

# Newsline

CHEMICALS & ENERGY

## Valuable goods: Energy carriers and resources



Dear Readers,

Many companies have made lowering the cost of energy and use of materials a long-term goal in an effort to secure their competitive ability. When purchasing

conditions have reached their limits, costs in manufacturing processes must be lowered. In many companies, process optimisation taps into enormous savings potential. This results in lower throughput times, reduced storage, higher material yield and less waste.

### Modernisation and efficiency enhancements of production facilities in increased demand

At present, resource prices have eased off somewhat but in the long term, demand will set in again and, together with the natural shortage, prices will rise again. Losses currently caused by wasteful handling of resources along the process chain are estimated at 5-10% of materials usage. Added to this are the costs resulting from things such as energy loss. A lack of awareness is also very costly. Conscious handling can result in significant advantages in terms of efficiency and competitiveness. A desirable side effect of this is a reduction in CO<sub>2</sub> emissions.

### Precise measurement of energy consumption becoming increasingly important

KROHNE offers a variety of options when it comes to process control and optimisation. These options can help your company gain significant efficiency and competitive advantages thanks to savings on energy costs and resources. Right from simple flow display to highly precise flow measurement and direct mass measurement in the process down to the custody transfer measurement of crude oil and natural gas. Depending on the application, you can choose from four different measuring methods when it comes to measuring energy carriers like gas and steam. In the field of level monitoring, we can help you manage your resources intelligently and optimise storage.

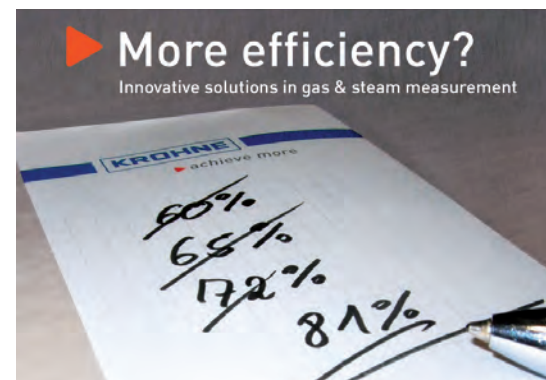
On the following pages, we introduce you to a few selected solutions, allowing you to cut costs in both the short and long term.

Sincerely,

Ralf Haut  
Industry Manager Chemical

Would you like to receive our chemicals newsletter? Simply send an e-mail to: [chemie@krohne.com](mailto:chemie@krohne.com)

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Gas and steam are used as energy carriers in many processes. When you focus on minimal pressure loss and high measuring accuracy when distributing these energy carriers, the efficiency of a system can sometimes be increased considerably.

KROHNE specialises in gas and steam measurement, employing the vortex, Coriolis, mass, variable area and ultrasonic measuring methods. Read on to see sample solutions to increase plant efficiency.

## OPTIMASS 7300 C Tantalum: Process optimisation for highly aggressive media



OPTIMASS 7300 C

Direct mass measurement is now possible even with problematic media whose flow could not previously be measured due to unstable measuring tube materials:

In a Swiss chemical company, an OPTIMASS 7300 C Tantalum meter measures the liquid Toco Toluol into a column in which a vitamin is produced. Toco Toluol is an aggressive, acidic solvent. That is why Tantalum was the only measuring tube material that was considered for this process.

The measuring range in the process is from 0 to 7000 kg/h. At a density of 0.881 kg/l and a pressure of 1.8 bar, the temperature of the medium is 78 °C. A Tantalum measuring device from a different manufacturer had been used previously. However, due to problems with deposits in the device, the customer was looking for a replacement. He opted for the KROHNE OPTIMASS 7300C Tantalum because it offers one crucial advantage: the OPTIMASS features one single, straight measuring tube, eliminating the need for a flow splitter.

Thanks to the straight tube, the customer was able to select a significantly smaller diameter (DN 25 instead of the DN 50 used previously), thus achieving an increased flow rate. This prevents the product from being deposited on the inner wall of the measuring tube.

