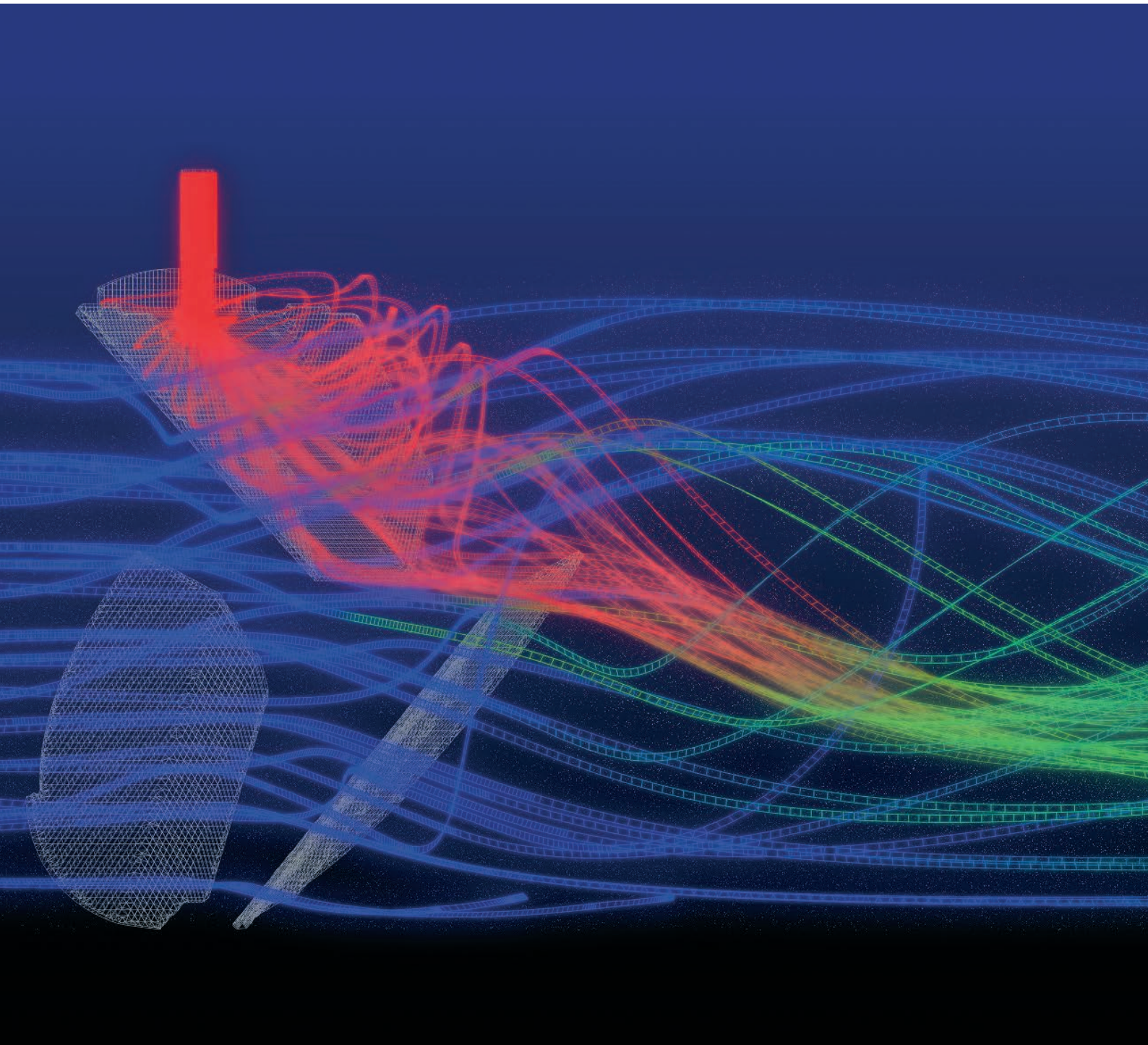


Sulzer CompaX™

Economic and energy efficient admixing
of additives



Sulzer CompaX™ for turbulent flow

Sulzer CompaX is the name of the most efficient and economic solution to admixing additives in the turbulent flow regime. Fluids, additives and gases are reliably and effectively mixed over a very short distance. The pressure drop of a Sulzer CompaX mixer is up to 8 times lower compared to orifice type static mixers. This leads to a significant savings on pump energy which is both an economical and ecological benefit.

Functional description

The Sulzer CompaX design consists of a highly efficient mixing device with an integrated dosing point. The additive is fed into the zone where strong turbulent flow prevails.

For larger diameters, the CompaX design achieves homogenous mixing of up to 6 additives over a very short distance with the use of only one mixing element.

