the tenancy rating and building quality and, of course, moving towards a more ecological thinking.

The measures for achieving a higher energy efficiency are numerous. An important one is without a doubt the energetic control of the heating and cooling flows within the building.

May it be for temporary measurements or stationary applications, FLEXIM's Energy flow meters offer the superior solution with a high degree of reliability and repeatability. Pipe works for installation are not required and thus the clamp-on flow meters are also an ideal solution for retrofitting existing plants.

FLEXIM's energy flow meters offer an accuracy of 1% or better on the flow rate. This superior precision can be reached by specially matched and paired ultrasonic transducers and temperature probes. Moreover, being temperature compensated, inaccuracies or drift through deviations of the ambient temperature do not exist. With its powerful correction algorithms, FLEXIM's flow meters can also be placed at non ideal pipe conditions. Valves, vents, pipe bends or even EMC issues through pump drive converters, as encountered with other flow meter types, are not an issue for FLEXIM.

Benefiting from Governmental Programs

Governmental programs, such as the Singapore Green Mark incentive scheme or the to subsidize and support energy efficiency programs, are becoming more and more popular with continuous efforts to save energy globally.

In doing so, the Building and Construction Authority of Singapore, known as the BCA, has passed down a series of green incentive schemes to encourage building owners and developers to achieve a higher water and energy efficiency. As a lot of monetary savings comes along with energy savings, the accuracy requirements of the energy flow metering are set up high with an added emphasis for precision.

FLEXIM is able to meet the requirements set by the BCA and as a result of this, many commercial and private users throughout the island of Singapore are using our clamp-on technology to meet the Green Mark Standards.

FLUXUS® Energy

Technical Data

Technical Data

FLUXUS® Energy:	Fully integrated thermal energy metering system (ultrasonic clamp-on transit-time flow measurement, temperature measurement with clamp-on or insert temperature sensors)
Quantities of measurement:	Instantaneous thermal energy output, totalized thermal energy, volume and mass flow, temperature Ts, Tr, qT, flow velocity, liquid's sound speed, signal strength
Units:	Wh, BTU, tons, J, etc.
Flow velocity:	(0.01 to 25) m/s
Repeatability:	0.15% of reading ± 0.01 m/s
Calibrated Accuracy volumetric flow rate*:	+-0.5% ... 1% of measured value or reading +- 1 cm/s**
Temperature measurement:	Accuracy: ± 0.05 K with matched RTDs Types: 100 Ohm / 1000 Ohm clamp-on and insert sensors Construction: 4-wire Platinum RTD
Integrated data logger:	>100 000 measurement values typically stores 2 months data at 15 min storage rate
Outputs types:	Analog: 4-20 mA, 0-10 V, pulse, Modbus, RS485 (other protocols available)
Output data:	All quantitites of measurement

* under reference conditions and with v > 0.15 m/s
** if reference uncertainty better than 0.2%

For more information, see the corresponding technical specifications.

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