**Industrial Energy Efficiency Solutions**

Non-invasive ultrasonic measurement of thermal energy, compressed air and steam flow rates – Permanent Installation and Portable

---

**Measurement Technical Specifications**

<table>
<thead>
<tr>
<th>Feature</th>
<th>FLUXUS® TE</th>
<th>FLUXUS® CA</th>
<th>FLUXUS® ST</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Applications</strong></td>
<td>Thermal</td>
<td>Energy</td>
<td>Energy</td>
</tr>
<tr>
<td></td>
<td>Flow</td>
<td>Flow</td>
<td>Flow</td>
</tr>
<tr>
<td></td>
<td>Measurement</td>
<td>Measurement</td>
<td>Measurement</td>
</tr>
<tr>
<td></td>
<td>of liquids</td>
<td>of liquids</td>
<td>of liquids</td>
</tr>
<tr>
<td></td>
<td>and flow</td>
<td>and flow</td>
<td>and flow</td>
</tr>
<tr>
<td></td>
<td>Measurement</td>
<td>Measurement</td>
<td>Measurement</td>
</tr>
<tr>
<td></td>
<td>of liquids</td>
<td>of liquids</td>
<td>of liquids</td>
</tr>
<tr>
<td></td>
<td>and flow</td>
<td>and flow</td>
<td>and flow</td>
</tr>
<tr>
<td><strong>Measurement Quantities</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Volume Flow</td>
<td>Energy Flow</td>
<td>Volume Flow</td>
</tr>
<tr>
<td></td>
<td>Flow Velocity</td>
<td>Flow Velocity</td>
<td>Flow Velocity</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Media</strong></td>
<td>Water</td>
<td>Water</td>
<td>Saturated</td>
</tr>
<tr>
<td></td>
<td>Glycol</td>
<td>Various</td>
<td>Steam</td>
</tr>
<tr>
<td></td>
<td></td>
<td>liquid</td>
<td>up to 180 °C</td>
</tr>
<tr>
<td></td>
<td></td>
<td>energy</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>related media</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>like</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Ammonia and</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>thermal</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>oils</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Temperature</strong></td>
<td>-40 °C … +240 °C</td>
<td>-30 °C … +130 °C</td>
<td>+100 °C … 180 °C</td>
</tr>
<tr>
<td></td>
<td>with WaveInjector®</td>
<td>for Gases</td>
<td>for Steam</td>
</tr>
<tr>
<td></td>
<td>up to 400 °C</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Pipe Diameters</strong></td>
<td>6 mm … 6000 mm</td>
<td>50 mm … 250 mm</td>
<td>40 mm … 400 mm</td>
</tr>
<tr>
<td></td>
<td>for Liquids</td>
<td>for CA</td>
<td>for Steam</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Applications</td>
<td>Applications</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Measurement uncertainty</strong></td>
<td>1.0% of reading</td>
<td>1 ... 3% of reading</td>
<td>1 ... 3% of reading</td>
</tr>
<tr>
<td></td>
<td>for Gas</td>
<td></td>
<td>for Steam</td>
</tr>
<tr>
<td></td>
<td>Applications</td>
<td></td>
<td>Applications</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Calibration</strong></td>
<td>In house calibration</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

---

**Data Evaluation**

The reason for measuring is the need for conclusive data that can be used in Energy Management Systems or to report plant conditions.

So FLUXIM brings FLUXDiag into play, a sophisticated Software program for managing measured data from portable or fixed installed meters.

Easy read-out, data evaluation and interpretation by graphic visualization is one feature. But more importantly is the convenience of the one-click to MS Excel expert function – creating a comprehensive report including all relevant information like measuring site, operator and local conditions. Measurement quality and expected accuracy is also shown along with all detailed measured values.

Reporting measuring data has never been easier or faster.

---

**Measurement Data you can trust**

FLUXIM takes reliability and accuracy seriously – With 30 years of field experience we are setting the standard for today’s measuring technology.

