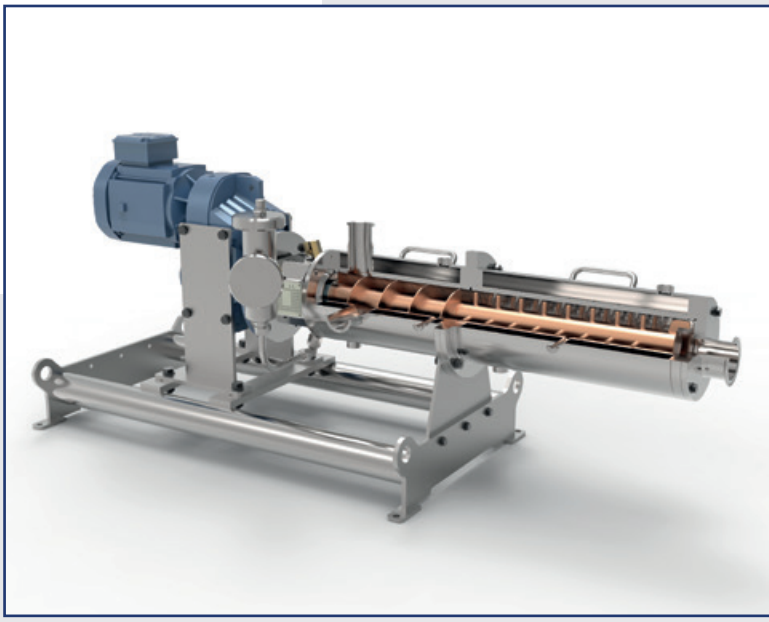
INDAG
Maschinenbau GmbH

The FlowMix®-Company





Solid-Liquid Inline Mixer Type DLM/FS

Continuous homogeneous mixing of solids with liquids

Function and applications of the DLM/FS

The INDAG Solid-Liquid Inline Mixer type DLM/FS is used for the continuous mixing of liquids with solid components. The solid components can have sizes up to 20 mm (spherical diameter) or be powdery. Usually, the liquid content is the larger portion by weight. Depending on the geometry of the mixing elements, the solids can be mixed in gently or with a higher shear rate. This ensures that powders are finely distributed, and larger solid particles are not damaged during mixing. It is also possible to mix solids into foams without damaging the foam material. A few examples from a wide range of applications are: Mixing fibers or powders into polymers, mixing pigments with carrier substances, and granulates in liquids, mixing powders into silicones, ...

Technology of the DLM/FS

The INDAG Solid-Liquid Inline Mixer type DLM/FS consists of a feeding zone and a mixing zone. The liquid and solids are fed into the feeding zone, from where they are transferred to the mixing zone by means of a screw conveyor. The mixing zone contains mixing elements in the rotor as well as the stator. Thanks to the special arrangement of mixing elements and feeding zone, the ingress of gases into the product is limited to a minimum. At the discharge end, the mixed product is fed virtually pressure free to the next processing stage. The mixed product either enters a buffer container or is fed to a pump. Both stator and rotor are available as heated versions (double-walled). For machines with frequent manual cleaning cycles, and because of the easier maintenance, we recommend a machine frame with the mixer housing mounted on the „Easy clean“ carriage. The DLM/FS is perfectly suited for CIP cleaning. Optionally, every mixer can be fitted with a double acting mechanical seal or a stuffing box seal. The DLM/FS comes in various sizes, and is suitable for use in explosion-hazarded zones G2, D21, and D22 (ATEX). We offer rental machines for tests on the customer's site or at INDAG.

Advantages of DLM/FS

- **Homogenously mixing of small concentrations (0,1% mixing ratio); very homogenous mixing result.**
- **Energy efficient mixing process**
- **Mixing energy can by changed by frequency inverter**
- **Temperature increase less than 1°C**
- **Gentle mixing of shear sensitive products**
- **Easy dismounting for manual cleaning**
- **Very good self cleaning during CIP-cleaning**

Positioning
Horizontal

Pressure levels
6 bar; depending on the material's viscosity, the mixer itself generates a max. pressure of 0.5 bar at the discharge end.

