

**FUNDAMIX®**

Mixing Redefined  
by Oscillation.  
Beyond Rotation



**DrM**  
DrM Group —.....

# Pioneering Vibrational Mixing Since the late 1960s

40<sup>+</sup>  
years of excellence

41<sup>+</sup>  
countries served

581<sup>+</sup>  
units delivered

## Swiss Engineered to Perform.

Invented in the late 1960s by Dr. Hans Müller, founder of DrM and Chemap AG, the FUNDAMIX® was first developed and manufactured under Chemap AG, pioneering high-frequency vibration mixing for sterile and high-purity processes. The technology became widely used for gentle, efficient pumping and dispersion through a perforated plate with conical bores. In 2012, DrM re-engineered and reintroduced the system with modern materials and automation. The figures shown refer to units delivered since this 2012 reintroduction, representing the current FUNDAMIX® generation.

## Efficient Mixing. Proven Advantages

FUNDAMIX® delivers powerful, low-shear mixing without rotating parts, meaning no mechanical seals, minimal maintenance, and reduced energy consumption. Its simplified tank design eliminates the need for baffles or vortex breakers, ensuring high reliability and a long service life.

The axial mixing motion guarantees fast, uniform dispersion without vortex formation. Depending on

the application, different plate types allow for either downward flow or upward flow.

A membrane sealing unit ensures excellent performance in sterile environments and supports high operating pressures. For added precision, an optional piezo sensor enables amplitude control with exceptional accuracy.



### Custom Design

Designed to minimize energy consumption.



### Axial Mixing

Provides effective and uniform axial flow.



### Shear Force

Ideal for a wide range of applications, from gentle suspension maintenance to more demanding mixing tasks.



### Available in different sizes

Volume capacity up to 12,000L



### Low Maintenance

Ensures quick installation and minimal maintenance.



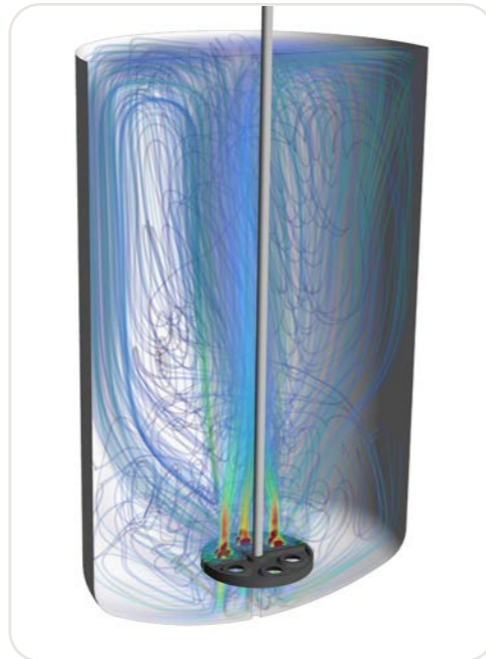
### Simplified Construction

Operates without rotating parts, baffles, or mechanical seals.



# Mixing. Tailored to Your Process

FUNDAMIX® is a highly versatile and efficient vortex free mixing solution for a broad spectrum of applications and operating conditions.



## Versatile mixing

- From low-shear to vigorous, tailored to your process needs.

## Hygienic design

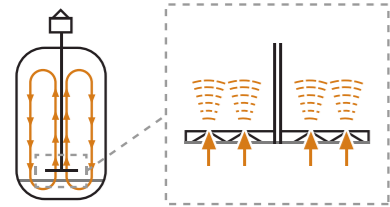
- Fully compatible with CIP/SIP procedures for efficient cleaning and sterilisation.

## Minimal product losses

- Very low residual liquid volume thanks to the low plate positioning.

## Energy efficiency

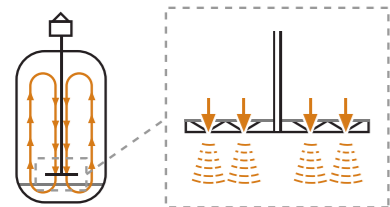
- Delivers powerful mixing with significantly reduced power consumption.



