Bronkhorst® HIGH-TECH

newsletter

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"Quality is our Pride"

BRONKHORST STRENGTHENS POSITION AS GLOBAL LEADER

Bronkhorst High-Tech B.V. has played a leading role for 30 years now, in the field of thermal mass flow meters/regulators, brought to the market through a global network of subsidiaries, distributors and licensees. The strongly growing Asian market, and a rising trend towards globalisation, has provided Bronkhorst with an additional incentive to extend its focus emphatically towards the overseas countries.

In addition to establishing a new facility within the USA, Bronkhorst has commenced a number of initiatives in Asia with a view to further expanding local sales and service activities. In light of this, Bronkhorst has set up its own sales and service branches in Taiwan and Japan and a service office in China. This will facilitate local calibration and/or servicing of instruments, allowing service to be provided faster and more efficiently. The service offices are equipped with a full calibration suite and cleanroom facilities with all engineers being fully trained and internally audited to assure the highest level of quality and service for our products across the globe.

Bronkhorst is convinced that this expansion of sales and service points will contribute positively to the support we provide to our clients operating at global scale. Contact details for all Bronkhorst offices and distributors can be found on **www.bronkhorst.com**.

LIQUI-FLOW™ mini – MICROFLUIDIC LIQUID FLOW METER

Bronkhorst High-Tech has been the pioneer in the field of micro to low flow liquid metering instruments based on a thermal measuring principle. A wealth of experience has been gathered over many years, which has resulted in a series of instruments covering flow ranges from 30 mg/h up to 20 kg/h. The use of micro fluidic devices for research and analytical purposes has some important advantages. Firstly, because the internal volumes within the instruments are very small, the analysis will be faster and the amount of reagents and analytes used can be reduced. The latter is especially significant for expensive reagents. Furthermore, the physical dimensions are much smaller than those of conventional devices. This enables Life Sciences system integrators to downscale the size, inherently reducing the costs of ownership, of their equipment. Also, the availability of compact and lightweight instruments could lead to the development of portable systems.

Bronkhorst designed the LIQUI-FLOW™mini Mass Flow Meter (MFM) for liquids according to the micro fluidic concept. This very compact instrument measures ultra low flow ranges from 30 mg/h (0,5 µl/min) up to 600 mg/h, based on water (full scale values). The straight, duplex steel sensor tube has an internal volume of less than 1 mm^3 and operates on the proven thermal measuring principle. Due to its high pressure rating (up to 1233 bar) the MFM is suited to HPLC systems. The instrument is equipped with a microprocessor-based printed circuit board, offering high accuracy, excellent temperature stability and both analog and digital (RS232) communication.

EL-FLOW® - METAL SEALED THERMAL MASS FLOW CONTROLLER

Bronkhorst High-Tech manufactures metal sealed thermal mass flow meters/ controllers, designed especially to meet the requirements of the semicon market as well as other high purity gas applications. The instruments feature high surface quality and are of modular construction with metal-to-metal seals that ensure long-term leak tightness. Now, as an alternative to traditional face seal fittings, optional downport connections (c-seal/w-seal) are offered to reduce mounting space, while facilitating installation and maintenance. Metal sealed mass flow meters/ controllers can be supplied in ranges starting from 0-5 ml_n/min up to 0-100 l_n/min (based on N_2) or even higher on request.

Todays instruments are equipped with a digital pc-board, offering high accuracy, excellent temperature stability and fast response (settling time down to 500 msec). The main digital pc-board contains all of the general functions needed for measurement and control. EL-FLOW® features optional Multi Gas / Multi Range functionality, providing (OEM-) customers with optimal flexibility and process efficiency. For the convenience of the customer Bronkhorst provides free and easy-to-use configuration software tools. In addition to the standard RS232 output the instruments also offer analog I/O. Furthermore, an optionally integrated interface board provides DeviceNet™, Profibus-DP®, Modbus-RTU® or FLOW-BUS protocols.

MASS VIEW® - 10 SELECTABLE GASES ON MASS FLOW METER

Bronkhorst has upgraded their series of MASS VIEW® flow meters, available at their webshop Mass Flow ONLINE, with three additional gases. Now the user can easily select one out of ten pre-installed gases - Air, N_2, O_2, Ar, CO, CO_2, N_2O, CH_4, C_3H_8 or C_4H_{10} - which eliminates the need to recalibrate for different gases. Recently the product line has already been extended with models for Hydrogen and Helium. Besides the selection of gases, the user can switch between four different flow ranges. The instruments are suitable for flow rates from 0,01 to 200 l_n/min (Air-equivalent), offering an accuracy of ±2%RD if the flow is higher than 50% of it's maximum full scale and ±1%RD plus ±0.5%FS on lower flows. The maximum operating pressure for the instruments is 10 bar.

