MagnaSafe®
INTERNATIONAL

Safe, Sealless, 100% Leakproof Mixing for the Chemical & Sanitary Industries

Environmentally Safe – No Emissions

MagnaSafe® INTERNATIONAL Safe Mixing

Sealless Makes Sense

Magnetic Drives offer the safest, most cost effective solution...

Think Magna-Safe when you want to prevent hazardous vapor emissions

Think Magna-Safe when you want to prevent product contamination

Sealless Design, 100% Leakproof

The primary advantages of our sealless design are to eliminate vapor leakage, prevent product contamination, and enhance operator safety.

Our magnetic drive eliminates the need for mechanical seals, resulting in less costly maintenance, fewer spare parts, and decreased downtime.

Environmentally safe

No emissions mean you are doing your part to protect your environment.

Sealless Mag-Drive Mixing

- Top Entering Mixers
- Bottom Entering Mixers
- Side Entering Mixers
- Inline Mixers
- Small Scale Mixers
- Replace Existing Sealed Mixers
- Impellers & Speed Sensors
- Support & Documentation

for the Chemical & Sanitary Industries

Mixers for Demanding Process Applications

MST Sealless
Top Entering Mixers

High Torque Mag-Drive Mixers for Plant Production

- Torques to 50,000 in-lb.
- Temperature -100°C to 350° C
- Flange, Tri-clamp, or Threaded Connection
- Impellers for any process application
- Motors can be electric, variable speed, air, or hydraulic
- Available with speed sensors tachometers, and power monitors
- Available in most alloys, glass lining and coatings
- Several bearing designs to suit most conditions
  - Stainless steel lubricated and shielded
  - Hybrid ceramic/ stainless dry running
  - All ceramic dry running
- Sanitary features include:
  - 15Ra Polish
  - All stainless drive
  - Triclamp ferrule
- Pressures to 3000 PSI, including double wall containment shells
- ATEX certified

100% Leakproof

A sealless, leakproof mag-drive design that eliminates a mechanical seal and lubrication system.

Zero leakage means no product contamination, while providing operator safety.

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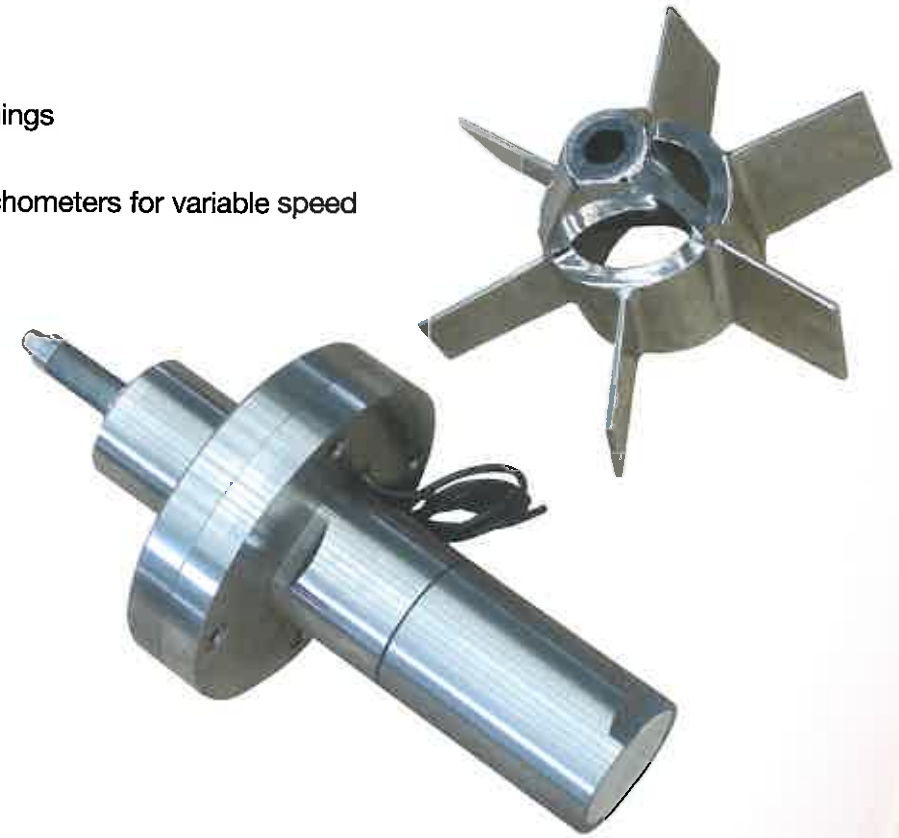
MSB Sealless
Bottom Entering Mixers