Materials
1.4404 (AISI 316L), higher grades on request

Seals
Double acting mechanical seal; stuffing box seal

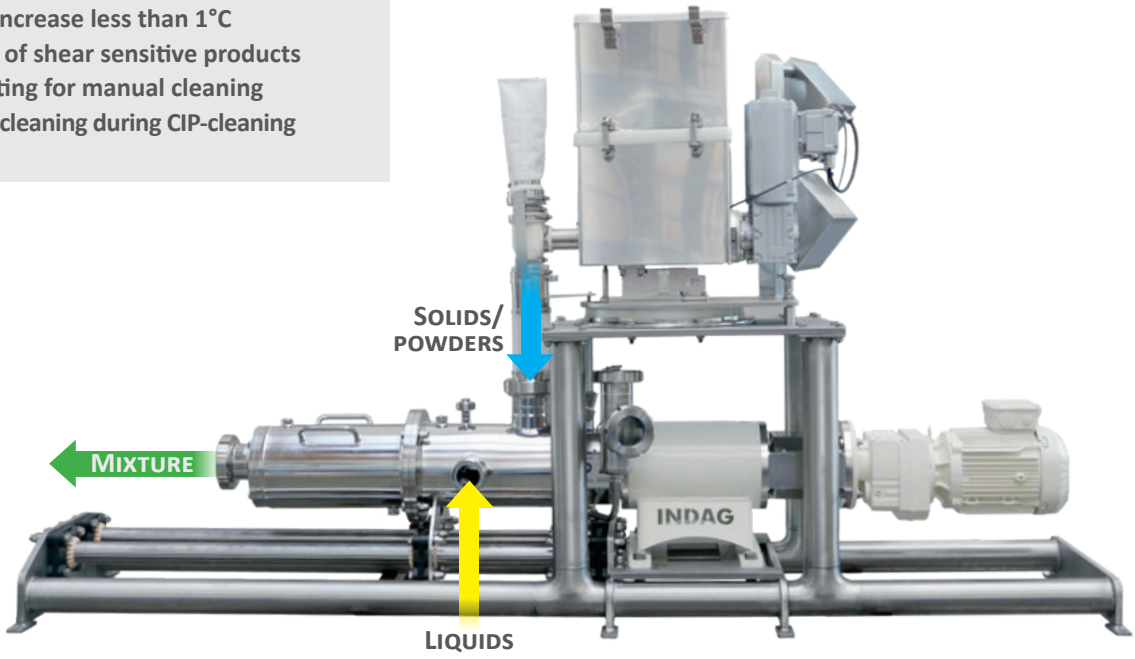
Connections
Dairy connections to DIN 11851, DIN 11864, Tri Clamp, SMS or others

