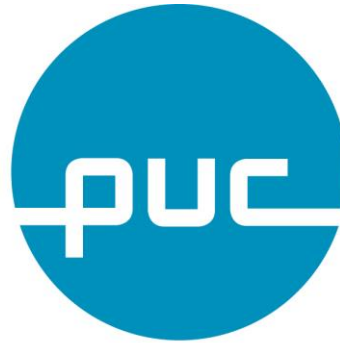




Probst & Class

invented and built to last



About Probst & Class

- We are a specialised machine building company in Rastatt at the southwest of Germany near the french border.
- Founded in 1926, we have more than 90 years experience in engineering, production and service for the industrial process engineering
- Our machines are worldwide known by the name of PUC.



1958



2018

Milestones

1926 Company foundation
1933 First patent registration
1955 First exhibition appearance at the Achema
1956 Market introduction of our perforated disc mill
1967 Patent grant for the de-aeration of highly viscous liquids
1972 Market entry into Japanese market
1976 Patent granted for a colloid mill with conic rotor
1983 Patent grant + market introduction for Vibroreactor Type A
1991 Establishment of a test lab
1995 Market introduction of the inboard colloid mill
2001 Entry of the follow-up generation of management

2002 Market entry of Vibroreactor Type B
2006 Our production becomes semi-automated
2017 PUC becomes exclusive distributor for Mountech products in Europe
2019 Transfer of the executive management



Top priority industrial sectors

- **Chemical and petrochemical industry**
- **Food industry**
- **Pharmaceutical industry**
- **Cosmetics industry**



Processes

- Homogenizing
- Dissolving
- Mixing
- Wet milling
- Pre Comminution
- De-agglomeration
- Dispersing
- Emulsifying
- De-aeration
- Micro Comminution



Applications

Some exemplary applications

Food industry

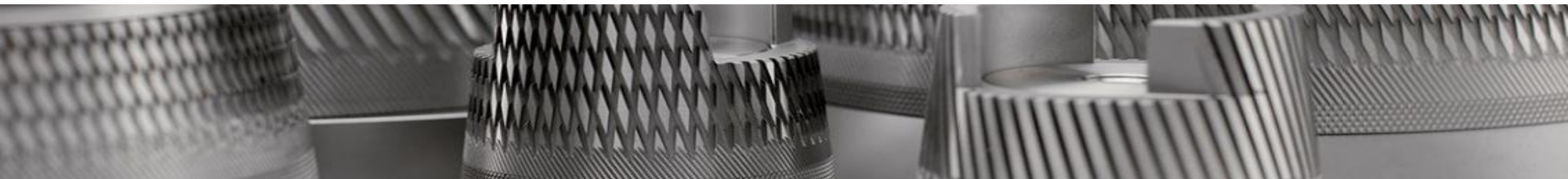
- Peanut butter
- Quark/curd cheese
- Mustard
- Rice milk
- Beverage
- Soy milk/Tofu
- Ketchup
- Mayonnaise
- Almond milk
- Jam
- Chocolate
- Baby food
- Dough recycling
- Sausages
- Tea soft drink
- Curry powder/-paste
- Margarine
- Yoghurt

Chemical industry

- Grease
- Pigment dispersion
- Film coating
- Silica gel
- Fertiliser
- Pesticide
- Ammonium carbonate
- Cellulosic nanofibre
- Urethane resin

Cosmetics industry

- Cleaning agent
- Creme
- Face lotion
- Mascara
- Lipstick
- Eyeliner



PUC Types of machinery

- Colloid mills
- Vibroreactors
- Perforated disc mills
- Plant engineering
- Analysers
of MOUNTECH Co. Ltd.