### TYPE A

Type A with the conical bores facing upwards is the preferred standard. The plate can be mounted very low, so the mixable heel volume is reduced to a minimum.

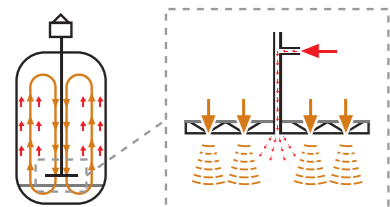
- Best for: Processes requiring rapid and efficient mixing, such as liquid-liquid blending and formulations involving liquids with light solids.



### TYPE B

Mixer type B with the conical bores facing downwards is chosen if the product tends to sediment, creates foaming or if no air is to be introduced during mixing. The distance of the plate to the bottom of the vessel is about the diameter of the plate.

- Best for: Processes with fast-settling solids or where foam prevention is critical.



### TYPE B + GAS DISPERSION

If gas is required then it can be injected through the shaft with mixer plate type B. The liquid flows downwards distributing the fine gas bubbles in the vessel generating an excellent gas dispersion.

- Best for: Processes requiring precise gas distribution such as aeration, fermentation, or gas sparging.

FUNDAMIX® Model	Vessel Ø Range	Vessel Capacity Range
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#### FM-1

Ideal for small tanks, pilot systems & lab-scale mixing.

70-400mm

0.5-20L

#### FM-2

Best fit for most standard industrial mixing applications.

400-600mm

10-200L

#### FM-3 (+)

Optimized for larger tanks without compromising mixing efficiency.

##### FM-3

600-900mm

50-1,000L

##### FM-3 +

900-1,200mm

300-2,000L

#### FM-4 (+)

Designed for industrial scale mixing with demanding process requirements.

##### FM-4

1,200-1,600mm

1,000-10,000L

##### FM-4 +

1,400-2,000mm

6,000-12,000L

\* Custom configurations and special executions are also available.



FM-1

FM-2

FM-3 (+)

FM-4 (+)

# Essential Mixing Components

## DRIVE UNIT

The drive unit is the core element of every FUNDAMIX® Vibro-Mixer, generating the controlled oscillations that power the unique mixing principle.

Designed for long-term reliability, it combines robust engineering with a compact form, ensuring smooth and consistent performance across laboratory, pilot, and industrial-scale applications.

### Wide capacity range

- Volumes from 0.5-12,000L

### Energy efficiency

- Low-consumption performance through innovative oscillation design

### Protection & safety

- Standard IP65 protection; ATEX option on request

### Robust design

### Low maintenance



## SUSPENSION SYSTEM

The suspension system provides stable support for the drive unit and is carefully engineered to maintain precise oscillation of the mixing plate.

By ensuring smooth operation and mechanical stability, it contributes to reliable performance even under demanding process conditions.

Vibration isolation

Robust design

Performance assured

Custom solutions



## MEMBRANE SEALING UNIT

The membrane sealing unit is designed to ensure reliable performance under a wide range of process conditions, it provides a robust sealing solution without the complexity of traditional mechanical seals.

Versatile operation

- Solutions for atmospheric, pressurized, and vacuum conditions.

Friction-free design

- No rotating parts, no mechanical seal, and no generation of friction.

Certified materials

- With FDA, USP Class VI, and EN 10204 3.1 certification



## MIXING DEVICE

The mixing device uses an innovative oscillating plate technology, where liquid is driven through conical bores to create a controlled vertical flow.

This simple yet highly effective principle enables efficient mixing, dispersion, homogenization, and even gas-liquid reactions, all without rotating parts.

Dimensional adaptability

Material selection

Application specific configuration

Surface quality

Design flexibility

CIP/SIP compatibility

# From Laboratory to Industrial Scale Models

01

## LABORATORY

Before scaling up to full production, lab-scale testing allows you to validate your process, optimize parameters, and ensure reliable mixing performance.

