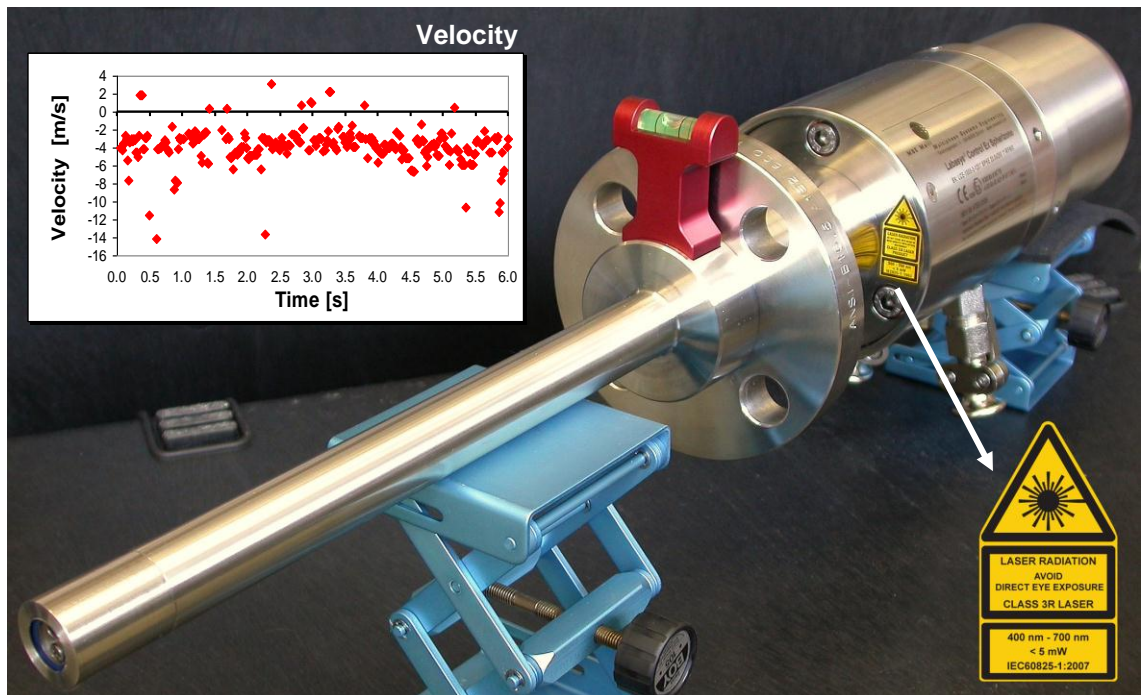


Labasys[®] Control

'Bulk-Flow'

In-line Velocity Determination of Bulk Material




Description

The measuring system LABASYS[®] Control Ex 'Bulk-Flow' is a special version of the LABASYS[®] Control Ex instrument designed for the in-line determination of the **velocity of bulk material** flowing in a tube or reactor, e.g. moving beds. The measuring principle is laser backscattering; the velocity is calculated by advanced and robust cross-correlation techniques.

A flush into the front of the tip integrated sapphire window protects the sensitive fiber sensors and allows for rough process conditions with elevated pressures and temperatures. The tip and flange of the robust instrument are custom tailored to the specifics of the particular measuring situation. An optional cooler permits the operation at elevated temperatures.

**Designed for industrial
in-line process control!**

Features

- **in-line velocity** determination of particulate bulk solids material.
- **explosion protected** for zones **0/1 gas** and **20/21 dust**:  II 1/2 GD Ex d IIC tD A21 T6, CE mark.
- tip with **sapphire window** at front build for harsh process conditions and **high pressures**.
- tip with **dual sealing barrier** towards process – leak-proof even if sapphire window broken.
- high sensitivity and accuracy.
- outer parts completely in chromium-nickel steel.
- dimensions **probe tip** and process connection **upon customer specification**.
- unique algorithm for real-time detection of **non-moving flows** corresponding to a velocity of zero available.
- **approved by LyondellBasell** for the velocity measurement in the recirculation loop of the 'multi-zone circulating reactor' MZCR of their '**Spherizone**' polypropylene process.



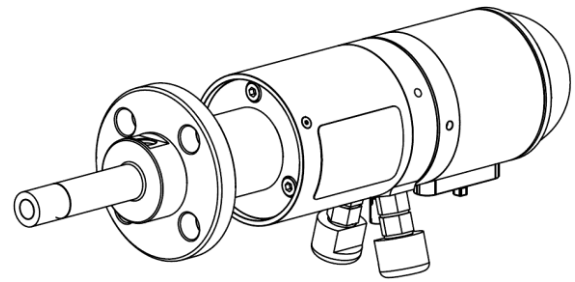
Applications

Any kind of particulate bulk material flows in tubes or reactors with known direction of solid/gas or solid/liquid systems, e.g.:

- Recirculation rate of polymer material to MZCR reactor in 'Spherizone' polypropylene process.
- Solids transport in Chemical Looping Combustion (CLC) in carbonate, calciner or in the oxygen transport loop.
- Your application: ...?