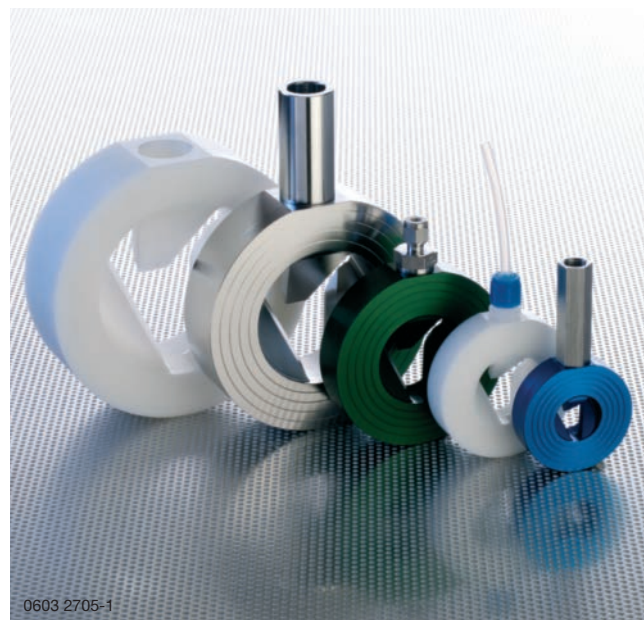
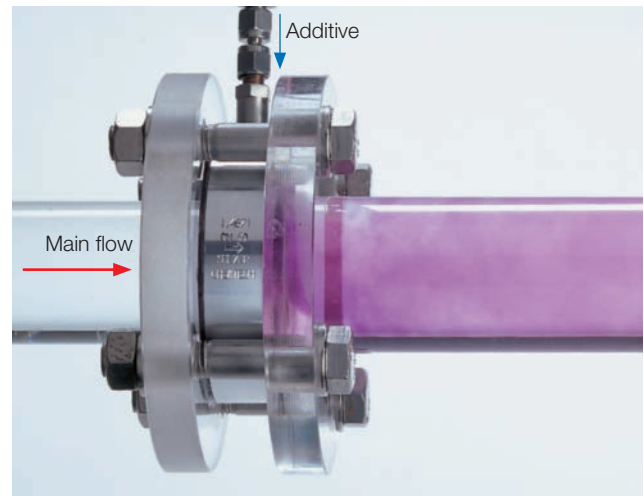
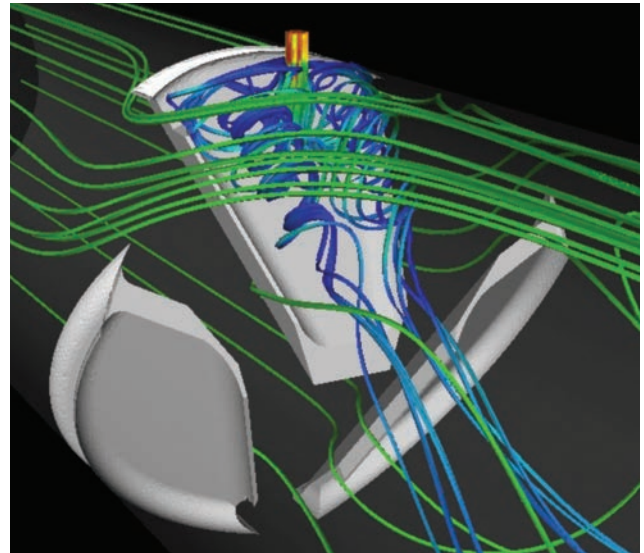
Due to the open wing geometry and the additive dosing location, the mixer does not experience clogging problems.

Field of application

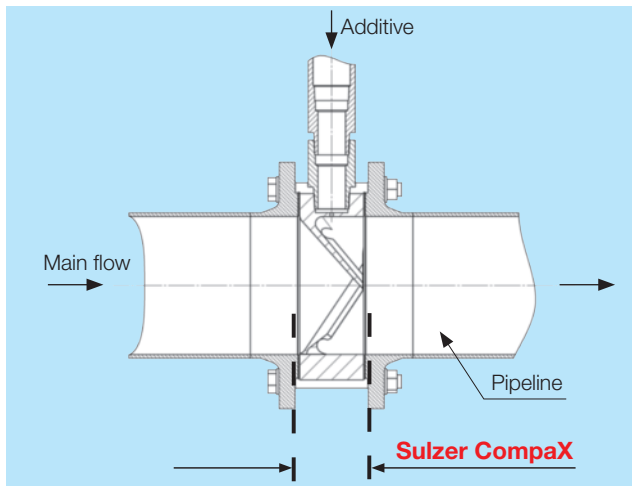
The Sulzer CompaX is widely used for the inline mixing of liquids, gases and suspensions in the turbulent flow regime.

Outstanding features

- Very efficient mixing ($CoV \leq 0.05$)
- Lowest possible pressure drop (typically 10 – 100 mbar for low-viscous fluids)
- Extremely short overall installation length (approx. 0.3 pipe diameters)
- Easy to fit, low installation costs
- Optimized dosing point for additive mixing, no further injection lances required
- No clogging (both in the main flow and in additive stream)
- Robust construction
- Excellent price/performance ratio



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Sulzer CompaX ring design



Applications

The Sulzer CompaX mixer was designed and optimized to admix additives. It can deal with mixing ratios from 1:5 up to more than 1:10'000. Typical applications can be found in the chemical industry as well as the water/wastewater treatment industry. The CompaX mixer can be used, for example, to admix flocculation agents or for pH adjustment.

