

MHD 2000/10

The patented IKA MHD 2000 (mixing-homogenizing-dispersing) system is designed for mixing solids (powders, granulates) with liquids. It is predominantly used for fully continuous production processes. The MHD unit is particularly suitable for applications which meet at least one of the following:

- The process should largely occur in a single pass.
- Up to 80% solid concentrations are to be incorporated in a single pass.
- A reaction occurs immediately after mixing.
- The liquid phase is already highly viscous.
- The amount of energy required for the mixing process is to be minimized.
- The solid is a granulate and is to be crushed mechanically as well as mixed.
- The amount of entrapped air is to be minimized.

The MHD 2000 has two horizontal liquid connections and one vertical connection for the solid materials. The liquid phase is fed through the upper inlet normally by the means of a positive displacement pump or from a pressurized feed system. The liquid is introduced, distributed across the MHD's concentric drum and dosed into the premixing chamber through multiple apertures. The solid is fed vertically into the pre-mixing chamber from the top via a chute, by means of a dosing device (screw feeder, rotary feeder, etc.). The dry feed section and the wet pre-mixing chamber are separated by a feed screw. The liquid and solid phases come into contact in the definite proportions in the pre-mixing chamber. On leaving the pre-mixing chamber, the components are immediately dispersed by an optional rotor-stator system with high shear action, producing high quality, agglomeration-free product in a single pass. The mixed product is discharged by gravity feed through the liquid outlet at the lowest point of the unit.

This unique wetting method was developed to minimize air entrapment, which can occur in solid/liquid dispersion systems based on Venturi principle.

Throughput of the MHD is set by adjusting the dosage system. The amount of energy required, and thus the degree of mixing, is determined by speed and the tool configuration chosen. For simple processes such as filling tanks or storage containers, volumetric dosage systems are generally adequate. In the case of fully continuous processes requiring high levels of precision, quantity controlled dosage pumps are used for the liquids and differential dosage scale of the solids. The results are generally accurate to within 0.5% or better.

The MHD 2000 mixing system is available in eight different sizes with throughput volumes of between 60 and 40,000 l/h. All sizes operate at the same rotor peripheral speed, thus the most reliable conditions for scale-up.



Technical Data

Total capacity	10 gpm
Solids capacity (max)	2,900 #/hr
Motor power	20 Hp
Motor speed	3,600 rpm
Tip speed	23 m/s
Speed regulation possible	Yes
Mixing tools	Variable
Single mechanical seal	Yes
Double mechanical seal	Yes
Ex-proof possible	Yes
Cleaning	Yes, CIP
Sterilization	Yes, SIP
Inlet (solid)	2 ½" Tri-clamp
Inlet (liquid)	1 ½" Tri-clamp
Outlet	2" Tri-clamp
Ident. No.	MHD 2000/10

Advantages of the IKA MHD 2000:

- Three process steps in one machine: Mixing / Homogenizing / Dispersing
- Fully continuous mode of operation
- Possibility of high solid flows up to 80% in one pass, depending on the product
- Wide range of mixing tools adaptable to process requirements
- Finest particle sizes attainable by installation of up to three dispersion levels
- Suitable for wet grinding processes
- No additional aeration by transport of solids
- Suitable for high viscosity products
- Closed system preventing dust and solvent emission
- Wetting particle to particle, thus preventing agglomeration formation
- No loss of raw materials by bundle handling
- Impressive reduction of process time
- Reduced raw material insertion requirements because of better raw material design
- Compact design
- Easy scale-up processes from MHD laboratory machine to MHD production plant
- Manufacture according to EHEDG guidelines (European Hygienic Engineering and Design Group)
- CIP/SIP capable
- All wetted parts are made of 316L / 316Ti stainless steel
- 3A-Sanitary conformed and certified
- Explosion protected executions according to NEMA guidelines deliverable

IKA engineers and application technicians will be happy to advise you on the installation of the MHD mixing system in existing or new plants. As well as individual machines, the IKA team can also supply complete systems ready for installation as a single unit, including content dosing and refilling devices, pipe work, steel structures, sensor systems and control systems.

