LIQUID DOSING MODULE FOR WATER TREATMENT

Ratio control • Dosing • Filling • Mixing • Blending

Bronkhorst®

LIQUID DOSING MODULE FOR WATER TREATMENT

SUSTAINABLE DEVELOPMENT GOALS

6 CLEAN WATER AND SANITATION

Typical application: Dosing additives to prevent lead or copper precipitation

Public water systems commonly add phosphates to the drinking water as a corrosion inhibitor to prevent the leaching of lead and copper from pipes and fixtures. Inorganic phosphates (e.g. phosphoric acid, zinc phosphate, and sodium phosphate) are added to the water to create orthophosphate, which forms a protective coating of insoluble mineral scale on the inside of service lines and household plumbing. The coating serves as a liner that keeps corrosion elements in water from dissolving some of the metal in the drinking water. As a result, lead and copper levels in the water will remain low and within the norms to protect the public health.

Challenges in Water Treatment

Increased population and insufficient investment in infrastructure over the past several decades have left almost one-third of the world's people without access to clean water. Unesco has identified the care for clean water as one of the most important objectives for the coming years.

With regard to the improvement of our drinking water, Bronkhorst products can play an important role in such areas as:

- Preventing lead or copper precipation
- Iron and lime removal in drinking water
- Effluent treatment of wastewater

Bronkhorst Flow Solutions

Bronkhorst® specializes in low flow Mass Flow Meters and Controllers for liquids and gases. Our Coriolis principle based instruments are designed to accurately measure and control flow ranges from 0.1 g/h up to 600 kg/h. They are suitable for numerous applications, also in the field of water treatment. Combined with a (gear) pump or (shut-off) valve, compact liquid mass flow dosing modules can be offered as an alternative to manually adjusted volumetric metering pumps.

In addition to the extensive standard product range, based on more than 35 years of experience and market driven innovation, Bronkhorst collaborates with customers to develop the best customized process measurement and flow control solution.

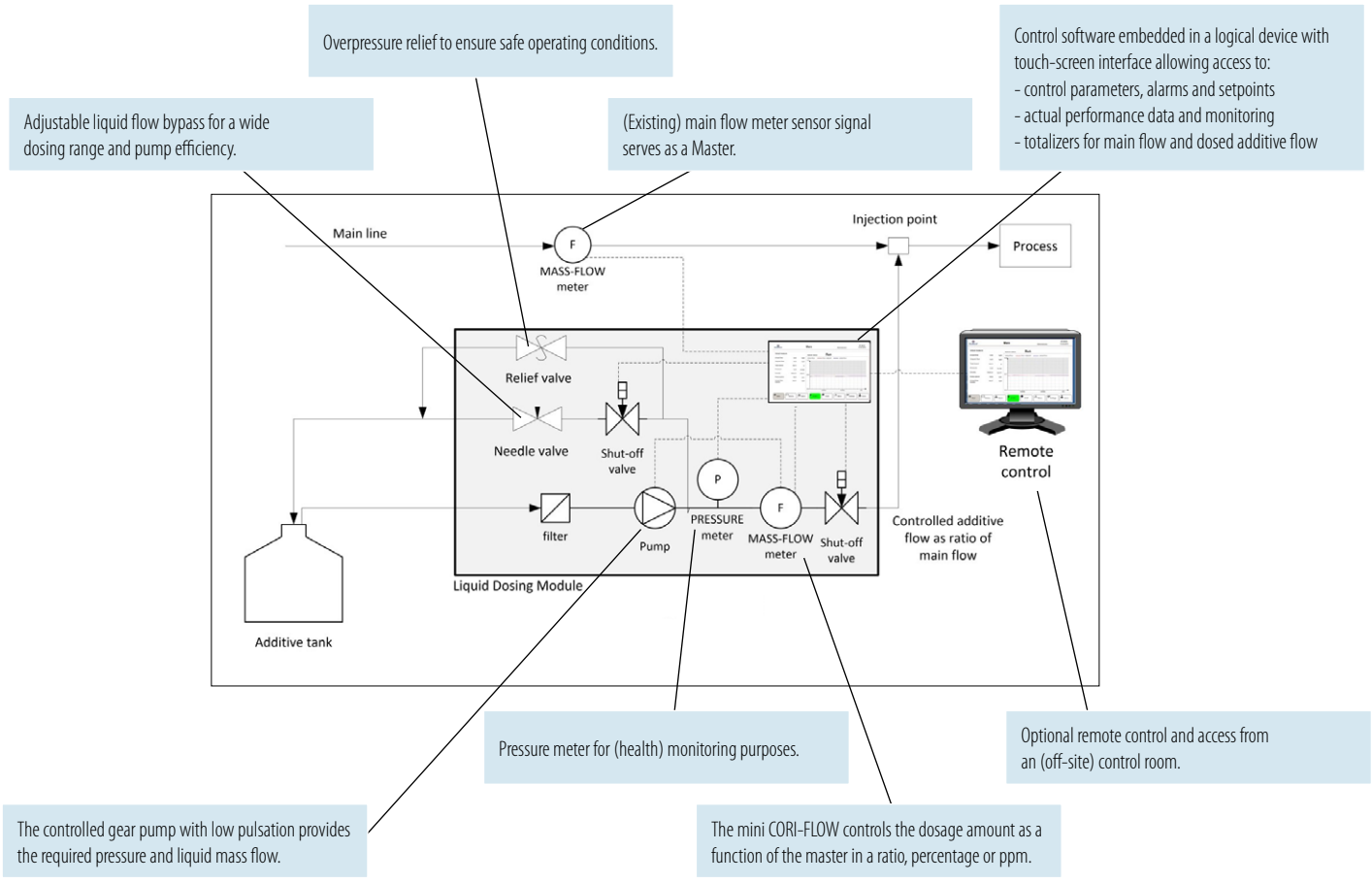
Our global perspective with local focus ensures that our international network of Bronkhorst offices, distributors and other partners is able to provide on-site support and discuss the best solution for many different applications. This approach also includes product adjustments, customized solutions and 24/7 service support to ensure that the finer details of your application will always be covered and available.

