OPTIMASS 7000 & 7100
Single Tube
Coriolis Mass Flowmeters
OPTIMASS is a brand new family of Coriolis mass flowmeters from KROHNE.

The new family of meters overcomes many of the constraints traditionally associated with Coriolis meters and at the same time improves on the measurement accuracy available with this technology.

...No Limits

No Limits with materials

The OPTIMASS range uses the latest in materials technology to provide meters with Titanium, Stainless Steel and Hastelloy® wetted parts.

No Limits with flow

The OPTIMASS family has two styles of meter, the 7000 single straight tube (general purpose applications) and the 7100 single Z tube (low flow applications). Flowmeters are available for applications from 0.3 kg/h to 430,000 kg/h (0.66 lb/min to 15,8000 lb/min).

No Limits with measured product

OPTIMASS is ideal for high viscosity, fluide containing particulate matter, inhomogeneous mixtures and normal entrained air, with little effect on the accuracy and quality of measurement.

No Limits with installation

No installation restrictions; meter can even be supported on the body.

No Limits with electronics

OPTIMASS has also been designed with all new electronics which incorporates Front End signal processing that is permanently mounted to the meter. The main converter can either be mounted integrally or remotely at distances of up to 300 m (1,000 ft). The new electronics also provide OPTIMASS with excellent turndown capabilities preventing the need to downsize meters when measuring low flow.

OPTIMASS benefits

- Reduced installation cost
- Higher performance
- Wider range of applications
- Lower cost of ownership
- Flexibility in material and electronics.
No Limits with applications

The new OPTIMASS range has been developed following wide ranging discussions with leading companies in the different industries. KROHNE can provide metering solutions whatever your requirement including the following typical applications:

**Food Industry**

**Brewing**
- Density measurement
- Dosing of hop extract
- Flow measurement wort cooler
- Flow measurement yeast
- Flow measurement sterile air – yeast propagation
- Flow measurement – wort aeration
- S.G. measurement in the fermentation tank
- Density measurement – high gravity unit
- Flow measurement adhesive for labels
- CO₂ injection

**Confectionery**
- Chocolate flow
- Cocoa butter

**Bakery**
- Flow measurement of dough
- Cream flow for biscuit filling

**Beverage Industry**

**Dairy**
- Flow measurement – milk delivery
- Fat content measurement – milk & cream
- Density measurement at the yoghurt evaporator
- Dosing of yoghurt fruit components
- Dosing of yoghurt cultures
- Flow measurement of milk concentrate
- Density measurement of milk concentrate

**Fruit Juice Production**
- BRIX measurement pressed juice
- Density measurement evaporator
- Flow measurement concentrate
- Dosing of components additives
- BRIX measurement of final product
- Bulk loading

**Other applications**
- Peanut butter
- Olive oil
- Molasses
- Coffee
- Margarine
Pharmaceutical Industry
- Ingredient batching into reactors
- Ultra pure water ring main measurement
- Solvent extraction
- Suitable for batching and filling.

... and in many other industries.

OPTIMASS is ideal for:

**Chemical Industry**
- Batching to reactors
- Production balance of raw material feed
- Quality control of final product (by concentration, density, etc.)
- Production control of product using concentration measurement
- Bulk loading from storage to road/rail tankers
- Tank farm management using mass flow to storage tanks instead of level or volume flow which is subject to change due to temperature fluctuation.

**Oil and Gas industry**
- Metering skids
- Loading/Offloading

**Mining, Machinery, Minerals**
- Precise metal content in slurries

**Water/Waste water**
- Flocculent dosing
- Density Measurement

Ask your local KROHNE contact for more details.

**OPTIMASS features**

**Process**
- Continuous monitoring of product quality
- Suitable for batching and filling applications
- Smooth transition from measuring tube to process pipe work
- Heating jacket available for solidifying products
- Output options – Total mass flow, density, temperature, concentration by mass or volume, Brix, degrees Plate, degrees Baumé Concentration.

