

**PLUS  
ECO  
SUPPORT**

**VERSATILE  
SOLUTIONS  
FOR THE**

**CHEMICAL  
INDUSTRY**

**FrymaKoruma**

# PERFECTING QUALITY STEP BY STEP.

Fine particle size, good dispersion, optimal distribution and minimal air are important steps in diverse applications. ProXES offers a wide range of processing technologies to help you push your manufacturing to the next level.

**Paints or ceramics, battery coatings or lubricants – let's talk about how our technology can help improve your individual process steps.**

## CERAMICS

Thanks to their versatile properties, ceramics can be used in a wide field of applications, such as glazes of sanitary products, conductive parts of resistors, surface coatings or even special foils. ProXES milling and de-aeration technology can have direct impact on product quality.

## CHEMICAL SUSPENSIONS

In applications such as slurries for lithium batteries, silica suspensions, dental masses, paper coatings or processing of waste, our milling, dispersion and de-aeration technologies, help you mix microscopic solids and liquid homogeneously, reduce in size and maintain low air content.

## GREASE & LUBRICANTS

Greases for high or particularly low temperatures, applications in vacuum, with water-resistant, weatherproof or food-safe properties, need a professional homogenization or milling step after saponification and dehydration. As skid units or just as a single component our mills and deaerators will be the right add-on to your process.

## PAINTS & LACQUERS

The quality of all paints depends on the optimal dispersion and particle size distribution of the pigments in the liquid phase. ProXES offers its proven technology for ATEX and non-ATEX applications such as the premixing of highly filled systems and pre-dispersion, fine-dispersion or fine grinding of temperature sensitive formulations.

## PESTICIDES & FERTILISERS

In the field of emulsifiable, non-soluble and soluble concentrates, the instant dilution, homogeneous droplets distribution, high stability and low volume of incorporated air has an enormous importance. Our mixing, emulsifying, wet milling and de-aeration technologies have been designed with aspects to highest operation safety and product quality.



**PAINTS  
LACQUERS  
CERAMICS  
SUSPENSIONS  
PESTICIDES  
FERTILISERS  
GREASE  
LUBRICANTS**

# EXPERT MILLS FOR PARTICLE SIZE REDUCTION.

**Our portfolio offers different technologies for milling, which individually or in combination cover a wide range of particle sizes – from several centimeters of initial size to target sizes of a few micrometers, in special cases even nanometers.**

## TOOTHED COLLOID MILL (MZ)

Toothed Colloid Mills (MZ) are experts for the wet milling and dispersing of fluids and high-viscosity suspensions and emulsions. You can choose between standard, coarse-toothed or cross-toothed milling sets.

## CORUNDUM STONE MILL (MK)

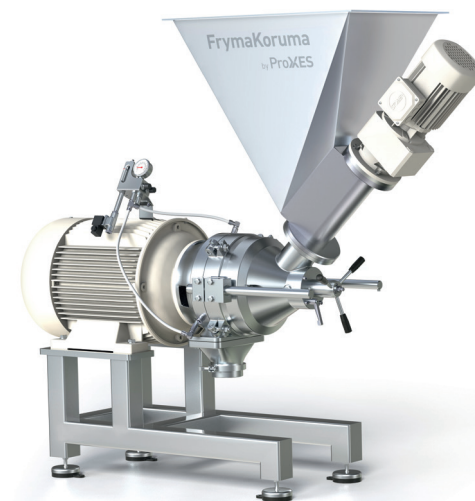
At the heart of our efficient and flexible FrymaKoruma MKs for wet milling and dispersing are the corundum discs, which are available in various grains. While the rotor element rotates against the fixed stator at high speed, extreme shear and cutting forces reduce the size of the particles.

## CO-BALL BEAD MILL (MS)

The FrymaKoruma Co-ball Bead Mill (MS) is used for very fine milling, for suspensions of medium to high viscosities. The versatile mills deliver prime product quality efficiently and cost effectively.

Main applications

- grease additives
- agrochemicals
- pigments
- resins
- waste based suspensions
- polymer suspension
- fibres
- aluminium oxide suspensions
- carbon suspensions
- ceramic coatings
- mineral suspensions
- metal oxide slurries



**Tooth Colloid Mill – MZ**  
Variable wet milling



**Corundum Stone Mill – MK**  
Versatile wet milling & dispersing



**Co-Ball Mill – MS**  
High energy grinding & dispersing

# IMPROVING QUALITY THROUGH DISPERSION AND DEAERATION.

**A reliable induction, wetting, mixing and dispersing of powders in liquids with low air volume incorporation has a big impact on the processing cost and final quality of product.**

Depending on your application, manufacturing process and product, ProXES equips you with the optimal tools. From all-in-one units that efficiently cover multiple functionalities to single-purpose building blocks to fit into your process: Let's talk!