Sanitary Mag-Drive Mixers

- Free draining, open impeller with high flow, low shear blades
- Highly polished wetted parts in 316L SS
- All stainless drives and motors available
- Electric and air motors to 5 hp
- All FDA, USDA, and USP approval materials
- Independently tested for cleanability and particle shedding
- Able to mix volumes to 30,000 liters
- Validatable using documents provided
- No maintenance design
- CIP/SIP sterilizable
- Magnets cannot decouple
- Pure silicon carbide and PEEK bushings
- Robust, one piece weld plate
- Available with speed sensor and tachometers for variable speed
- Dry running option



Sterile Mixing Technology

We have eliminated all seals. The mounting flanges are welded to the tank forming a 100% leakproof design. The Magna-Safe mixer is Cleaned In Place (CIP) with the vessel.

MSS Sealless
Side Entering Mixers

Capable of mixing volumes to 1,000,000 gallons

Prevent Product Contamination and Emissions

The Magna-Safe mixer is designed to be Cleaned In Place (CIP) and can run dry. ***No other company provides a*** *side entering design that is both 100% leak proof and sealless.*

Magna-Gard™
Sealless Inline Mixers

For Continuous Flow Applications

100% Leakproof

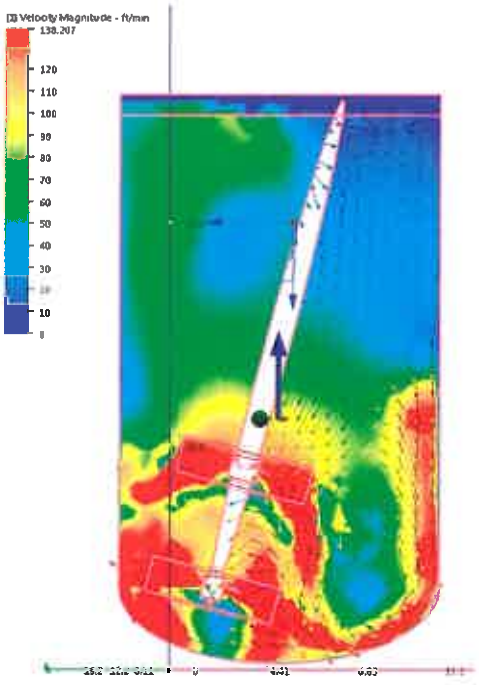
Sealless technology for continuous processes requiring inline blending or high shear, with all the features of the MST top entering mixer.

MagnaSafe® INTERNATIONAL

Magna-Gard
Sealless Small Scale Mixers

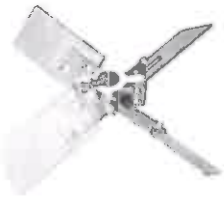
Laboratory & Pilot Scale
Mag-Drive Top Entering Mixers

- Small mounting connections
- Can be fitted to glass vessels
- Electric, variable speed, and air motors
- Several impeller styles to suit most applications
- High pressure capability to 3000 PSI
- Available in most alloys, glass lining, and coatings
- Suitable for volumes to 50 gallons
- Sanitary features available including
  - 15 Ra polish
  - Triclamp ferrule connection
  - All-stainless drives and motors
- ATEX certified