PUC Colloid mills

- To be used for the precise milling and mixing of substances
- Reproducible result
- Stator-Rotor milling procedure
- High-precision milling/mixing in a steplessly adjustable annular gap due to change of the axial position of the stator
- Many raw materials, aggregates and agglomerates can be processed in one pass through the mill



PUC Colloid mills type O

- Operating solely in a vertical position, fully enclosed motor
- Materials can be fed to the mill via various different types of hopper or via piping flanged directly to the mill
- Seven standard sizes, standard milling gears
- The milling gear may be adapted to your specific process
- Capacity between 150 and 34.000 l/h
- Customised solutions offered for special processes



PUC Colloid mills type E

- Designed for inline operation
- Many widely used types of connection available (threaded nozzle, flange, tri-clamp, etc.)
- Six standard sizes, standard milling gears
- The milling gear may be adapted to your specific process
- Capacity between 150 and 34.000 l/h
- Customized solutions offered for special processes



PUC Colloid mills type EL

- Designed for inline operation
- Many widely used types of connection available (threaded nozzle, flange, tri-clamp, etc.)
- With bearing block that allows our customers to use their own standard motors (standard B3 motors)
- At high inlet pressures and viscosity values, the forces generated can be absorbed even more effectively
- Our bearing blocks are fitted only with high-quality bearings with permanent lubrication, made in Germany
- Six standard sizes, standard milling gears
- Capacity between 150 and 80.000 l/h
- Customized solutions offered for special processes



PUC Colloid mills - Options

- Optional milling gears
- Pharmaceutical version, various material options
- Recirculation system for recirculation of material through the milling gear
- Heated / Cooled housing
- ATEX (explosionproof) version, sterilisable version
- Feed and discharge pump
- Feeder screw with controlled gearbox
- Frequency converter, Motors for different voltages and frequencies in IE3-Norm
- IE3 standard motors for various voltages and frequencies



Colloid mill grinding gear, rotors

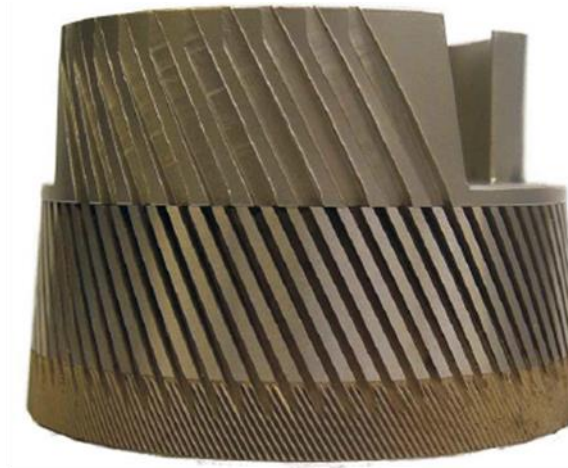
- Usually rotors are made of two different parts, except type DU which is made as one part
- All types of rotors for applications with hygienic requirements are also made of one part to avoid possible contamination at the gap between the two parts → additional costs for type N and K



