



APPLICATION REPORT Oil & Gas

Flow measurements for sample dosing
in process analysers for the petrochemical industry



- Dosing highly viscous products with no electrical conductivity
- Flow monitoring to detect leaks and blockages
- Precision dosing of sample flow using integrated needle valve

1. Background

Bartec Benke GmbH specialises in analysis systems for liquids and gases in the petrochemical industry.

For monitoring product quality in the production process and to adhere to product specifications, e.g. of benzene, diesel, kerosene, heating oil, paraffin, hydrocarbons and Naphtha, measuring systems are used to determine the boiling point, cloud point, flash point, solidification point and vapour pressure.

2. Measurement requirements

Constant sample flows fed to the analysers are important to ensure accurate analysis. Typical flow volumes for these applications are in the range of approx. 2...40 l/h.

The products have no or very little electric conductivity and may have a very high viscosity of up to 40 cSt (centistokes).

For the process analysers, the sample processing systems and for turnkey analyser cabinets, Bartec Benke generally uses variable area flowmeters.

3. KROHNE solution

Measurement of the constant sample flow is carried out with DK 32 variable area flowmeters by KROHNE, which require no power supply. Using the integrated needle valve and the local display, the desired flow rate can be set directly with the DK 32 measuring devices. As an option, minimum flow monitoring using limit switches is performed for continuous process analysers in order to detect leaks and blockages in the sample line. The universal variable area flow measuring principle is not only used for the actual sample flows of 2...40 l/h, but also for inert gas (0.5...5 NI/h), instrument air (800...1400 NI/h) and cooling water (20...60l/h).

4. Customer benefits

The DK 32 low-flow measuring devices offer a very cost-effective solution and measure with sufficient accuracy at a maximum permissible error of 4% of the measured value. The repeatability and consistency of the flow are more important than the accuracy. The integrated needle valve saves on planning and installing additional valves. Since the measuring principle can be used for both liquids and gases, the same type of device is used for both the sample flows and the auxiliary fluids. This increases familiarity with the measuring devices and facilitates operation. Straight inlet and outlet runs are unnecessary, as is an electric power supply, simplifying installation and integration in particular. Since the DK 32 measuring device is approved for operation in hazardous areas according to ATEX, IECEx, FM and NEPSI, these devices are used internationally in analyser systems.



Cloud point-analyzer

5. Product used

DK 32 Variable area flowmeter

- Reliable measurement and dosing of low flows of liquid and gaseous products
- Measurement of viscous products with no electric conductivity
- Space-saving installation with no inlet and outlet runs
- Local measured value display without power supply
- Optionally available limit switches for monitoring
- Certification for hazardous areas according to ATEX, IECEx, FM and NEPSI



Contact

Please visit our website for a current list of all KROHNE contacts and addresses.



www.krohne.com