Rotational speed
100 rpm to 300 rpm

Capacities
100 l/h up to 7000 l/h, higher values on request

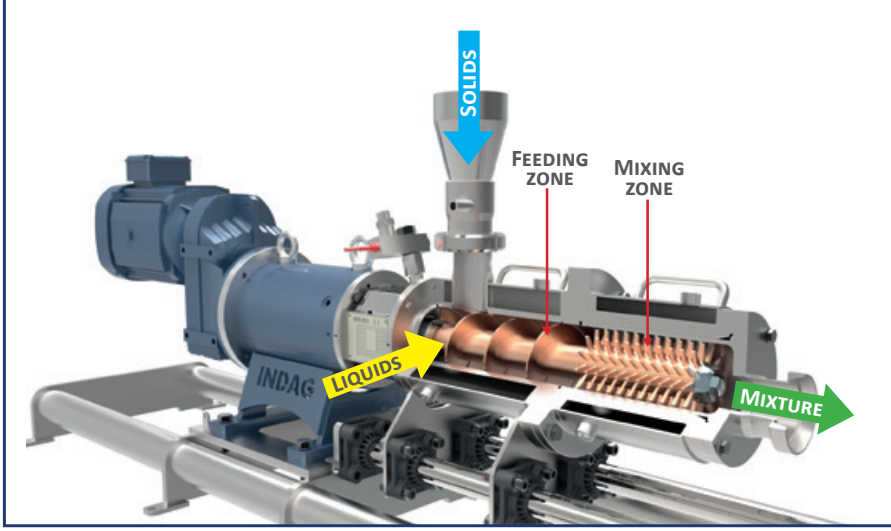
Temperatures
0 °C to 300 °C

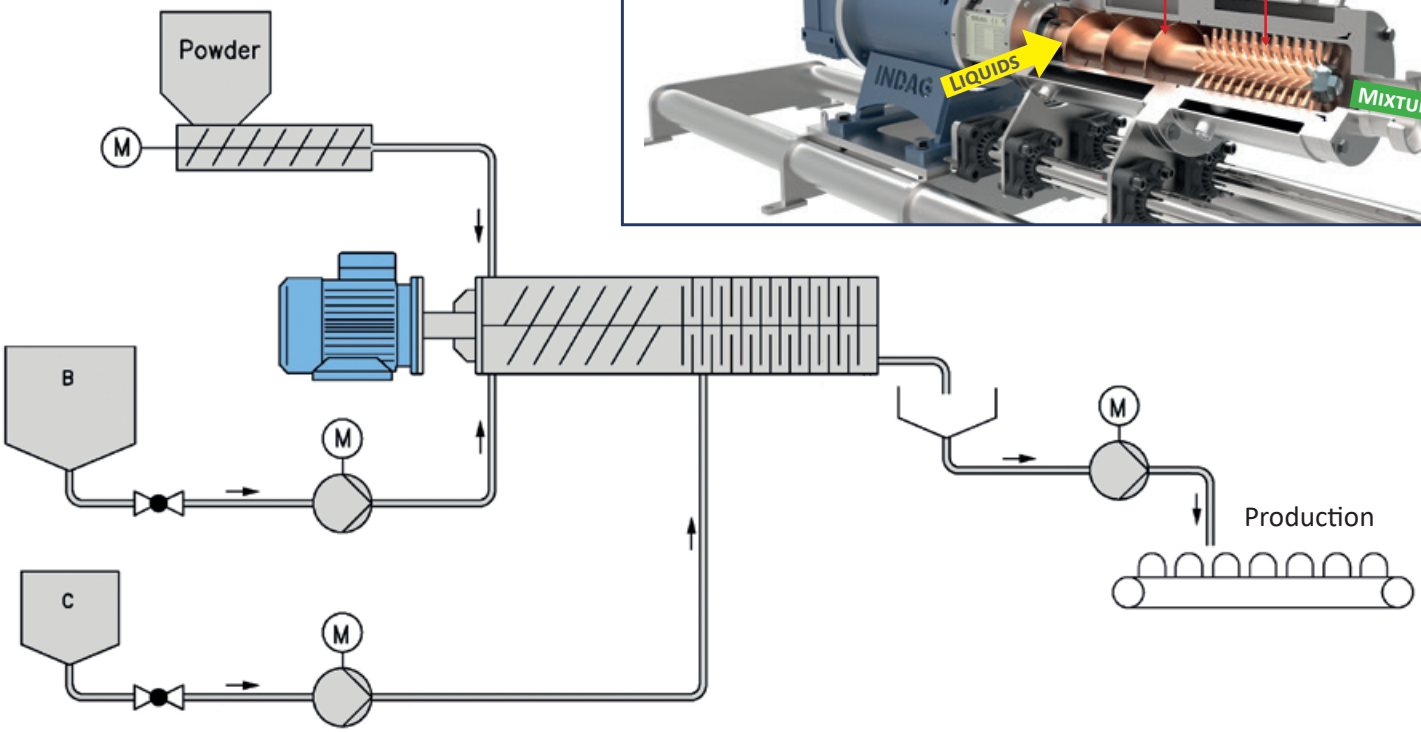
Viscosities
1 mPas up to 10.000.000 mPas



Construction of an INDAG DLM/FS mixer

Flow diagram of DLM/FS





Mixer sizes and capacities of DLM/FS

Type DLM/FS	Unit	2	3	4	5
capacity*	l/h	100 - 800	500 - 2,000	1,000 - 3,600	1,500 - 7,000
connection solids*	mm	80	100	125	150
power *	kW	1.5 - 2.2	2.2 - 4	4 - 7.5	5.5 - 11
rotational speed*	1/min	150 - 300	150 - 300	100 - 200	100 - 200

*depends on product.
Higher throughputs on request.