MASS VIEW® flow meters distinguish themselves by their direct local readout with OLED (organic light emitting diode) technology, indicating the actual gas flow (in figures and as bar graph), clearly visible from virtually any angle and free from parallax error. The display also shows the flow unit, gas type and totalised flow. As an option, the thermal mass flow meter can be equipped with in-built needle valve for flow control duties. MASS VIEW® was designed to mimic the straightforward features and vertical format of the VA meter, but with the considerable added benefits of an electronic output signal, high measuring accuracy, virtual independence from gas temperature and pressure variations and inherently safe construction, with no fragile glass components in the flow path.

Power consumption is low and mechanical process connections are fitted for straightforward VA meter replacement. Alarm settings and the selection of pre-installed gases and flow ranges are accessed via a user-friendly menu, using a 4-way navigation button mounted on the front plate. An analog output signal enables data logging against various parameters and full accountability of gas flow, such as for shared ring main applications.

www.massflow-online.com

MASS-STREAM™ – NEW DIGITAL MASS FLOW METER / CONTROLLER FEATURES LOCAL INDICATION AND OPERATION

M+W Instruments, a Bronkhorst company located in Leonhardsbuch (D), introduced a new generation of digital mass flow meters/controllers. The new digital MASS-STREAM™ series D-6300 works on the basis of direct through-flow measurement, following the constant temperature anemometer principle, and will gradually replace the analog series D-6200.

The MASS-STREAM™ series D-6300 is characterized by significant improvements, covers ranges from 0.2 l_n/min up to 5000 l_n/min (full scale, based on Air), and follows M+W's strategy of widely standardised product ranges.

The instruments have IP65 protection as a standard and are operated with a main-board with all functions for accurate flow measurement and control. They can be supplied with commonly used digital or analog input/output signals. Along with the standard RS232, Profibus-DP®, DeviceNet™, FLOW-BUS and ModBus-RTU® are available as an option.

One key element and innovative improvement is the optionally integrated, modern, multi-functional and multi-colour LCD display, fully IP65 compliant with operator buttons on the instrument. With its multiple functions, such as actual flow indication, totalisation and alarms, the new MASS-STREAM™ series D-6300 offers an excellent price-performance ratio. The instruments are suitable for application in laboratories, production machinery as well as industrial installations.

www.mw-instruments.com

APPLICATION STORY: TESTING OF RESIDENTIAL GAS METERS WITH A 'CEM'

For more than 15 years, Bronkhorst's CEM-System (Controlled Evaporation Mixing) has successfully been applied for a wide variety of processes. The applications vary from climate conditioning for the protection of art collections to the coating of solar cells using chemical vapour deposition (CVD) techniques. The following application story shows how another unique request can be fulfilled with a standard solution.

One of the fields of activity of NMi in The Netherlands is inspecting new measuring equipment to the statutory admission requirements. One type of product to be tested is a flow meter for natural gas, which is applied within the consumer market. To guarantee the safety of these gas meters, the instruments are tested on chemical resistance against corrosive fluids which the natural gas may contain. Therefore, the devices under test are flushed for a certain period with a high concentration of "problematic component" diluted with Nitrogen. Under atmospheric conditions these fluids are in the liquid phase and must therefore be evaporated before they can be mixed with N_2. The Bronkhorst CEM-system is ideally suited for this process as it provides a homogenous mixture of evaporated fluid and carrier gas.

Since both gas and liquid flow are accurately determined by mass flow controllers, an exact concentration can be guaranteed. Changing this concentration is just a matter of giving the flow controllers a different setpoint.

BRONKHORST CALIBRATION CENTRE ISO-17025 ACCREDITED

DUTCH ACCREDITATION COUNCIL RvA

The Dutch Accreditation Council RvA, by law appointed as the national accreditation body for The Netherlands, hereby declares that accreditation has been granted to:

Bronkhorst High-Tech B.V.
R&D department
Ruurlo

The organisation has demonstrated to be able to generate technical valid results in a competent way and work according to a management system.

This accreditation is based on an assessment against the requirements as laid down in ISO/IEC 17025:2005.

The accreditation covers the activities as specified in the authorized annex bearing the registration number.

The accreditation is valid provided that the organisation continues to meet the requirements.