Impellers

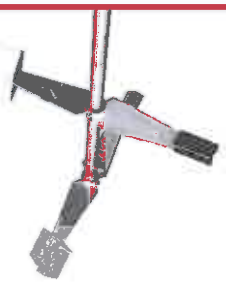
Axial Impellers for Flow



45º Pitch

Hydrofoil

Propeller



Intermig

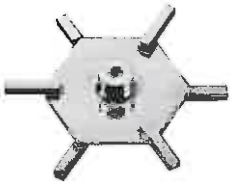
Radial Impellers for Shear

90º

Rushton

Gas

Disperser



Shear

Special Impellers

Anchor

Ribbon

Retreat

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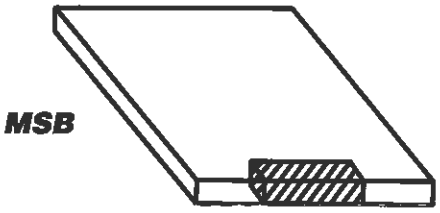
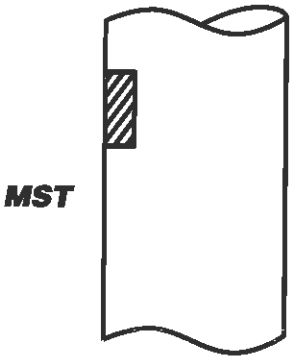
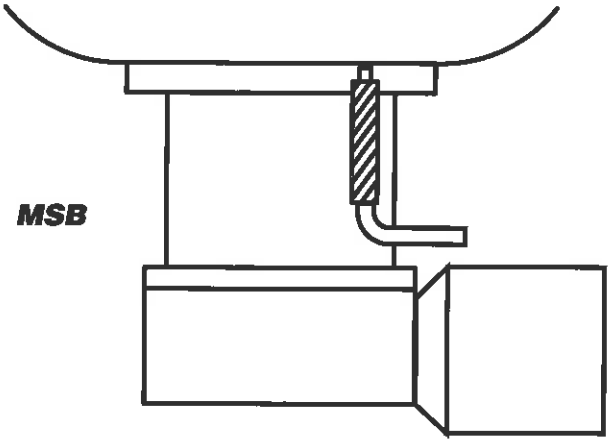
Speed Sensors
for MSTs & MSBs

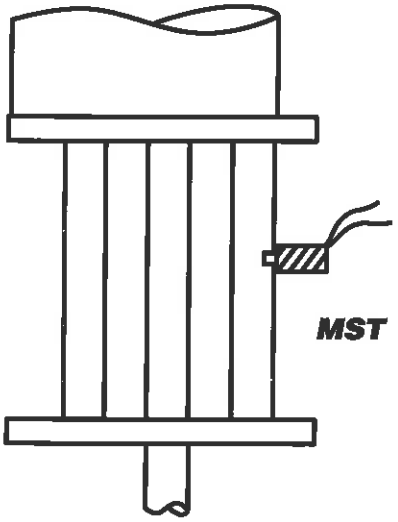
A. Embedded Magnet in Shaft or Impeller



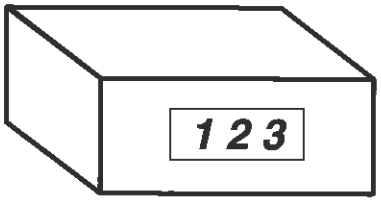


B. Mag Pick-Up Speed Sensors - NEMA, Intrinsically Safe





C. Barrier Box and/or Tachometer NEMA 1, 4X, 7/9



MSB and MST

Autoclaves, High Pressure Reactors

AmarE

Laboratory & Pilot Scale Mag-Drive Mixers & Pressure Reactors

Salient Features

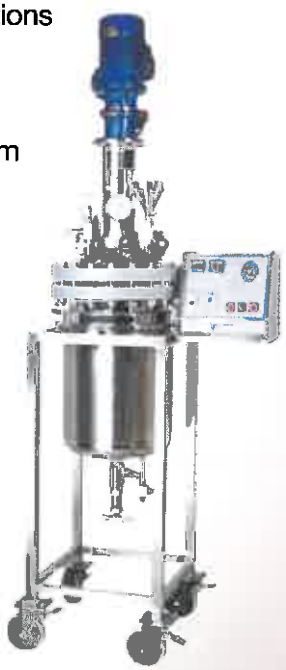
- Stirred and non-stirred reactors/pressure vessels
- Sizes from 25 ml to 1000 liters capacity
- M.O.C. 316 SS/316L, Hastelloy B/C, Monel, Inconel, Nickel, Titanium, Tantalum, Zirconium, etc.
- Max. design pressures up to 5000 psig (350 bar) and temperatures up to 500°C
- All designs as per ASME codes and CE certified autoclaves on request
- High torque zero leakage magnetic drive coupling
- Complete pilot plant with automatic temperature, pressure RPM, motor torque/current, liquid and gas flow controlling, autocooling system, chiller, condensor for distillation or reflux, thermic fluid heating/cooling system, etc.
- PC controlled autoclave system to continuously monitor, control, and record various parameters
- Multiple parallel 4 or 6 reactors for high throughput testing
- Complete FLP certified/explosion proof systems suitable for group IIC gases like H
- Bottom stirred autoclaves
- Glass body autoclaves
- Interchangeable metal autoclaves
- Interchangeable metal and glass autoclaves
- Rocker/Shaker Hydrogenator
- Continuous flow stirred tank reactor
- Fixed bed catalyst tubular reactor
- Acid digestion vessel
- Chemical reactors
- Laboratory reactors
- Pressure reactors
- Plant reactors

