A090-CM02 - GENAUE DOSIERUNG ORGANISCHEN LÖSUNGSMITTELDURCHFLÜSSEN

APPLICATION NOTE A090-CM02

ACCURATE DOSING OF SMALL ORGANIC SOLVENT FLOWS

Solvents are the workhorses within chemistry. They are usually liquids that interact in such a way with solids, gases or other liquids that the latter become dissolved - distributed uniformly on a molecular scale.

Especially organic solvents such as ethanol, acetone, hexane or diethyl ether find their use in many applications. For example as medium in chemical and pharmaceutical syntheses and for extraction, as diluting vehicle in oil-based paints that evaporates when the paint dries, or in nail polish removers.

Within chemical industry, the supply of organic solvents is a frequently occurring operation. In this context, Bronkhorst delivers devices to accurately dose small flows of organic solvent.



Application requirements

When investigating new chemical processes or existing processes with new chemical compounds, it will be convenient to start on a small scale with little investment in equipment and efforts. In this case a setup is needed that can accurately supply small amounts of organic solvent, either as a batch amount or continuously. Furthermore, it is convenient to be able to start working with the setup immediately.

Important topics

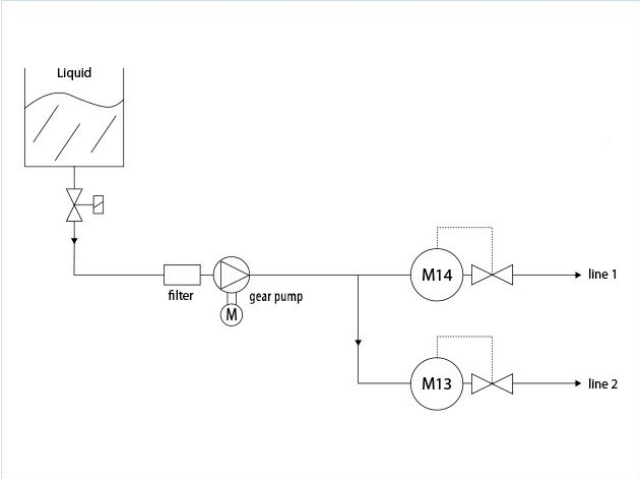
- Accurate supply of small flows of organic solvent
- Simple plug & play solution
- Use of software tools: FlowWare, FlowDDE, FlowPlot, FlowView

Process solution

To dose small flows of solvent into a reactor vessel at low pressure, Bronkhorst has a combination of Coriolis mass flow controllers (series mini CORI-FLOW) with a gear pump available for that purpose.

For the current application, the amounts to be dosed are so small that this dosing can't be done with any equipment whatsoever, since most devices on the market are not accurate enough on a small scale. In this case, 'small' means 0.5 to 6 kg/h, or even smaller: 0.1 to 2 kg/h. Both ranges are covered with M14 and M13 mini CORI-FLOW mass flow controllers, each with a liquid flow valve (type C5I) - to be controlled by client based readout & control equipment. A Tuthill gear pump is used to build up pressure that is necessary for the mass flow controllers. Furthermore, an overflow valve allows for the backflow of excess medium.

To be able to withstand a variety of organic solvents, the parts that are in contact with the medium are made of stainless steel, whereas o-rings can be made of Teflon, Kalrez or PEEK. As the organic solvents may be inflammable, the devices can be ATEX Zone-2 certified.



Flow scheme

Bronkhorst can provide any customer with a free PC-based control software, such as FlowDDE, FlowPlot or FlowView, to help customers ease-of-use and get up and running quickly. In this way, chemical researchers as well as machine builders or end users can easily go through initial tests or entire series of tests simply without programming - just by entering a parameter. Subsequently, an optional programming in a controller is the easier because the user knows which setting parameters he actually has to consider or would like. *Real Plug & Play!*

As an addition to the traditional RS232 connection between mass flow controller and PC, Bronkhorst delivers a Digitus 2.0 dongle to convert from RS232 to USB. It is even possible to put a Bright B3 compact local readout/control module in between the mass flow controller and the T-part of the RS232 in order to provide the controller with a set point.

Recommended Products



MINI CORI-FLOW™ M13

Min. Bereich 1…50 g/h
Max. Bereich 20…2000 g/h
Druckstufe 200 bar
Medienunabhängig
Hohe Genauigkeit, schnelle Messung



MINI CORI-FLOW™ M14

Min. Bereich 0,03…1 kg/h
Max. Bereich 0,3…30 kg/h
Druckstufe 200 bar
Medienunabhängig
Hohe Genauigkeit, schnelle Messung



SERIES C2I, C5I

Durchflussventile für Flüssigkeiten

Direktwirkendes Ventil
Druckstufe 64/100 bar
Kv-max: 6.6 x 10^{-2}



BRIGHT SERIES

Kompaktes lokales R/C-Modul

helles, Weitwinkel 1.8" Display
Benutzerfreundliche Bedienung
Anzeige/Bedienung/Konfiguration

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