After a few months in test mode, the customer is very satisfied: in addition to the high degree of measuring accuracy, there are no more problems with deposits, the process has been successfully optimised.



OPTIMASS 7300 C in use

## Three measuring devices in one: OPTISWIRL 4070 C



OPTISWIRL 4070 C

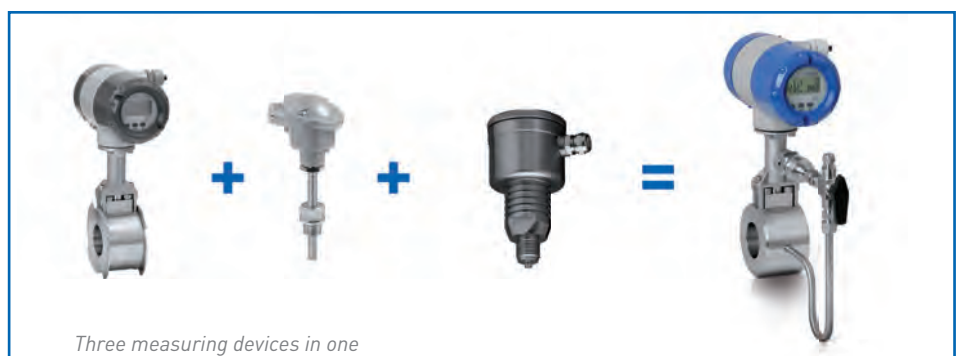
The OPTISWIRL 4070 C is KROHNE's answer to the need for an all-purpose device ideal for measuring vapours, gases and liquids in a wide variety of industries. This makes energy consumption transparent:

The OPTISWIRL 4070 C helps control supply processes such as compressor output, consumption measurement in pressurised air networks, steam boiler monitoring, measurement of industrial gases, burner consumption measurement or when measuring conductive and non-conductive liquids, e.g. demi water, heat conducting oil etc.

The integrated pressure and temperature compensation offers considerable advantages, especially when it comes to vapour measuring, as the amount of energy contained in the vapour is dependent on the pressure and temperature.

Basically the OPTISWIRL 4070 C is actually three measuring devices in one:

It is the first 2-wire device with integrated pressure and temperature compensation as a standard feature, thus saving you the expense of installing and wiring other sensors. For vapour and gas measurements, the operating density is determined online and the correct value is output as mass or standard volume flow. With vapour measurement, the gross heat volume can also be determined and output. Additional features of the OPTISWIRL 4070 C include: immediate availability thanks to its plug&play technology, maintenance free construction of the sensor and wear free, fully welded stainless steel construction with high resistance to corrosion, pressure and temperature.



Three measuring devices in one

## Variable area devices with SIL: Safely controlling small amounts of gas

In the chemicals industry, measuring gases is often more than simply measuring the flow: process analysis technology is an important instrument when indicating quality and when it comes to guaranteeing process reliability. At the same time, it also helps in process monitoring and optimisation. It is increasingly the focus during the course of standardisation to IEC 61508, i.e. it is included when considering the reliability of critical applications.

This also includes a classification of the measuring devices used according to their Safety Integrity Level (SIL).

Specifically for this area, KROHNE now introduces its DK32/34/37 variable area flowmeters

with suitability as per SIL 2 for measuring liquids from 0.2 l/h and gases from 2 l/h. For larger flow rates, the tried and tested variable area classic H250 with SIL 2 classification has been in use since 2005 in circles where safety is of the utmost importance.

To put it simply, the SIL rating of a component is a gauge for measuring its suitability for use as part of a protective device to reduce risk. The DK32/34/37 with inductive limit switches are designed for use in SIL 2 applications, both the basic variant and the variant featuring an optional differential pressure regulator or flange connection adapter.



DK32



DK34



DK37



H250

## The new generation in accuracy: ALTOSONIC V12

Ultrasonic flowmeters have become standard when it comes to measuring energy: with them, non-conductive thermo oils and gases can be reliably measured, regardless of their viscosity, temperature, density and pressure.

In addition to the process devices, there is also another class of devices typically used by large natural gas producers, in distributor networks of gas transport companies and by large-scale consumers like refineries and power plants.