DrM offers compact FUNDAMIX® test units, available for purchase or rental, to help simulate real process conditions in a controlled lab environment.

- Ideal for mixing trials, process development, or R&D
- Fully enclosed, hygienic design
- Easy-to-use, compact footprint
- Adjustable mixing parameters
- Available for rental or purchase



Vessel Capacity Range:

0.5- 200L

02

## PILOT UNITS

The pilot units form the crucial bridge between laboratory studies and industrial production.

They replicate the same mixing performance as the larger systems while allowing flexible testing of different impeller sizes, frequencies, and vessel geometries.

- Scalable performance from pilot trial to industrial application
- Ideal for extended studies or limited production runs
- Integrated instrumentation for optimization and validation



03

## INDUSTRIAL SCALE

DrM's industrial-scale systems combine performance, flexibility, and reliability to meet the demands of modern manufacturing.

Based on the same vibration-mixing principle as smaller units, they ensure consistent results and efficient scale-up from development to full production.

- Scalable design: smooth transition from lab to production scale
- Adjustable operation: precise control of vibration amplitude and frequency for optimal mixing intensity

- Retrofit capability: FUNDAMIX® components can be integrated into existing vessels for process upgrades
- Reliable performance: long-term stability with minimal maintenance.

### Turnkey solutions

Complete process plants available, including production facilities for vaccine or insulin manufacturing and CIP/SIP systems

\* see Packaged Units brochure for details



# Control Systems & Monitoring

## Vibro-Controller

The Vibro-Controller VC-201 is a compact, panel mounted interface developed specifically for the FUNDAMIX® Vibro-Mixer. It provides precise adjustment of both frequency and amplitude, allowing operators to fine-tune the mixing process to match exact application needs.

By enhancing automation and control of critical parameters, such as mixing amplitude, the VC-201 ensures consistent, reliable performance across a wide range of processes.

## Vibro-Monitor

The Vibro-Monitor is a handheld, laser-based tool for measuring the oscillation amplitude and frequency of the FUNDAMIX® Vibro-Mixer in real time. Compact and easy to use, it provides fast, non-contact reference measurements for routine checks, troubleshooting, and process monitoring.

- Real time reference measurements
- Handheld & portable



Real time amplitude monitoring

Seamless integration

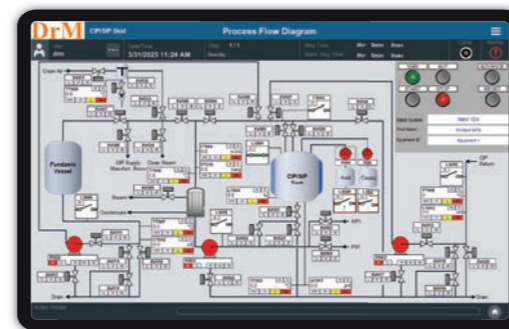
Flexible control modes

User friendly operation

## Bespoke Control Solutions

All FUNDAMIX® models can be seamlessly integrated into bespoke control system solutions, tailored to the level of automation required.

DrM delivers flexible automation architectures that ensure reliable operation, process transparency, and full compliance with industry standards such as GMP and 21 CFR Part 11 where required.



From simple local controllers for standalone operation to:

- PLC/HMI
- SCADA

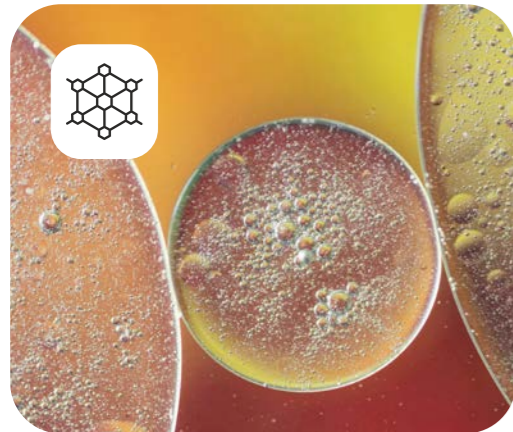
# Precise control & validation to ensure reliable, reproducible mixing.