- High end digital signal processing for best measuring performance and dynamics
- Separately calibrated transmitters and transducer pairs based on patented and PTB traceable aperture calibration for highest possible accuracy of the measuring system
- Matched and paired flow and temperature transducers ensuring zero offset and superior low flow performance
- Integrated transducer temperature compensation (acc. to ANSI/ASME MFC-5.1-2011 regulations), for stable measurements independent of changing ambient temperatures
- Measuring principle unaffected by the medium - drift free measurement even with wet or laden compressed air

---

FLEXIM GmbH, Germany
Phone: +49 30 93 66 76 60
sales@flexim.com

FLEXIM Austria GmbH
Phone: +43 1 73 22 0 81
info@flexim.at

FLEXIM Instruments Benelux B.V.
Phone: +31 476 70 20 80
sales@flexim.nl

FLEXIM France SAS
Phone: +33 4 27 46 52 10
info@flexim.fr

FLEXIM Instruments UK Ltd.
Phone: +44 1606 781 420
sales@flexim.co.uk

FLEXIM Instruments Benelux B.V.
Phone: +31 476 70 20 80
sales@flexim.nl

FLEXIM Instruments Asia Pte Ltd.
Phone: +65 67 94 53 25
sales@flexim.com

FLEXIM Instruments China
Phone: +86 21 64 95 75 20
shanghai@flexim.com

FLEXIM S.A., Chile
Phone: +56 22 32 03 62 80
info@flexim.cl

FLEXIM India
Phone: +91 98114 49285
salesindia@flexim.com

FLEXIM Instruments Middle East
Phone: +971 44 30 51 14
salesme@flexim.com

FLEXIM Instruments Americas Corporation, USA
Phone: +1 631 49 22 30 00
salesus@flexim.com

www.flexim.com

---

**Efficiency determination of:**

- Heat Exchangers
- Boilers
- Heat Transfer
- Heat / Chiller Plants
- Process cold networks
- Compressed air networks
- Steam generation

---
Keeping track of energy consumption

Within industrial environments energy efficiency is a key competitive factor. Efficiency determination and optimization is an ongoing task – not only to meet underlying governmental regulations and standards such as ISO 50001 – but to stay cost effective.

Industrial production processes consume energy in many forms – steam, compressed air and thermal energy such as heating and cooling.

Unlocking optimization potentials begins with measuring these streams, as a basis for determination of consumption levels of individual suppliers and consumers or complete production units.

Accurately and reliably measuring heat and cold flow rates, compressed air and steam within complex production environments can cause headaches in terms of plant availability and maintenance, as well as inventory management.

What if there were a hassle-free metering solution for any kind of application?

FLEXIM is the answer! Based on the ultrasonic transit time measuring principle, FLUXUS not only measures virtually any liquid medium, but also gases – including compressed air as well as steam.

Whether it's for temporary spot metering or permanent monitoring, FLEXIM's non-invasive ultrasonic metering solutions are the perfect fit within industrial energy management.

By measuring from outside the pipe wall and never in direct contact with the media, there is no need for pipe modifications and thus ensuring full plant availability even during installation. Alongside comes increased operational safety – no cutting, welding or risk of leakage.

FLEXIM's technology is most importantly flexible – all liquid or gaseous media, wide measuring ranges and wide range of covered pipe diameters means less headache in finding the optimum meter.

Knowing industrial demands, our metering solutions are engineered in rugged stainless steel housings withstanding even the harshest industrial environments, guaranteeing long-term stability and durability with no measurement drift and zero maintenance requirements.

Process Cold
Controlling ammonia compressors and lines
- Measurement of thermal energy flow rates of ammonia without media contact and pipe intrusion for highest operational safety
- Measurement directly at the compressor outlet for improving energy efficiency and exact process control
- Measurement at individual lines for balancing and heat quantity consumption analysis

Flexible Energy Management
A combination of portable and fixed installed meters is the economic approach for energy data acquisition. Permanent Monitoring of the most important energy flows, and temporary measurement to cover the blind spots.

One for all
FLEXIM's transit time principle suits all applications, whether liquids, gas or steam. Our portable meters are multi-functional and the perfect tool for Energy Managers.

Compressed Air
Monitoring, Balancing and Leakage control of compressed air networks
- Measurement unaffected by moisture, oil or dirt particles
- Completely drift-free with very low maintenance requirements
- Fully bidirectional measuring system for monitoring forward and backward flows

High Temperature Media
Flow rate monitoring of any heat transfer medium up to 1400 °C and beyond
- Non-invasive measurement at extreme media temperatures
- Monitoring and balancing of energy transfer within thermal oil systems

Saturated Steam
Flow measurement of saturated steam up to 180 °C
- Reliable volume and mass flow measurement even at low flows
- No pipe reductions, no pressure loss
- Portable and fixed installed measurement

Heating and Cooling
Measuring thermal energy flow rates for line balancing and efficiency determination
- Non-invasive flow and temperature measurement in one integrated thermal energy measuring system
- Independent of medium, line pressurization and temperature

One for all
FLEXIM's transit time principle suits all applications, whether liquids, gas or steam. Our portable meters are multi-functional and the perfect tool for Energy Managers.
Industrial Energy Efficiency Solutions

Non-invasive ultrasonic measurement of thermal energy, compressed air and steam flow rates – Permanent Installation and Portable

Measurement Data you can trust

FLEXIM takes reliability and accuracy seriously – With 30 years of field experience we are setting the standard for today’s measuring technology.