The accreditation with registration number:

K 127

is granted on 26 May 2010

This declaration is valid until
1 June 2014

The accreditation has been granted for the first time on
26 May 2010

The Chief Executive

Ir. J.C. van der Poel

ISO/IEC 17025 declaration certifying that our laboratory's Quality Assurance system, calibration methods and technical competences have been inspected and audited and meet all necessary requirements.

Bronkhorst High-Tech has been producing thermal mass flow meters and regulators for 30 years now. These instruments are calibrated with state-of-the-art calibration equipment, certified via the Dutch Metrology Institute VSL (formerly NMi) in accordance with national and international standards.

On Wednesday 8 September 2010, the management of Bronkhorst received the ISO/IEC 17025:2005 certificate, the highest national standard for gas calibration, from Mr van der Poel, General Director of the Dutch Accreditation Council (RvA).
This certification entitles Bronkhorst to perform accredited gas calibrations for a unique range from 0.0007 to 6200 l_n/min. This applies to both Bronkhorst High-Tech mass flow meters/controllers and those of other brands. In addition to mass flow calibrations, Bronkhorst also offers volume flow calibrations from 0.0007 to 6650 l/min.

Accredited calibrations can be applied to new instruments that are ready for delivery as well as older equipment that has already been in operation. Bronkhorst also offers portable and stationary calibration systems with an optional RvA calibration certificate.

Example of a Bronkhorst portable flow calibrator.

FUEL VIEW - COMPACT AND LIGHT WEIGHT FUEL FLOW METER

Bronkhorst's webshop Mass Flow ONLINE presents a new liquid flow meter. FUELVIEW is a compact, light weight and very cost-effective solution for measuring the fuel consumption and operating time of vehicles, tractors, river vessels or any mobile or fixed installations with diesel engines. Its features for protecting and preventing theft of fuel, the protection against overstatement of readings and intervention and the patented method of measuring different engine operating times make this flow meter the best solution on the market today. The instrument offers a local display and has several secure onboard counters that can be operated via the selector magnet as supplied rather than by user contact.

The FUELVIEW series operate on the principle of a rotary piston. The unique design of the flow meter allows fuel flow, even if the chamber is locked or clogged up. A fuel filter effectively protects the measuring chamber from contamination and can be removed and washed without disassembling the flow meter. The flow meters can be supplied in full scale ranges from 50 l/h up to 400 l/h with the standard configuration being a blind meter together with a signal cable. As an option, an LCD display allows reading of actual flow [l/h], total flow consumption [l], total engine operating time [h], engine operating time in "idling", "optimal" and "overload" mode. The instruments can work with an external power supply or with an embedded battery.

FUELVIEW can be easily ordered at www.massflow-online.com, 24 hours a day, 7 days a week. From this webshop, we deliver competitively priced, high quality products with excellent delivery time. Your on-line order will be shipped within two working days.

www.massflow-online.com

CORI-FILL™ – ACCURATE DOSING OF SMALL MASS FLOW RATES

Bronkhorst Cori-Tech has introduced CORI-FILL™, a compact solution for fluid dosage, based around the extremely accurate mass measurement of its (mini) CORI-FLOW™ series of Coriolis-type instruments, for flow rates between 400 mg/h and 600 kg/h. Developed using innovative hardware and software, CORI-FILL™ technology features integrated batch counters and the facility to directly control a close-coupled shut-off valve for brief batch sequences down to 0,3 seconds, a proportional valve for longer sequences, or a liquid pump for dosing without the need for pressurised vessels. CORI-FILL™ offers all this functionality, with plug and play simplicity that enables an immediate start to dosage duties after connecting power and fluid accessories, in one compact footprint and from one supplier, with single point responsibility and best cost of ownership.

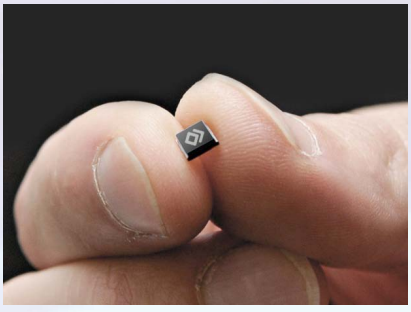
In contrast with gravimetric processes using weighing scales, where compounds are dosed one by one, CORI-FILL™ systems can add all ingredients simultaneously, shortening batch and agitation cycles, as well as improving quality. The amount to be dosed can be easily preset by programming the batch counters via a fieldbus connection, with all the standard digital protocols available.