Liquid Dosing Module's core technology: Flow meter controlled dosing pump assembly

The Liquid Dosing Module (or LDM) is a modular assembly of a Bronkhorst® mini CORI-FLOW mass flow meter and a pump system, built together in a robust enclosure as a complete unit with integrated power supply and touch-screen interface. Based on the customer application, the LDM can be configured using one of the available mini CORI-FLOW instruments, a matching (gear) pump, and the required dosing strategy. Bronkhorst® mini CORI-FLOW mass flow meters can be considered as weighing scales for flowing mass. For (very) small liquid flows, they are the most accurate type of true mass flow meters, offering accuracies up to 0.2% reading.

For more information visit: www.bronkhorst.com or watch the 'mini CORI-FLOW' video on our YouTube channel.

Liquid Dosing Module features and benefits in a Master / Slave (ratio) mixing configuration

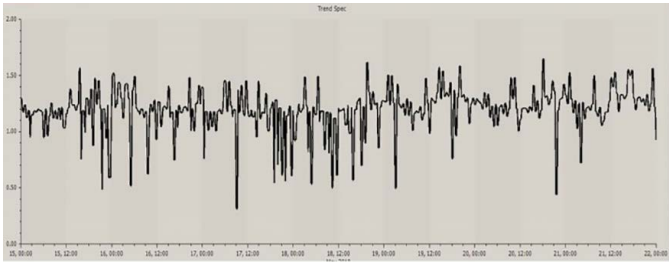


Bronkhorst's complete liquid dosing solution for challenging applications where accuracy is required

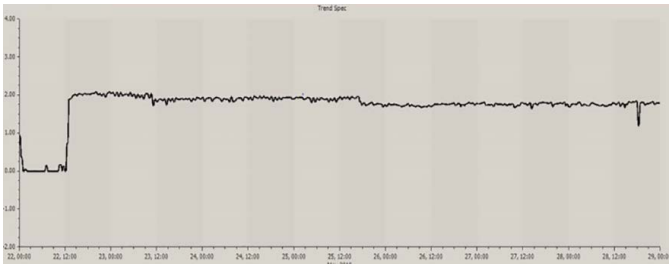
- Solutions with 24/7 service coverage
- Components built into an industrial style IP65 rated enclosure
- Configurable for Master / Slave (ratio), continuous or batch dosing solutions
- Can be operated as a stand-alone (plug&play) or plant integrated system
- Setpoints can be controlled in either mass flow or volume flow
- Available parameters for reading, logging and trending for quality monitoring purposes include: the master flow, the dosed additive flow, pressure, density and temperature measurements
- Multiple programmable warnings and alarms
- System health monitoring to prevent and reduce unexpected downtime
- Particle filter for increased operating time
- Optional redundant components to continue operations when a hardware failure occurs

Improved additive dosing process

A traditional dosing process is performed by volumetric pumps, relying on a constant supply of additives. There is only limited feedback on the quality of the dosage and the possibilities for remote control are usually limited. The application of an LDM system improves these aspects and ensures a very stable supply of additives.



Measured concentration using traditional dosing



Measured concentration using a Bronkhorst LDM

- Precise dosage of chemical additives for optimal concentration at lowest health risk
- Up to 30% reduction in additive consumption (based on H3PO4 in drinking water)
- Ratio control as a function of an actually measured master (main flow) signal
- Reduction in chemical concentration of additives in sewage water
- Reduction in manual on-site intervention due to remote control functionalities
- Real-time performance and additive consumption data
- Liquid density reading for quality monitoring purposes

Typical additive dosing applications in the water industry

- Lead precipitation
- pH control
- Fluoration
- Disinfection
- Corrosion and lime scale inhibition
- Addition of nutrients for biological processes
- FeCl3 into waste water

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