- High end digital signal processing for best measuring performance and dynamics
- Separately calibrated transmitters and transducer pairs based on patented and PTB traceable aperture calibration for highest possible accuracy of the measuring system
- Matched and paired flow and temperature transducers ensuring zero offset and superior flow performance
- Integrated transducer temperature compensation (acc. to ANKUS/ASME MFC-5.1-2011 regulations), for stable measurements independent of changing ambient temperatures
- Measuring principle unaffected by the medium - drift free measurement even with wet or laden compressed air

Data evaluation made easy

The reason for measuring is the need for conclusive data that can be used in Energy Management Systems or to report plant conditions.

So FLEXIM brings FLUXDiag into play, a sophisticated Software program for managing measured data from portable or fixed installed meters.

Easy read-out, data evaluation and interpretation by graphic visualization is one feature. But more importantly is the convenience of the one-click to MS Excel export function – creating a comprehensive report including all relevant information like measuring site, operator and local conditions. Measurement quality and expected accuracy is also shown along with all detailed measuring values.

Reporting measuring data has never been easier or faster.

Technical Specifications

<table>
<thead>
<tr>
<th>Portable gas and liquid flow meters</th>
</tr>
</thead>
<tbody>
<tr>
<td>FLEXUS® TE / FLUXUS® TE series</td>
</tr>
<tr>
<td>FLEXUS® CA / FLUXUS® CA series</td>
</tr>
<tr>
<td>FLEXUS® ST / FLUXUS® ST series</td>
</tr>
</tbody>
</table>

**Applications**
- Flow and Thermal Energy Flow
- Measurement of industrial gases
- Flow Measurement of compressed air and technical gases

**Measurement Quantities**
- Volume Flow
- Energy Flow
- Flow Velocity
- Standard Volume Flow
- Volume Flow
- Flow Velocity
- Mass Flow
- Volume Flow
- Flow Velocity

**Media**
- Water
- Water Glycol
- Various liquid energy related media like Ammonia and thermal oils
- Compressed Air
- Nitrogen
- Oxygen
- Intergas

**FLUXUS® G601 CA Energy** includes all liquid Media

**FLUXUS® G601 ST Energy** includes all liquid and gas Media

**Temperature**
- -40 °C … +240 °C
- up to 400 °C with WaveInjector®
- -30 °C … +130 °C for Gases
- +100 °C … 180 °C for Steam

**Pipe Diameters**
- 6 mm … 6000 mm for Liquids
- 50 mm … 250 mm for CA Applications
- 40 mm … 400 mm for Steam Applications

**Measurement uncertainty**
- 1.0% of reading
- 1 ... 3% of reading for Gas Applications
- 1 ... 3% of reading for Steam Applications

**Calibration**
- In-house calibration traceable to PTB standards

FLEXIM GmbH, Germany
Phone: +49 30 366 76 60
finfo@flexim.de

FLEXIM Australia Pty Ltd.
Phone: +61 1300 561 430
sales@flexim.com.au

FLEXIM Instruments Benelux B.V.
Phone: +31 10 24 92 333
benelux@flexim.com

FLEXIM Instruments Benelux B.V.
Phone: +31 10 24 92 333
benelux@flexim.com

FLEXIM Energy
Phone: +91 98114 49285
salesindia@flexim.com

FLEXIM Instruments Asia Pte Ltd.
Phone: +65 67 94 53 25
salessg@flexim.com

FLEXIM Instruments China
Phone: +86 21 64 95 75 20
shanghai@flexim.com

FLEXIM S.A., Chile
Phone: +56 22 32 03 62 80
info@flexim.cl

FLEXIM Instruments UK Ltd.
Phone: +44 1606 781 420
salesuk@flexim.com

FLEXIM Middle East
Phone: +971 44 30 51 14
salesme@flexim.com

FLEXIM Service and Support Center
South America, Argentina
Phone: +54 11 49 20 71 00
flexim@escoarg.com.ar

www.flexim.com

www.escoarg.com.ar

FLEXIM when measuring matters

Efficiency determination of:
- Heat Exchangers
- Boilers
- Heat Transfer
- Heater / Chiller Plants
- Process cold networks
- Compressed air networks
- Steam generation
- Steam generation

www.flexim.com
Keeping track of energy consumption

Within industrial environments energy efficiency is a key competitive factor. Efficiency determination and optimization is an ongoing task – not only to meet underlying governmental regulations and standards such as ISO 50001 – but to stay cost-effective.