Autoclave Applications

Applications

It is used for reactions such as alkylation, amination, bromination, carboxylation, catalytic reduction, chlorination, dehydrogenation, esterification, ethoxylation, halogenation, hydrogenation, methylation, nitration, oxidation, ozonization, polymerization, sulphonation, etc. at high pressure, vacuum, and temperature.

- To invent new chemicals
- To produce chemicals in small quantity in batch or continuous mode
- For pilot plant purpose
- For quality control and process improvements
- To study reaction parameters
- For heterogeneous mixing
- To carry out catalytic reactions
- To carry out exothermic or endothermic reactions
- For corrosion studies
- For reaction calorimetry
- For supercritical CO, solvent extraction system
- For Hydrogen disbonding test,k etc.



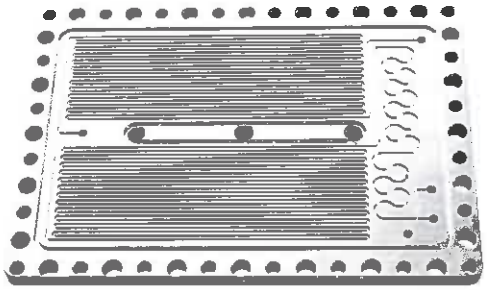
In R&D centers, pilot plants and manufacturing facilities of fine and speciality chemicals, bulk drug (API) pharmaceuticals, dyes, intermediates, paints, oils, agrochemical, petrochemicals, petroleum, etc. Industries and also in chemical engineering colleges/research institutes/defense organizations where high pressure reactions are carried out.

AMaR-2: Microreactor

(Patent Filed)

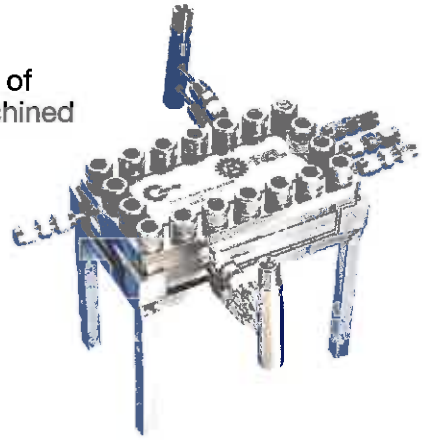
Application

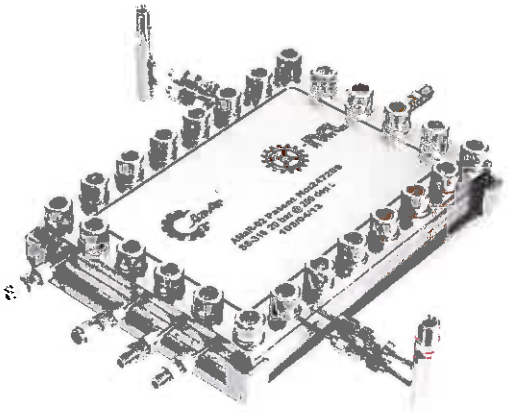
Mixing of miscible liquids or immiscible liquids or gases creating dispersion of immiscible fluids or gases in liquids and carrying out very fast, exothermic, homogeneous, and heterogeneous reactions. Some of the tested applications include nitrations, halogenations, sulfoxidation, sulfonation, esterification, diazotization, condensation reactions, etc.