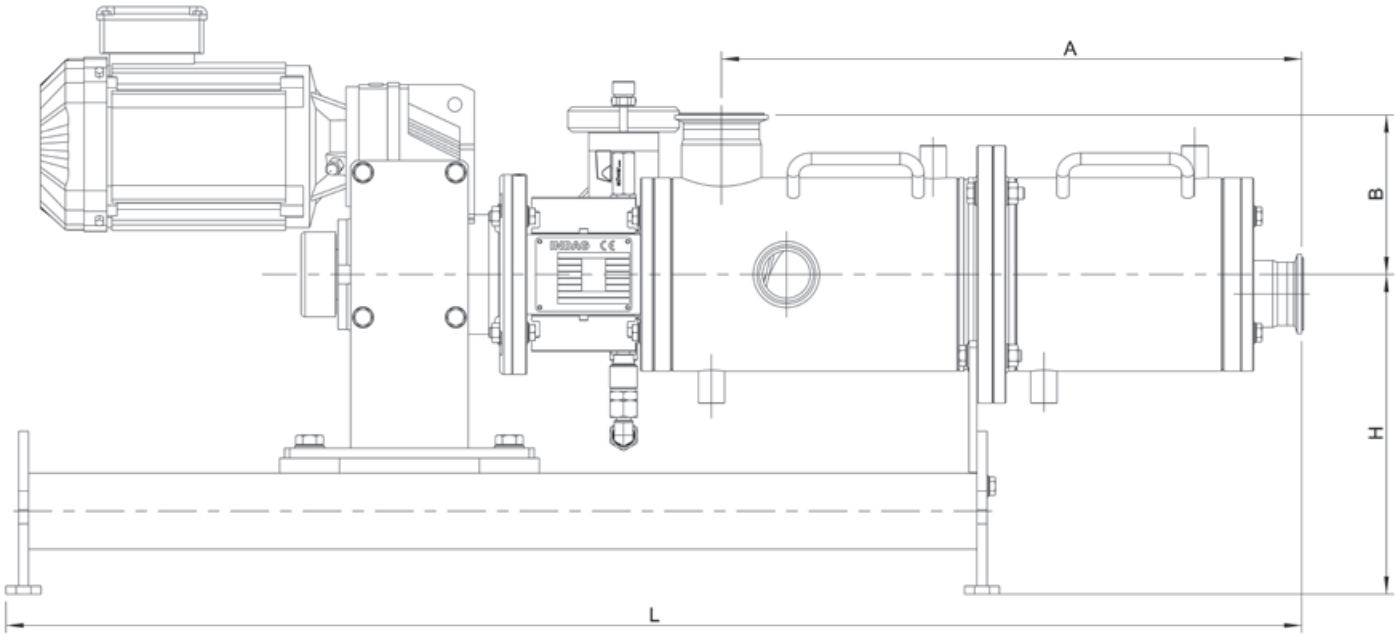


Alternative mixing elements



Installation example in a mixing & batching system

Dimension drawing of DLM/FS (KB)



Dimension table of DLM/FS (KB)

Type	Unit	A	B	H*	L*
DLM/FS-206 KB	mm	565	145	320	1300
DLM/FS-306 KB	mm	605	185	380	1620
DLM/FS-408 KB	mm	675	215	420	1860
DLM/FS-508 KB	mm	880	254	450	2100

* depends on the drive

Company profile

For more than 70 years, INDAG has been developing, designing and manufacturing dynamic inline mixers in Borsfleth near Hamburg.
INDAG mixers are designed to meet the highest quality and efficiency standards.

Product range and services

Our product range covers: Dynamic inline mixers for gentle, intensive, or high shear mixing. Possible applications are: Mixing, emulgating, dispersing and foaming.
Our services include: Commissioning, maintenance, and repair of INDAG mixers, spare parts service and customer support based on many years of experience.

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