Industrial production processes consume energy in many forms – steam, compressed air and thermal energy such as heating and cooling.

Unlocking optimization potentials begins with measuring these streams, as a basis for determination of consumption levels of individual suppliers and consumers or complete production units.

Accurately and reliably measuring heat and cold flow rates, compressed air and steam within complex production environments can cause headaches in terms of plant availability and maintenance, as well as inventory management.

What if there were a hassle-free metering solution for any kind of application?

FLEXIM is the answer! Based on the ultrasonic transit time measuring principle, FLUXUS not only measures virtually any liquid medium, but also gases – including compressed air as well as steam.

Whether it's for temporary spot metering or permanent monitoring, FLEXIM's non-invasive ultrasonic metering solutions are the perfect fit within industrial energy management.

By measuring from outside the pipe wall and never in direct contact with the media, there is no need for pipe modifications and thus ensuring full plant availability even during installation. Alongside comes increased operational safety – no cutting, welding or risk of leakage.

FLEXIM’s technology is most importantly flexible – all liquid or gaseous media, wide measuring ranges and wide range of covered pipe diameters means less headache in finding the optimum meter.

Knowing industrial demands, our metering solutions are engineered in rugged stainless steel housings withstanding even the harshest industrial environments, guaranteeing long-term stability and durability with no measurement drift and zero maintenance requirements.

Flexible Energy Management

A combination of portable and fixed installed meters is the economic approach for energy data acquisition. Permanent Monitoring of the most important energy flows, and temporary measurement to cover the blind spots.

One for all

FLEXIM’s transit time principle suits all applications, whether liquids, gas or steam. Our portable meters are multi-functional and the perfect tool for Energy Managers.
Keeping track of energy consumption

Within industrial environments energy efficiency is a key competitive factor. Efficiency determination and optimization is an ongoing task – not only to meet underlying governmental regulations and standards such as ISO 50001 – but to stay cost effective.

Industrial production processes consume energy in many forms – steam, compressed air and thermal energy such as heating and cooling.

Unlocking optimization potentials begins with measuring these streams, as a basis for determination of consumption levels of individual suppliers and consumers or complete production units.

Accurately and reliably measuring heat and cold flow rates, compressed air and steam within complex production environments can cause headaches in terms of plant availability and maintenance, as well as inventory management.

What if there were a hassle-free metering solution for any kind of application?

FLEXIM is the answer! Based on the ultrasonic transit time measuring principle, FLUXUS not only measures virtually any liquid medium, but also gases – including compressed air as well as steam.

Whether it's for temporary spot metering or permanent monitoring, FLEXIM's non-invasive ultrasonic metering solutions are the perfect fit within industrial energy management.

By measuring from outside the pipe wall and never in direct contact with the media, there is no need for pipe modifications and thus ensuring full plant availability even during installation. Alongside comes increased operational safety – no cutting, welding or risk of leakage.

FLEXIM's technology is most importantly flexible – all liquid or gaseous media, wide measuring ranges and wide range of covered pipe diameters means less headache in finding the optimum meter.

Knowing industrial demands, our metering solutions are engineered in rugged stainless steel housings withstanding even the harshest industrial environments, guaranteeing long-term stability and durability with no measurement drift and zero maintenance requirements.

FLEXIM's transit time principle suits all applications, whether liquids, gas or steam. Our portable meters are multi-functional and the perfect tool for Energy Managers.

Flexible Energy Management

A combination of portable and fixed installed meters is the economic approach for energy data acquisition. Permanent Monitoring of the most important energy flows, and temporary measurement to cover the blind spots.

One for all

FLEXIM’s transit time principle suits all applications, whether liquids, gas or steam. Our portable meters are multi-functional and the perfect tool for Energy Managers.

