

Press information

Products

Pure in their application – MAFAC aqueous-based parts cleaning machines

Based on standardised cleaning machines, machine manufacturer MAFAC offers customised solutions for aqueous parts cleaning. In the development of products and processes, the company sets great store by the high-grade, reliable, economic and resource-saving cleaning performance of its machines as well as by the diversity of their application. The key to meeting these high demands lies in the unique, patented MAFAC cleaning process of counter- or co-rotation of basket receptacle and spray system.

The MAFAC technology – design inspired by relative movement

The patented MAFAC process technology is based on the realisation that cleaning is more efficient when combined with movement. Accordingly, the MAFAC cleaning machines make purposeful use of controlled turbulences; combining mechanical movement with temperature, cleaning agents and time to provide for reliable and effective cleaning of component surfaces. This is made possible by the perfect interaction of basket receptacle and spray system. During the wet phase, the receptacle basket rotates in the same or in the opposite direction to the spray system, generating a relative movement. Depending on the type and degree of contamination and the type of workpiece, this can be controlled individually via the movement of the basket system (rotating, rocking, standing) and the nozzles. The MAFAC machines' hot air pulse blowing and hot air drying process and the newly developed, patented ultrasonic method follow the same principle of rotation, so that critical parts geometries can be addressed in a targeted manner and cleaned or dried reliably.

Based on intensive research and development work, the kinematic principle of the MAFAC process technology is continuously developed further. In 2016, the process for targeted cleaning and drying was presented. The latest innovation is the vector kinematic process.

Targeted cleaning and drying - reliable cleaning of hidden interior contours

This process makes it possible to target the parts in the work piece carrier with water and air in a sophisticated manner and, combined with the counter-rotation of basket receptacle and spray system, generates strong turbulences that are directly targeted at inside contours, through which they flow for thorough cleaning. Thus, difficult-to-access areas such as undercuts or angled channels can be cleaned efficiently and reliably while open surfaces are only cleaned and dried for as long as necessary. At the heart of the innovative technology is a special workpiece positioning system (WPS) with central bearing kinematics. Cleaning agent nozzles integrated in the workpiece carrier ensure that the cleaning agent is directly targeted at the functional geometries, while flat secondary geometries continue to be cleaned globally.

Vector kinematics - a new dimension of dynamic cleaning

With the MAFAC vector kinematics process, there is even more movement to cleaning and drying components. In contrast to the process in a rigid nozzle system, the workpieces are not hit at one specific angle but at different angles. The nozzle tube performs a rocking movement around its own axis through 35° to either side, while the basket receptacle system rotates synchronously at an optimally adapted speed. The Maviatic controller of the machines calculates the movement of the basket rotation beforehand, with co- and counter-rotation both being possible. This coordinated interaction of nozzle tube and basket movements leads to a targeted and, depending on the part geometry, up to 60 % higher application on the component surfaces. Excessive cleaning of easily accessible component regions is avoided.

The MAFAC machine technology: Spray and spray-flood cleaning

The performance range of MAFAC comprises machines for spray and spray-flood cleaning as well as accessories to further optimise processes. The company's portfolio currently includes six basic models, with the compact standard design already meeting the highest technological requirements and covering a wide range of applications. Further options can be tailored to individual customer requirements. MAFAC cleaning machines are easy to operate and maintain, and convince with a long service life and a high degree of flexibility.

MAFAC PURA - the powerful entry-level model

The MAFAC PURA spray cleaning machine is the smallest machine model in the MAFAC product range. This general-purpose machine with single-bath technology is designed for decentral use and is ideal for fast, thorough cleaning. In addition to its powerful technology, MAFAC PURA impresses with its functionality and simplicity. The standard selection program allows easy operation by any user. This means that it can be put into operation by the customers themselves - thanks to standardised parameters, no individual adjustments are necessary. The equipment also supports uncomplicated handling in other ways: The starter kit with basket and cleaner makes it easy to get started. The small basket size (471x321x200 mm) permits small batches to be processed, or allows an intermediate and final cleaning of individual workpieces. An optional coalescence oil separator and high-quality main-stream filtration ensure long and stable bath service lives.

MAFAC KEA – Spray cleaning with a small footprint

With its highly compact design, the one-bath machine MAFAC KEA offers efficient cleaning based on co- and counter-rotation of basket and nozzles. Its spray system features flat and full jet nozzles for point and surface cleaning of the workpieces. Despite its compact design, the machine is equipped with a large-volume tank and a coalescence separation system with floating suction device, which permits a long useful bath life. Because of its size, the MAFAC KEA is ideal for use as a decentralised premium-quality intermediate cleaning unit. The optional parts drying function uses a hot air pulse blowing system as well as an optional hot air drying system. A

fresh water rinse to meet high requirements on the surface quality of parts is also available if required.

MAFAC ELBA – Flexible spray cleaning with double bath system

With its wide range of process and program variants, the MAFAC ELBA spray cleaning machine is suitable for many different applications. It features a rotating spray cleaning system with counter-rotation of the basket and nozzle system for the effective removal of chips, particles, and cooling lubricants from the surface of the parts. The two holding tanks of the compact machine permit both cleaning and rinsing to be performed in a single machine. Thanks to the bath size and cascade arrangements, the useful life of the process water is extended. As another means to achieve this goal, the first holding tank is equipped with a coalescence separator as a standard. A rotating pulse blowing system and hot-air drying system are available as options.