**Hygiene**
- European Hygienic Equipment Design Group (EHEDG) approval
- Approved by the American 3 A standards Association
- Designed to meet ASME Bio processing equipment standard
- Industry accepted seals with FDA approved materials
- Wetted surfaces
  - Ra < 0.5 µm (RA 20)

**Cleaning**
- CIP/SIP compatibility up to 150°C (302°F) depending on tube material
- OPTIMASS 7000 is self-draining and can be sterilised

**Connectors**
- Patented hygienic process connection system
- All welded Tri-clamp and Tri-clover® connector available
- All welded DIN 11864 European pharmaceutical standard connector available

**Safety**
- Instruments are approved in accordance with ATEX, FM and CSA (pending) standards for use in hazardous area environments
- Electronic converter option with Intrinsically Safe passive outputs
OPTIMASS – Discover the Difference

Adaptive Sensor Technology

KROHNE have re-designed the Coriolis flowmeter from the inside out to produce an instrument that is inherently balanced under all operating conditions. The result is a meter that can cope with the most demanding process conditions and still deliver accurate and reliable measurement time after time. KROHNE’s patented AST design used on the OPTIMASS 7000 single straight tube flow meter is extremely stable and will adaptively tune each meter independent of external forces and fluid density.

Remote Metering

All OPTIMASS meters have Front-End sensor signal processor permanently mounted to the meter, this provides several benefits for instruments which need to have a remote mounted converter. Standard RS 485 bus communications are used providing a reliable and inexpensive means of communication at distances of up to 300 meter (1,000 ft).

Both processors store the instrument’s data, providing a back-up in the event of one set of electronics being replaced.

7000 Single Straight Tube

The OPTIMASS straight tube meter is available in 7 sizes from DN 06 to 80 and is suitable for flow rates of up to 430,000 kg/h (15,800 lb/min). The single tube design gives a low pressure drop and with no flow dividers will not damage shear sensitive products.

The straight tube is resistant to blocking or fouling and is available in Titanium, Stainless Steel 318L and Hastelloy® C-22.

- Flange connections to ANSI, DIN and JIS standards
- All welded Hygienic connector for DIN 11 864 or Tri-clamp
- Hygienic fittings available
- Secondary containment to 63 bar (910 psi). PED approved
- Heating jacket option.

7100 Single Z Tube

The OPTIMASS 7100 is a unique instrument providing highly accurate metering for low flow applications. Available with 1/4” NPT fittings as standard, hygienic connections are also available.

- Secondary pressure containment
- Liquid heating jacket option
- Modular design
- Available in Stainless Steel 316L and Hastelloy® C-22.

Industry Approvals

The OPTIMASS range is fully approved by the EHEDG and 3A. All meters are manufactured from materials specially selected to conform to FDA guidelines.

OPTIMASS is approved in accordance with ATEX, FM and CSA (pending) standards for use in hazardous area environments.
**Connectors**

OPTIMASS flowmeters are available with a variety of end connections as standard including an all new (patented) hygienic connector designed acc. to DIN 11864/2. High pressure tongue and groove flange options also available.

**Specifications**

**Series 7000 Single Straight Tube**

<table>
<thead>
<tr>
<th>Connections</th>
<th>Flange, Tri-Clamp, SMS, DIN 11864, DIN 11851, IDF etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Protection Category</td>
<td>IP 67</td>
</tr>
</tbody>
</table>

**Titanium Wetted Parts**

<table>
<thead>
<tr>
<th>Process Temperature</th>
<th>-30°C ... +150°C or -22°F ... +302°F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Pressure</td>
<td>max 63 bar g or 910 psig</td>
</tr>
</tbody>
</table>

**Hastelloy (HC-22) Wetted and Stainless Steel (318 L) Parts**

<table>
<thead>
<tr>
<th>Process Temperature</th>
<th>0°C ... 100°C or 32°F ... 212°F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating Pressure</td>
<td>max 40 bar g or 588 psig</td>
</tr>
</tbody>
</table>