# Applications & Industries



## Pharmaceutical & Cosmetics

- Insulin production
- Blood plasma fractionation
- Preparation of sterile solutions
- Oil emulsification
- Solid-liquid extraction
- Homeopathic activation processes
- Cosmetics
- Vaccines production



## Microbiological & Biochemical

- Anaerobic/aerobic fermentations
- Submerge culture of mammalian cells
- Protein solutions
- Human tetanus and plant cells trypsinization



## Agroscience

- Seed preparation
- Algae cultivation
- Animal health products
- Mixing fertilizers

## Chemicals

- Suspending of solids
- Dissolution of flavors and fragrances
- Catalysts, activated carbon or bentonite in liquids
- Precipitation or crystallization of solids during neutralization
- Gas/liquid batch reactions like hydrogenations and chlorinations
- Metal leaching



## Food & Beverage

- Mixing of soft drinks
- Blending alcoholic beverages
- Agitation of milk
- Beer ingredients preparation
- CO<sub>2</sub> saturation
- Addition of flavors, salt, sugar, vitamins and dyestuff



## Electronics

- Preparation of solvents
- Dissolution of copper with sulfuric acid under high temperatures
- Plasma coating of fluorescent materials in fluidized bed reactor (CVD process)
- Mixing of anode materials in lithium battery production
- LED production



# Full Project Lifecycle & Capabilities

With decades of experience in designing and delivering packaged process systems, DrM is a trusted partner for the chemical, biotechnology, and pharmaceutical industries.

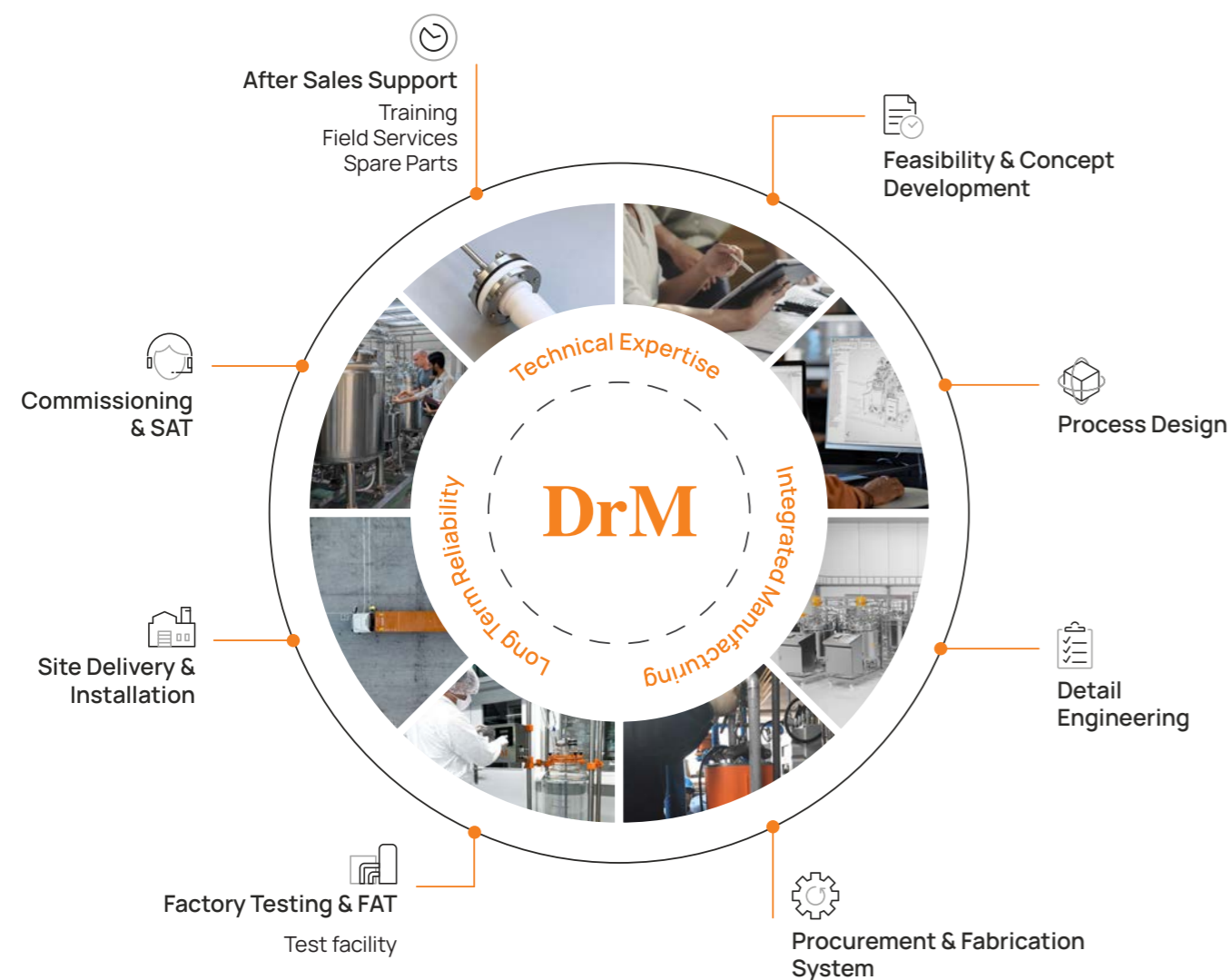
By combining process, mechanical, and automation engineering with in-house fabrication, testing, and integration, we deliver reliable systems that meet the highest standards.