Saturated Steam

Flow measurement of saturated steam up to 180 °C

Reliable volume and mass flow measurement even at low flows

No pipe reductions, no pressure loss

Portable and fixed installed measurement

Heating and Cooling

Measuring thermal energy flow rates for line balancing and efficiency determination

- Non-invasive flow and temperature measurement in one integrated thermal energy measuring system
- Independent of medium, line pressure and temperature

Compressed Air

Monitoring, Balancing and Leakage control of compressed air networks

- Measurement unaffected by moisture, oil or dirt particles
- Completely drift-free with low to zero maintenance requirements
- Fully bidirectional measuring system for monitoring forward and backward flows

High Temperature Media

Flow rate monitoring of any heat transfer medium up to 400 °C and beyond

- Non-invasive measurement at extreme media temperatures
- Monitoring and balancing of energy transfer within thermal oil systems

Process Cold

Controlling ammonia compressors and lines

- Measurement of thermal energy flow rates of ammonia without media contact and pipe intrusion for highest operational safety
- Measurement directly at the compressor outlet for improving energy efficiency and exact process control
- Measurement at individual lines for balancing and heat quantity consumption analysis
Flow and Thermal
High end digital signal processing for best measuring performance and dynamics
Integrated transducer temperature compensation (acc. to ANSI/ASME MFC-5.1-2011 regulations), for stable measurements independent of changing ambient temperatures.

Measuring principle unaffected by the medium - drift free measurement even with wet or oil-laden compressed air
-40 °C … +240 °C

Water
Separately calibrated transmitters and transducer pairs based on patented and PTB traceable aperture calibration

Matching measurement data has never been easier or faster.

Technical Specifications

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Measurement Quantities</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Media</td>
<td>Water</td>
<td>Water</td>
<td>Water</td>
</tr>
<tr>
<td>Volume Flow</td>
<td>Various liquid or gas media like Ammonia and Freon</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Temperature</td>
<td>-50 °C … +275 °C</td>
<td>-30 °C … +150 °C</td>
<td>-30 °C … +180 °C</td>
</tr>
<tr>
<td>Accuracy</td>
<td>±1.0% of reading</td>
<td>±1.0% of reading</td>
<td>±1.0% of reading</td>
</tr>
<tr>
<td>Flow Meters</td>
<td>Portable and In-Process</td>
<td>Portable and In-Process</td>
<td>Portable and In-Process</td>
</tr>
<tr>
<td>Pipe Diameter</td>
<td>16 mm … 6000 mm</td>
<td>50 mm … 1000 mm</td>
<td>50 mm … 250 mm</td>
</tr>
<tr>
<td>Temperature Drift</td>
<td>+1.0 °C / 10 °C</td>
<td>+1.0 °C / 10 °C</td>
<td>+1.0 °C / 10 °C</td>
</tr>
<tr>
<td>Calibration</td>
<td>On-Meter calibration traceable to PTB standards</td>
<td>On-Meter calibration traceable to PTB standards</td>
<td>On-Meter calibration traceable to PTB standards</td>
</tr>
</tbody>
</table>

The reason for measuring is the need for conclusive data that can be used in Energy Management Systems or to report plant conditions.

So FLEXIM brings FLUXDiag into play, a sophisticated Software program for managing measured data from portable or fixed installed meters.

Easy read-out, data evaluation and interpretation by graphic visualization is one feature. But more importantly is the convenience of the one-click to MS Excel export function – creating a comprehensive report including all relevant information like measuring site, operator and local conditions. Measurement quality and expected accuracy is also shown along with all detailed measuring values.

Reporting measuring data has never been easier or faster.

Industrial Energy Efficiency Solutions
Non-invasive ultrasonic measurement of thermal energy, compressed air and steam flow rates – Permanent Installation and Portable

Measurement Data you can trust
FLEXIM takes reliability and accuracy seriously - With 30 years of field experience we are setting the standard for today's measuring technology.

- High end digital signal processing for best measuring performance and dynamics
- Separately calibrated transmitters and transducer pairs based on patented and PTB traceable aperture calibration for highest possible accuracy of the measuring system
- Matched and paired flow and temperature transducers ensuring zero offset and superior low flow performance
- Integrated transducer temperature compensation (acc. to ANSI/ASME MFC-5.1-2011 regulations), for stable measurements independent of changing ambient temperatures
- Measuring principle unaffected by the medium - drift free measurement even with wet or oil-laden compressed air

Data evaluation made easy

Efficiency determination of:
- Heat Exchangers
- Boilers
- Heater / Chiller Plants
- Process cold networks
- Compressed air networks
- Steam generation

www.flexim.com