Due to the small footprint of the (mini) CORI-FLOW™ instruments, it is possible to fit the flow meter extremely close to the shut-off valve, which results in fast response times and even greater accuracy, since there is a minimal delay effect in the pipeline. It is also possible to mount multiple CORI-FILL assemblies together in highly compact, simultaneous dosing systems, with the absence of moving parts or line intrusions which results in less maintenance and cleaning downtime.

CORI-FILL™ is designed for batching, blending, dosing, filling, sterilisation and similar duties in the food and beverage, pharmaceutical, cosmetics, contact lens and life sciences industries, as well as being of interest to OEM machine builders. Suitable for all types of liquid additives, fragrances, flavours and colorants, including those with entrained air or solids, the Coriolis direct mass measurement method eliminates volumetric variation caused by changing temperatures and densities of ingredients, leading to accurate, repeatable quantities batch after batch.

www.cori-fill.com

GETTING READY FOR THE FUTURE



Bronkhorst is focused on continuous improvement of products and services, and the development of new, innovative instrumentation for a wide variety of markets and applications.

We listen to our customers and often collaborate with customers on new products. Substantial investments in research & development lead to the introduction of new products each year and result in frequent application for patents around the world.

The future of microfluidics offers a range of new opportunities. In 2005 Bronkhorst already launched a new series of miniaturised mass flow and pressure meters and controllers with chip sensors, the IQ⁺FLOW series. In close cooperation with MESA+ Institute for Nanotechnology and the University of Twente, Bronkhorst explores the possibilities for a micromachined single chip mass flow sensor with an ultra wide dynamic flow range.

At the following events Bronkhorst will present an abstract about these astonishing developments:

- **Sensor+Test**
  Nürnberg, Germany, 8 June 2011
- **Transducers '11**
  Beijing, China, 5-9 June 2011

INFORMATION

For more information about our products, literature requests, demos, product training, etc., please do not hesitate to contact us or visit our website

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Trade Shows 2011

13-18 March 2011
Pittcon – Atlanta, USA

4-8 April 2011
Hannover Fair – Hannover, Germany

5-7 May 2011
Asia Solar - Shanghai, China

7-9 June 2011
Sensor+Test - Nürnberg, Germany

22-24 June 2011
PV Japan – Tokyo, Japan

30 August – 2 September 2011
Miconex - Beijing, China

4-6 October 2011
Mesurexpo - Paris, France

14-18 November 2011
Expoquimia – Barcelona, Spain

THE BRONKHORST PRODUCT LINE

Bronkhorst High-Tech B.V. was established in 1981 and, since those early days, it has enjoyed steady and continuous growth, with regard to both market share and corporate size. It now offers the most extensive product range of thermal mass flow meters and controllers on the market. Numerous styles of both standard and bespoke instruments can be offered for applications in laboratories, universities, pilot plants, industrial and hazardous areas. The measuring range for these instruments can be selected between 0…0,7 ml_n/min and 0…10000 m^3_n/h for gases and 0-30 mg/h up to 0-20 kg/h for liquids. Bronkhorst's Coriolis Mass Flow Meters/Controllers for gases and liquids have a measurement/control capability of 0-5 g/h up to 0-600 kg/h.

Furthermore Bronkhorst offers pressure transducers and controllers with a minimum range of 0-100 mbar and a maximum range of 0-400 bar.
The innovative "CEM" Vapour Delivery System is suitable for mixing liquid flows of 0,25…1200 g/h with a carrier gas, resulting in an accurately controlled vapour flow of 50 ml_n/min up to 100 l_n/min.

www.bronkhorst.com

BRONKHORST WORLD WIDE

Bronkhorst is a truly worldwide organisation with its Headquarters being located in the town of Ruurlo in The Netherlands and with a total (worldwide) head-count now exceeding 330 employees. Our Customer Service Department offers "round-the-clock" support, seven days a week, to customers in every corner of the world.

Our specialist teams are available to you to ensure pre and post sales support with diverse needs, such as application advice, on-site inspection & calibration, start-up assistance and user training courses.

The Bronkhorst organisation spans the globe, with wholly-owned operations in The Netherlands, Great Britain, France, Switzerland, northern Germany, the USA, China and Japan, whereby local expertise and service is offered. In addition, Bronkhorst High-Tech has built up an extensive complementary network of distributors and service stations across every continent, contributing toward a formidable worldwide team and establishing Bronkhorst's global market presence. A team with a passion for mass flow measurement and control technology, dedicated to customers and with commitment to providing total solutions rather than just individual components.