## VME: HIGH VISCOSITY BATCH MIXING

From homogenising and dispersing of individual raw material components to the deaerated, deagglomerated, ready-to-fill product – our FrymaKoruma vacuum-mixing unit VME enables the production of high-quality products with short production times.

Main applications

- polymer dispersions
- adhesives
- furniture polishes
- car waxes
- battery suspensions
- agrochemicals



**VME**  
Universal mixing and dispersing

Illustrative purposes only. Actual machine construction may vary by specification.

## AND WHAT ABOUT ATEX?

In order to ensure that your processes comply with the European Directive 2014/34/EC about the production in potentially explosive atmospheres, we offer ATEX-certified executions of our machines. Ask our experts about solutions customised to your requirements!





## DIL: VERSATILE INLINE EMULSIFYING

The design of the FrymaKoruma DIL inline homogenizer offers superb conditions for processing even highly sensible products. Its uniquely shaped product chamber with no dead space or dirt traps, its simple and effective cleaning technology, high throughput and performance make it an expert partner for a wide range of chemical applications.

Main applications

- agrochemicals
- wax emulsions
- carbomer gels
- grease



**DIL**  
Inline emulsifier

Illustrative purposes only. Actual machine construction may vary by specification.

## VE: INLINE DEARATION OF LOW TO HIGH VISCOUS PRODUCTS

The FrymaKoruma VE is especially designed as a continuous vacuum deaeration system for deaeration of products with a liquid, semi-solid or pasty consistency. The VE efficiently removes entrapped air or gas from the product and has direct positive impact on product quality and efficiency of downstream processes.

Main applications

- paper coatings
- liquid detergents
- carbomer suspensions
- lubrication grease



**Vacuum Deaerator (VE)**  
Continuous automatic removal of air

# LET'S GROW SUSTAINABLY!

More and more consumers are making choices based on the environmental impact of their products. A challenge for the industry? Yes. But: At ProXES we know that sustainability and profit increase are not contradictions. Let's talk!

**The ProXES experts support your company in finding new ways to optimise your production sustainability, e.g. for processes or engine technology.**

An optimised life-cycle assessment reduces the consumption of resources and operating costs. There is no need to re-organise your whole operation: Your proven process systems can also be retrofitted. This way, you can sustainably extend their service life, save energy, and generate additional potential. Some examples:

## REDUCED WATER CONSUMPTION

- New mechanical seals within a closed circuit reduce water consumption to a minimum.

## REDUCED POWER CONSUMPTION

- Our IE3 motors with premium efficiency help reduce CO<sub>2</sub> emissions.
- Conversion from direct current to alternating current provides a higher degree of efficiency without extra maintenance costs.

## REDUCED PROCESS & CLEANING TIMES

- Our on-site ProXES technicians will explain how to minimize batch or cleaning times.

**Ask our ProXES experts about how to synchronise ecology with economy!**





## WE ACCELERATE YOUR IDEAS

With three leading brands FrymaKoruma, Stephan and Terlet under one roof, ProXES combines long-standing expertise with a challenger mindset. As an agile partner, we support our customers from first product concept to industrialisation and empower them to bring their ideas to life. Together we set trends: Through sustainable and innovative solutions we drive our customers' success today and help them shape future markets.

In addition to the standalone FrymaKoruma, Stephan and Terlet products, ProXES combines their technologies to create modern process lines. By using the most advanced

automation and service concepts, ProXES facilitates competitive advantages for customers in the food, pharmaceutical, cosmetics and chemical industries. How can we help your business?

## FROM INSPIRATION TO FEASIBILITY

Our process technology and training centre is a space to try out new ideas. Here you can develop or improve formulas in a professionally equipped laboratory, test any kind of machine, perform scale-ups and produce test batches. You will receive expert advice and support on all the capabilities of the technical equipment and modifications.

## GET IN TOUCH WITH OUR EXPERTS



For a full list of our global subsidiaries and their contact details, please visit:  
**[www.proxes.com](http://www.proxes.com)**

**ProXES GmbH**  
Kolumbusstrasse 14  
22113 Hamburg  
Germany

**T.** +49 40 35625-70  
**E.** [info@proxes.com](mailto:info@proxes.com)