For these custody transfer applications, KROHNE introduced, at the beginning of the year, the ALTOSONIC V12, a new generation of ultrasonic gas flowmeters. In addition to high measuring accuracy, the ALTOSONIC V12 offers considerable design advantages that give it an edge over comparable solutions. It is the first ultrasonic meter for natural gas with an accuracy class of 0.5 as per OIML R137, previously reserved for turbine type meters.

For more information about the ALTOSONIC V12 and its features, go to [www.krohne-oilandgas.com](http://www.krohne-oilandgas.com)



ALTOSONIC V12

### ALTOSONIC V12 pays for itself within a very short period of time

If you take into account the purchase cost in relation to the value of the natural gas measured, the ALTOSONIC V12 pays for itself in a very short period of time.

For example: A power plant draws about 680 million cubic meters of gas per year using a gas pipeline with a DN 200 diameter. At a price of 0.30 €/m<sup>3</sup>, the supplier invoices around 204 million euros. In this case, the ALTOSONIC V12 with its compensatory

functions cuts uncertainty by approx. 50 % compared to existing solutions. By using the ALTOSONIC V12, the power plant could monitor accounts more precisely, which, in the best case scenario, would mean a savings of over 1 million euros per year compared to measuring with conventional ultrasonic meters.

This sum makes the purchase cost seem like nothing.

Measuring uncertainty	conventional UFM	ALTOSONIC V12
Meter (Repeatability, Non-linearity)	0.20 %	0.15 %
Installation effects	0.50 %	0.15 %
Possible contamination effects	0.50 %	0.10 %
Overall uncertainty in relation to the high pressure test bench	0.75 %	0.25 %

Measuring uncertainty with ultrasonic flowmeters

## Managing resources intelligently: Level measurement with radar

Storage tanks also consume energy and can, for example, have an effect on climate control. However, it is more important to efficiently manage the expensive resources stored inside these tanks. Newly developed microwave measuring systems enable improved and more reliable resource management when it comes to monitoring the levels in solid silos and warehouses. These systems permit measurement while filling which ultimately leads to lower costs for both storage and maintenance.

### Maintenance free and reliable

KROHNE has developed a new FMCW radar measuring device for this application: OPTIWAVE 6300 C features a special drop antenna which can also detect the uneven surfaces typically found in silos. It can be used wherever maintenance free, reliable level measurement is required, for example in silos, hoppers, storage containers and conveyor belts, in industries such as cement, iron and steel, chemical, paper and in power plants.

OPTIWAVE 6300 C was designed for universal use, even in extremely harsh conditions, and is also available in an ATEX approved version.

### Easy to install

Thanks to the device's great dynamics, its outstanding antenna efficiency and the FMCW process, no special mechanism is required to adjust the antenna. Dust and deposits have no impact on measurement as nothing sticks to the new drop antennas.

The DN80 drop antenna permits measuring ranges of up to 30 metres, thus measuring twice as far as other radar measuring devices in the same price segment. The larger DN150 drop antenna permits measuring ranges of up to 80 metres. Users can choose from several materials and antenna sizes: Depending on the material, application temperatures of up to 200 °C and pressures of up to 40 bar are possible.



OPTIWAVE 6300 C

## Come and see us at the industry trade fairs



Visit KROHNE at the Hannover Messe/ INTERKAMA and experience highlights like the OPTISWIRL 4070 C or ALTOSONIC V12 and other new products in processautomation live:



Are you a customer in the field of chemistry? Visit our stand at ACHEMA, where you can see our complete chemistry portfolio and discover innovation in the fields of flow and level measurement.

**Hannover Messe/ INTERKAMA**  
20. – 24.04.2009  
Hall 7, Stand C 13  
Hanover

**ACHEMA**  
11. – 15.05.2009  
Hall 10.2, Stand F25/ F31/ J25/ J31  
Messe Frankfurt

Can't make it? Go to [www.krohne.de](http://www.krohne.de) and have a look at the trade fair calendar to find out where we are or contact our sales department. We look forward to seeing you!



KROHNE at Interkama 2008

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