**Series 7100 Single Z Tube**

<table>
<thead>
<tr>
<th>Connections</th>
<th>¼” NPT (std) Tri-Clamp (optional)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process Temperature</td>
<td>-40°C ... +150°C or -40°F ... +302°F</td>
</tr>
<tr>
<td>Operating Pressure</td>
<td>max 150 bar g or 2200 psig</td>
</tr>
<tr>
<td>Protection Category</td>
<td>IP 67</td>
</tr>
<tr>
<td>Material Wetted Parts</td>
<td>316L Stainless Steel or Hastelloy® C-22</td>
</tr>
</tbody>
</table>

**Converters**

<table>
<thead>
<tr>
<th>Electronics</th>
<th>Compact or Remote</th>
</tr>
</thead>
<tbody>
<tr>
<td>Power Supply</td>
<td>24V DC, 21 ... 230V AC</td>
</tr>
<tr>
<td>Power Consumption</td>
<td>&lt; 18 W</td>
</tr>
<tr>
<td>Electrical Output</td>
<td>Current output, Status output, Pulse output, Digital output, Hart, PROFIBUS, Fieldbus Foundation (pending)</td>
</tr>
<tr>
<td>Display</td>
<td>2 line alphanumeric</td>
</tr>
<tr>
<td>Operator control</td>
<td>Menu assisted via keys</td>
</tr>
<tr>
<td>Approvals</td>
<td>Instruments are approved in accordance with ATEX, FM and CSA (pending) standards for use in hazardous area environment</td>
</tr>
</tbody>
</table>

**Measurement Ranges**

**Series 7000**

<table>
<thead>
<tr>
<th>Nominal Range (kg/h)</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>950 (35)</td>
<td>7000/06</td>
</tr>
<tr>
<td>2700 (100)</td>
<td>7000/10</td>
</tr>
<tr>
<td>11,250 (400)</td>
<td>7000/15</td>
</tr>
<tr>
<td>34,500 (1,250)</td>
<td>7000/25</td>
</tr>
<tr>
<td>91,500 (3,350)</td>
<td>7000/40</td>
</tr>
<tr>
<td>180,000 (6,600)</td>
<td>7000/50</td>
</tr>
<tr>
<td>430,000 (15,800)</td>
<td>7000/80</td>
</tr>
</tbody>
</table>

**Series 7100**

<table>
<thead>
<tr>
<th>Nominal Range (kg/h)</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 (0.5)</td>
<td>7100/01</td>
</tr>
<tr>
<td>100 (3.5)</td>
<td>7100/03</td>
</tr>
<tr>
<td>350 (12.5)</td>
<td>7100/04</td>
</tr>
</tbody>
</table>

**KROHNE offers you complete capability**

OPTIMASS is the latest in a line of innovative level and flow products designed and manufactured by KROHNE for process industries worldwide.

With manufacturing facilities and sales offices strategically located in all the major industrial markets, KROHNE is ideally placed to provide both front line and after sales service and support for end-users and contractors alike. KROHNE is one of the very few manufacturers who can offer a comprehensive range of level and flow products ensuring that the right solution is available for each application. The KROHNE range includes the following products and technologies:

- Flowmeters: Electromagnetic, Vortex, Ultrasonic, Variable Area
- Mass Meters: Coriolis
- Flow Switches: Moving Vane and Electromagnetic
- Level Gauges: Radar (Microwave & TDR) & Float
- Level Switches: Capacitance and Vibrating Probe
- Density/concentration: Coriolis
- Communications: HART, FF, PROFIBUS, MODBUS, PDM

**United Kingdom**

KROHNE Ltd.
Rutherford Drive
Park Farm Industrial Estate
Wellingborough,
Northants NN8 6AE, UK
Tel: +44(0)1933 408 500
Fax: +44(0)1933 408 501
E-mail: info@krohne.co.uk

**Germany**

KROHNE Messtechnik GmbH & Co. KG
Ludwig-Krohne-Strasse
D-47058 Duisburg
Tel: +49(0)203 301 0
Fax: +49(0)203 301 389
E-mail: info@krohne.de

**USA**

KROHNE Inc.
7 Dearborn Road
Peabody, MA 01960
Tel: +1-978 535 - 6060
Fax: +1-978 535 - 1720
E-mail: krohne@krohne.com