This integrated approach ensures smooth execution, reduced interface risks, and consistent quality, from concept to commissioning and operation.

## In-house testing & rental systems

DrM offers access to in-house test facilities and rental systems, enabling customers to explore performance, reliability, and process optimization under real conditions.

- Evaluate performance
- Optimized parameters
- Validate results
- Test on-site



# Headquarters and Subsidiaries

## Switzerland (HQ)

DrM, Dr. Mueller AG  
Alte Landstrasse 415  
8708 Maennedorf  
Switzerland

Phone: +41 44 921 2121  
info@drmgroup.com

[www.drmgroup.com](http://www.drmgroup.com)

## China

DrM Shanghai Co., Ltd.  
Building 2  
No. 18 Rong Xin Road  
Xinqiao, Song Jiang District  
Shanghai 201612, China

Phone: +86 21 5768 7390  
info-cn@drmgroup.com

[www.drmgroup.cn](http://www.drmgroup.cn)

## Poland

DrM Polska Sp. z o.o.  
Al. Kazimierza Wielkiego 5  
87-800 Włocławek,  
Poland

Phone: +48 54 427 09 21  
Fax: +48 54 427 09 31

info-pl@drmgroup.com

## India

DrM Filter Technology Pvt. Ltd.

Plot No 22, Aatmiya 9  
Industrial Park, NH-8, Near  
Suzlon Energy Ltd, Vill.  
Varnama, Dist. Vadodara,  
Gujarat 391243, India

info-in@drmgroup.com

## USA

DrM, Inc.

2125 Center Ave.  
Suite 507  
Fort Lee NJ 07024, USA

Tel. +1 346 221 8700

info-us@drmgroup.com

## Malaysia

DrM Malaysia Sdn Bhd  
21a, Jln PCR 1,  
Kawasan Perniagaan  
Cheras Raya Batu 11,  
43200, Cheras,  
Selangor, Malaysia

Phone: +60 16 225 0276

info-my@drmgroup.com

# Sophisticated Filtration & Mixing Solutions

**DrM, Dr. Mueller AG**  
Alte Landstrasse 415  
8708 Maennedorf  
Switzerland

[info@drmgroupp.com](mailto:info@drmgroupp.com)  
[www.drmgroupp.com](http://www.drmgroupp.com)