- DU, continuous gearing



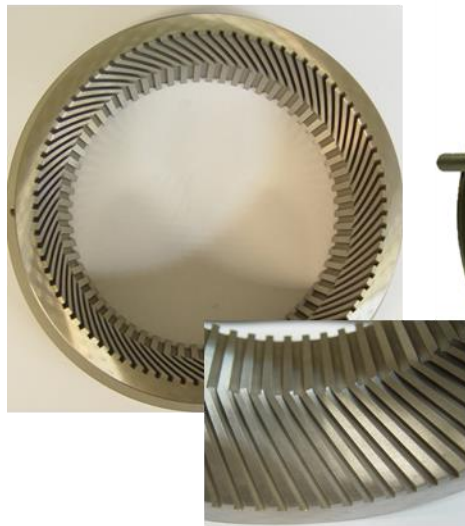
- K, cross cut gearing



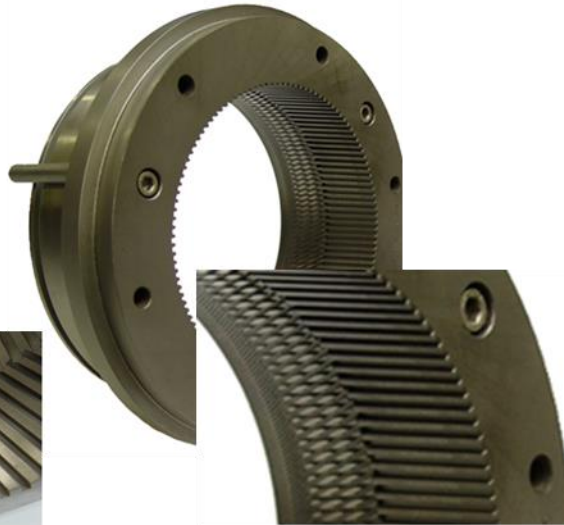
- N, out of phase gearing

Colloid mill grinding gear, stators

- All stators are made of two different parts, which have different gearing, except for hygienic applications. Then they are made of one part with different gearing → additional costs due to smaller production lot sizes



- DU, continuous gearing



- K, cross cut gearing



- N, out of phase gearing

PUC Vibro reactors

- Especially used for the production of emulsions and dispersions
- For the wetting, comminution, mixing, de-agglomeration and especially homogenizing of liquid/solid mixtures
- The rotor-stator system has a three-stage configuration, equipped with axial rotor
- Defibration process possible, can be used in a wide variety of applications
- Capacity between 150 and 100.000 l/h
- In many applications, high-pressure homogenizing can be replaced, as droplet sizes below 5 μm can be achieved
- Frequently, the machine is connected to batch hoppers, mixing and agitator vessels to reduce mixing times or accelerate dissolving processes
- Any material that can be pumped may be processed



PUC Perforated disc mills

- For crushing lumpy solid pieces and for mashing materials such as fruit, vegetables and meat for the pre-comminution of soy beans
- In general for the pre production and processing of foodstuffs, chemical and cosmetic products and the comminution of soaked paper
- The principle of the PUC perforated disc mill is based on a knife bar rotating close to the perforated disc
- The product is comminuted and then discharged by a driver wheel or impeller.



PUC Lubricant processing unit

- For the homogenizing and de-aeration of NLGI 0-4 greases, up to 10.000 Kg/h

Positive influence of the following physical attributes:

- Penetration or stiffness – evenly distributed thickeners
- considerably lower oil bleed (oil separation)
- Fine dispersion – Avoiding of agglomeration of solids respectively oil film rupture

Very economical implementation of these product improvements und excellent price-performance-ratio

Compared with other homogenizing units:

- very robust, easy to install and operate
- presents easy maintenance and cleaning properties



PUC Vacuum de-aeration unit

PUC EVA vacuum de-aeration units are used for the continuous de-aeration of products from liquid to pasty viscosity.

These units can process all the greases from NLGI 0-4 which are normally used, foodstuffs (e.g. mayonnaise, ketchup, mustard, sauces, jams, pastes, etc), chemicals, lotions and suspensions.

Vorteile

- Increased chemical stability
- Avoidance of oxidation
- Improved dosing precision during filling
- Precise packaging volume/weight
- Faster emulsifying
- Improvement in product appearance with smooth, even surface



Analysers of MOUNTECH Co. Ltd.

The **Macsorb** surface area analysers determine the specific surface area of samples by the BET method. They are controlled from a desktop computer using the software supplied with the unit.

The possible fully automated handling of samples effectively prevents operator errors. The high repeatability of the measurement results confirms the precision of the analyser and allows users to obtain well-founded data within a short space of time.

- Fully automatic measurement ensures fast, precise results
- User-friendly operating interface
- Modular design allows later extension of the basic unit
- Real-time logging and tracking of measurement results on PC
- Recording and archiving of data from adsorption to calibration, allowing precise verification of repeatability and precision
- Single-point BET analysis (multi-point analysis as an option)
- The short measurement time of about 30-50 minutes can be further reduced by using a pre-heating unit

Macsorb is a registered trademark of MOUNTECH Co.,Ltd., Tokyo, Japan.



Analysers of MOUNTECH Co. Ltd.