Design

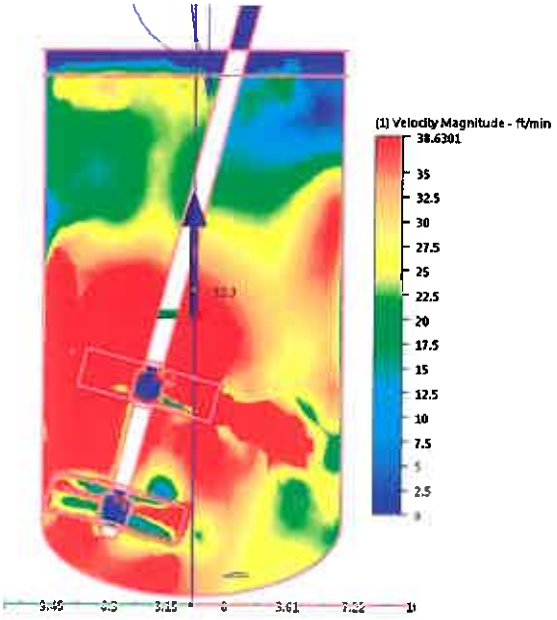
It consists of microchannels of specific size and shape machined on metal plates.

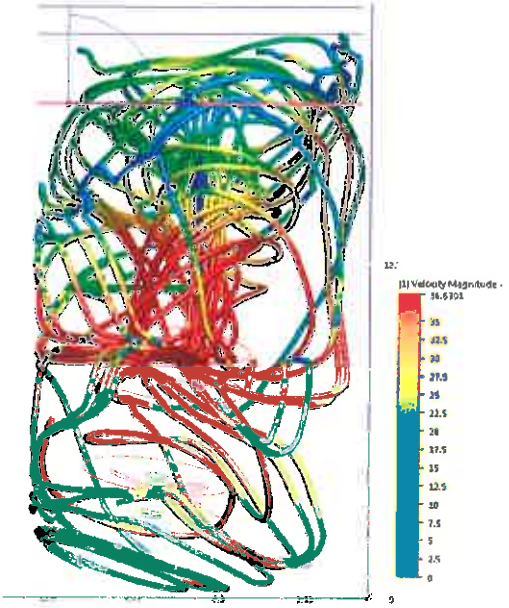




Technical Specifications	Standard	Optional
Volume (ml)	8	80ml (10 plates in series)
Design Pressure (bar)	20	—
Design Temperature (°C)	–40 to 200 (with Viton 'O' Ring)	–40 to 300 (with Kalrez 'O' ring)
MOC	316 SS	Hastelloy B/C, Inconel, Monel, Titanium, Tantalum lined, PTFE coated, Gold plated
Flow rate (L/hr)	2.88 (for 10s residence time)	4.8 (for 60s residence time)
Dimensions (mm)	230 × 165 × 25	—
End connections	3 nos. inlet, 1 no. intermittent port & 1 no. outlet, 1/8" O/D tube connector	1/4"-28 UNF connector
Heat transfer Area (m^2/m^3)	4500	4500
Heating/Cooling	Circulating thermic fluid through external 304 SS jacket on both sides	—

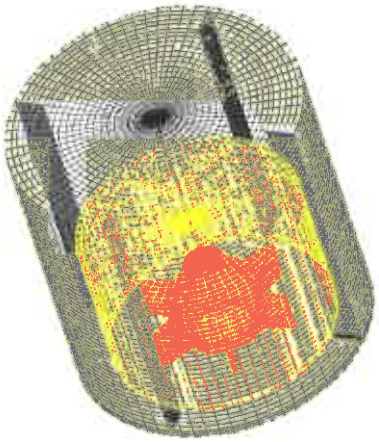
CFD Verification Software





Magna-Safe uses computational fluid dynamics to quickly determine if a mixer is the right choice for a customer's application. The benefit of the Computational fluid dynamics or CF Design, by Autodesk, is the ability to see the problems or optimize a design before it is even manufactured.

Computational fluid dynamics helps Magna-Safe with new applications, retrofits, and break downs to better understand the customer's problems with their current equipment and can work with them to create a retrofitted mixer or provide a new design that meets and exceeds the process requirements.



Applications

Sealless MST Top Entering

- Glass Lined
- Biotech
- Cryogenic
- High Pressure
- Extreme Temperature
- Biofuel
- Nuclear
- Explosive
- Fermentors
- Kilolabs
- Reactors
- Toxic
- Hydrogenators
- Flammable
- High Viscosity

Sealless MSB Bottom Entering

- Biotech
- CIP
- Pharma
- Injectable
- Vaccines
- Cell Cultures
- Protein Fractionations

Sealless MSS Side Entering

- Food Oils
- Biofuels
- Vitamins
- Chemicals
- Soups
- Citrus Juice
- Beverages

Magna-Gard Sealless Inline Mixers

- Detergents
- Continuous Flow
- Chemical
- Petrochemicals

Replace Your Existing Mechanical Seal Mixer

- Repair
- Refurbish
- Recondition
- Rebuild
- Retrofit
- Replace

Magna-Safe will retrofit and recondition your existing mechanical seal mixer using Mag-Drive technology. Reuse your existing wetted parts. or upgrade to new, more efficient, and high productivity impeller technology.