Homogeneity data

When using a Sulzer CompaX, a homogeneous mixture with CoV values ≤ 0.05 is achieved independent of mixing ratio, within only 3 pipe diameters downstream of the mixer.



Sulzer CompaX FRP

Design features

Sulzer CompaX mixers with a nominal diameter of 25 – 250 mm (1" – 10") are supplied as a ring with integrated dosing. The mixer is installed in the pipe, mounted between two flanges (DIN 2633 or ANSI B16.5). The dosing is designed for a maximum ratio of 20% (1:5) when comparing the additive(s) to main flow rates.

The installation length of the ring configuration is typically equivalent to 0.3 pipe diameters.

Nominal diameters > 250 mm (10") are supplied in FRP with integral flanges or as ring design in stainless steel. This configuration provides the option for 6 or more additive dosing points. The installation length of the flanged version is typically 1.0 pipe diameter.

Sulzer CompaX is available in the following materials:

DN 25 DN 250 / 1" – 10"

- Stainless Steel (SS) 1.4401 / 1.4571 (316 SS)
- Polypropylene (PP)

DN 250 – DN 2000 / 10" – 80"

- Fibre-reinforced plastic (FRP)

Pressure rating: SS = 16 bar @ 120 °C

PP = 10 bar @ 20 °C

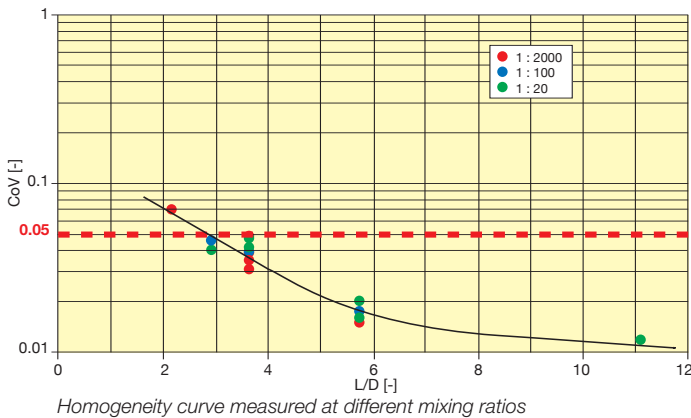
FRP = 3 / 6 / 10 bar @ 20 °C

The following materials are available upon request:

PVC, PTFE, SS-ETFE coated

Delivery

Shipment from stock for most standard designs.



Homogeneity curve measured at different mixing ratios



Calculation of the homogeneity with CFD (Computational Fluid Dynamics)

Pressure drop (Δp)

The pressure drop can be calculated as follows:

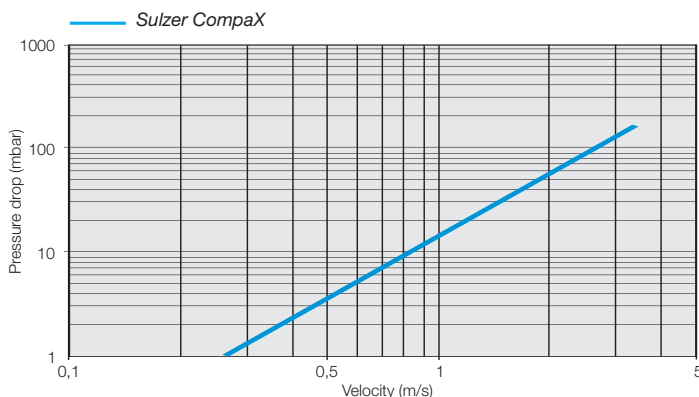
$$\Delta p = 0.014 \rho v^2$$

Δp = pressure drop (mbar)

ρ = density (kg/m³)

v = velocity (m/s)

In the case of water, the relevant pressure drop value can be seen in the diagram below.



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Sulzer Chemtech Ltd, a member of the Sulzer Corporation, with headquarters in Winterthur, Switzerland, is active in the field of process engineering and employs some 3500 persons worldwide.

Sulzer Chemtech is represented in all important industrial countries and sets standards in the field of mass transfer and static mixing with its advanced and economical solutions.

The activity program comprises:

- Process components such as fractionation trays, structured and random packings, liquid and gas distributors, gas-liquid separators, and internals for separation columns
- Engineering services for separation and reaction technology such as conceptual process design, feasibility studies, plant optimizations including process validation in the test center
- Recovery of virtually any solvents used by the pharmaceutical and chemical industry, or difficult separations requiring the combination of special technologies, such as thin film/short-path evaporation, distillation under high vacuum, liquid-liquid extraction, membrane technology or crystallization.
- Complete separation process plants, in particular modular plants (skids)
- Advanced polymerization technology for the production of PLA and EPS
- Tower field services performing tray and packing installation, tower maintenance, welding, and plant turnaround projects
- Mixing and reaction technology with static mixers
- Cartridge-based metering, mixing and dispensing systems, and disposable mixers for reactive multi-component material

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