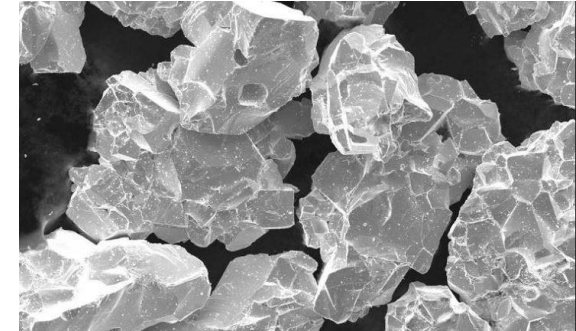
Options of the **Macsorb** surface area analyser

- Automatic sampler for automated sample feeding with 8, 10, 20 or 30 sample stations
- Multi-point measurement for a maximum of four points
- Pre-heating unit for 1 to 10 samples
- Automatic liquid nitrogen supply unit
- Gas switchover unit for multi-point BET analysis

Services

We determine the surface area of your sample via single- and multi-point measurements with N₂ 30% / He 70%

Macsorb is a registered trademark of MOUNTECH Co.,Ltd., Tokyo, Japan.



Analysers of MOUNTECH Co. Ltd.

Special and unique features

The **Macsorb** surface area analysers have unique features that will be your advantage, especially in quality control of your production processes.

- Fully automatic measurement and data storage with automatic sample station
- Faster measurement than comparable solutions therefore convenient for operating in the production
- Repeatability with a precision of 0,5%, comparable solutions offer ca. 1%
- Very user friendly interface, nearly unskilled workers are able to operate the device
- Mountech Co. offers top support with engineering competence stationed in Germany

Macsorb is a registered trademark of MOUNTECH Co.,Ltd., Tokyo, Japan.



PUC Service

- We are advising you with competence, that you will receive the machine which is properly suitable for your application
- Production of special machinery, due to your demand
- Testing Service, especially for your application
- On demand implementing, operation and maintenance training, maintenance contracts
- Spare parts deliveries and repairs



PUC Service

Consulting and production of special machinery

Our machines are offered in several standard sizes. The milling gear will be modified to your process requirements. For this purpose, the mills are fitted with standard stator-rotor combinations. Bespoke solutions are also available for special applications.

All units are available with various single and double-acting mechanical seals and with lip seals (PTFE) in accordance with FDA requirements.

Relating to options and accessories, as well as the reasonable configuration of your machine, do not hesitate to contact us.



PUC Service

Testing Service

Our machines have various fields of application.
If you like to have a test run for your special product, to examine or to analyse the test result, we are offering two options free of charge for you:

Test in our laboratory: You are providing us with the raw material and the requirements for the product and we are planning the test run in our laboratory, your responsible colleague is welcome to join us for collaboration.

Rental of a machine: We are providing you with an appropriate machine on loan for your own testing purpose.

For both options an adequate time planning is essential.



PUC Service

Delivery of spare parts and repairs

Our machines are extremely robust and durable.

Due to our longtime company history since 1926 we are frequently getting requests for repair and spare parts delivery. It is not uncommon that we deliver spare parts for 40 – 50 year old machines. These are usually wearing parts.

This is confirming the quality of our machines and additionally shows the good documentation of our products.



Our high standards, your benefit

Know how, reliability and quality
Made in Germany

- Our machines are extremely resistant and durable
- We are flexible and come up to your special requirements
- At Probst & Class, Made in Germany still means highest quality
- We are able to offer competitive prices and conditions



Contact us

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Probst & Class Management



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CEO



Sybille Fischer
Head of administration

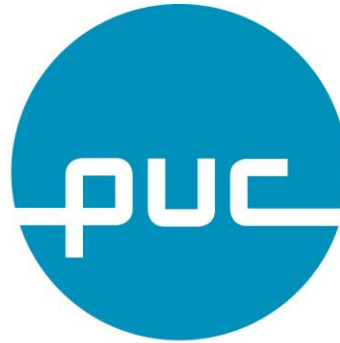


Thomas Falk
Head of production



Michael Jung
Technology and R&D

As officers in charge of a medium-sized mechanical engineering firm we like to work in close contact with our clients and suppliers. We are looking forward to being in contact with you, be it online, on the phone or in person.



Probst & Class

invented and built to last