Specifications (standard model)

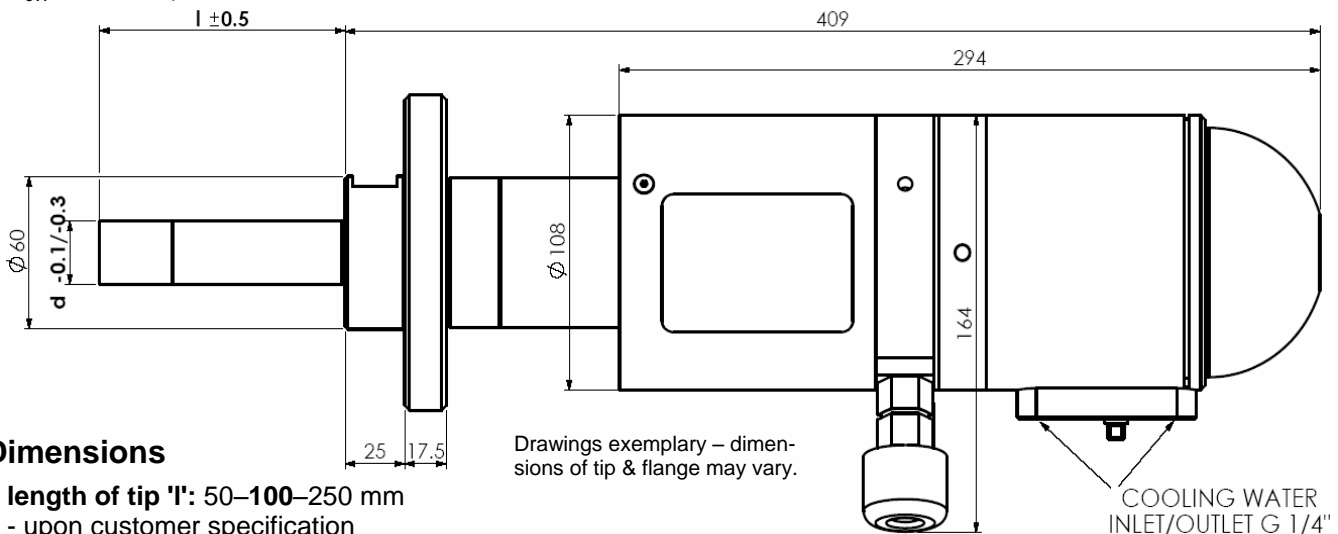
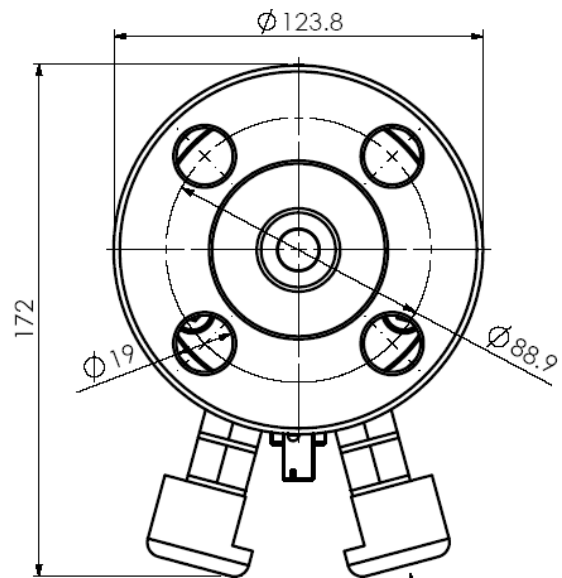
- **velocity:** 0.1 – 20 m/s (non bulk flows: 100 m/s)
- **flow structure:** moving particulate beds
- **process conditions tip:**
 - operating / max. temperature: -50 - 100 °C / 150 °C
 - operating / max. pressure: ≤ 42 bar / 52 bar (press. depending on specs. connector; max.: 1 h)
- **environmental conditions instrument:**
 - temperature: - -10 to 40 °C without cooler
 - ≤ 80 °C with cooler
 - humidity: 0-99% non-condensing
- **enclosure:** IP69 tip, IP 67 instrument
- **material:** stainless steel 1.4404/1.4435
- **power:** +5/±12 V DC with Labasys® Power Control LPC, 85-264 VAC, 47-63 Hz, 18 W
- **connector:** 1" RF 600 (ASME B 16.5) or alike – upon customer specification
- **connection to PCS:** via OPC-server on analysis PC or 4-20 mA output signal with analogue output board
- **Laser-light:** laser class: 3R, $\lambda=650-670$ nm, $P_{cw} < 1.5$ mW; < 5 mW/mm²



Options

- water cooler for instrument; necessary for ambient temperatures of 40°C and higher (connection: G1/4", other connectors with corresponding adapters).
- Instrument tips for higher temperatures or pressures; other materials.

Models with other specifications upon request.



Dimensions

- **length of tip 'l':** 50–100–250 mm
 - upon customer specification
 - including thickness of gasket (typically 3 mm in compressed state)
- **outer diameter 'd':** 23.5–25–30 mm
 - upon customer specification
 - clearance to I.D. inlet: ca. 0.3–0.5 mm in diameter
- **weight instrument** (without water cooler): 10.2 kg with tip 100 x 25 mm (l x d)
- **weight water cooler:** 1 kg (without connectors)

All information is subject to change without notice.

MSE Meili AG – Multiphase Systems Engineering
 Rheinweg 1, CH-8200 Schaffhausen, Switzerland
 Tel: ++41-(0)44-440 55 00 Fax: ++41-(0)44-440 55 04
info@msemi.ch, <http://www.msemi.ch>