Magna-Safe will replace old, unreliable mechanical seal agitators on existing vessels without the need to modify the vessels. Our capability extends to most alloys, coatings, and glass lining.

Benefits

A thorough analysis of the repair, retrofit, or replacement of your existing mixers Engineered solutions for difficult applications

- Increased sealing safety over conventional mechanical seals
- Reduced downtime means improved process productivity
- Original Magna-Safe OEM parts and factory trained service technicians
- No wearing seal parts means increased mixer life expectancy
- 100% Leakproof design

Magna-Safe will evaluate and optimize your process mixing performance with our unconditional process warranty

All designs are unconditionally warranteed for process performance

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Customer Service

Support

- Warranty
- Training
- Start-up Assistance
- Demo Tank
- Mechanical Trouble Shooting

Process Support

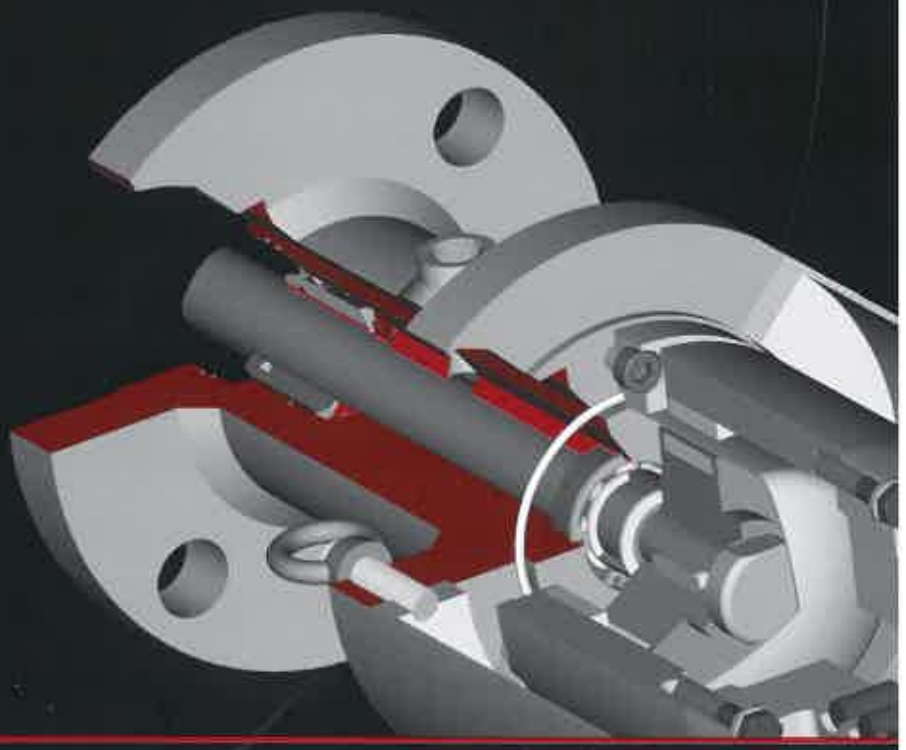
- Process Troubleshooting
- Scale Up/Down
- CAD Drawings
- Applications Engineering
- R&D
- Testing
- Prototype
- CFD

Control Documentation

- Cleanability Study
- ASME Code Section VIII
- PMI Test
- X-Ray Test
- Hydrotest
- Material Certificates
- QC per ISO 9002
- ATEX Certification
- USP Class VI
- Validation Capable

Aftermarket Support

- Inventory of Parts
- Rebuild as New
- Retrofit Existing Equipment



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The Fusion of Process Mixing and Mag-Drive Technology

7 Reasons to Specify Sealless Mixers

1. *Prevent Product Contamination*
2. *Absolutely Leakproof*
3. *SIP/CIP Sterilization*
4. *Eliminates Costly Mechanical Seal*
5. *Maintenance Free Design*
6. *High Pressure/High & Low Temperature Designs*
7. *Environmentally Safe – No Vapor Emissions*

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