MAFAC JAVA – The compact system for premium cleaning results

Equipped with a spray-flood cleaning system, the MAFAC JAVA is a very compact machine with a high capacity. It is particularly suitable for premium-quality intermediate and final cleaning. During the wet phase, powerful turbulences are generated by partial flooding of the chamber and by spray cleaning, both using the principle of counter-rotation. This allows the thorough cleaning of workpieces with concealed interior contours in particular. As a standard, the MAFAC JAVA is available as a single-bath system or double-bath system for additional rinsing. After the cleaning process, this option, too, offers an effective rotating hot air pulse blowing and hot air drying system, as well as the MAFAC vacuum drying system. Fast draining of the cleaning chamber effectively reduces auxiliary process times. The large coalescence separator ensures efficient bath care.

MAFAC PALMA – The perfect combination of spray and flood cleaning

The MAFAC PALMA parts cleaning machine is designed for high-quality final cleaning of intricate and sensitive workpieces. The two-bath or three-bath machine features a rotating multi-sided spray system with a counter-rotating basket receptacle system. Since the two processes spraying and

flooding can be combined individually, the MAFAC PALMA can be adapted precisely to the respective cleaning task, covering a wide range of different applications. The large-volume holding tanks provide for long useful bath lives, while the standard coalescence separator in addition guarantees effective bath care. The drying system of the machine is equally effective: The rotating hot air pulse and hot air blowing system as well as a vacuum drying function ensure the premium and complete drying of intricate parts.

MAFAC MALTA – High-precision cleaning and particle-free degreasing

The parts cleaning machine MAFAC MALTA has been specifically designed with the high-end cleaning of small and very small parts in mind. It is equipped with a rotating, six-sided spray system whose spray nozzles are arranged close to the centre of rotation. This ensures contact of the cleaning medium with all sides of the components while reducing the spray shadow to a minimum. The enhanced performance is attributable in particular to the newly developed, patented ultrasound system. If necessary, the ultrasonic oscillators can be rotated and moved to directly target critical parts geometries. This reduces shadow zones, improves the access to concealed interior contours, and cleans delicate structures effectively yet gently. The process achieves premium results with a shorter cleaning time. In addition, the special, rotating hot air pulse and hot air blowing system ensure a higher degree of dryness of the intricate components. Depending on the requirements, the MAFAC MALTA is available with two or three baths.

MAFAC system solutions for fully automated parts cleaning

Based on its patented process technology and the different parts washers, MAFAC develops customised system concepts in cooperation with its customers. Linking several standalone machines and combining them with logistics or transfer systems, fully automatic customised systems are designed and adapted to individual requirements. From first appraisal over analysis and design and test phase to final commissioning, our customers are supported and advised by an experienced team of engineers and technicians.

Measures, products and processes for process optimisation

In view of rising energy costs, the resource-saving operation of production lines is becoming more and more important. Against this background, industrial parts cleaning as a cost factor is also increasingly becoming the focus of consideration. MAFAC has recognised this trend early on, which is why sustainability and saving resources have always been integral to corporate philosophy and product development. Based on these efforts, MAFAC has developed a series of effective measures and technology modules, which contribute to resource-saving parts cleaning: kinematic cleaning and drying, targeted cleaning, full thermal insulation or the use of available heat sources to heat the cleaning baths, for instance with the heat exchange module MAFAC HEAT.X. With these options, a sum total of savings of up to 74% can be achieved. This is substantiated by numerous studies in research and development, for example at the ETA factory (energy-efficient model factory of the future) of Darmstadt Technical University.

Heat exchange module MAFAC HEAT.X: Cost-efficient heating of cleaning media

With the heat exchange module MAFAC HEAT.X, MAFAC is breaking new ground in the development and manufacture of resource-saving products. The compact unit heats cleaning agents using externally available heat as an alternative to expensive heating current. For this purpose, the module operates with a highly-efficient heat exchange procedure involving a co-axial pipe heat exchanger and pipe-in-pipe system and is able to utilise energy from different alternative sources, for instance hot water from heat treatment, from co-generation or from regenerative water heating applications (solar heat). In addition, the heat exchange module can be operated in mixed operation with electricity and water or can be connected to other machines. In total, savings of up to 90% are possible with MAFAC HEAT.X.

Images of the company and its products can be found in the MAFAC general image index.



Parts Cleaning. Systems and Solutions.

About MAFAC

MAFAC is one of the leading manufacturers in aqueous parts cleaning. The company offers a wide range of compact series machines for a large variety of cleaning requirements tailored to customers' requirements, for example in the automotive and aerospace industry, in machine building, metal-cutting production, hydraulic and medical engineering, and in the electrical industry. All machines are developed and produced at the Alpirsbach site in the Black Forest by currently about 100 employees. Founded in 1968, MAFAC has been involved in industrial parts cleaning since 1974 and has focused on this field since 1990. The patented cleaning technology of counter- or co-rotating spray system and basket receptacle system sets new standards in terms of cleanliness and efficiency. The company operates globally with a network of technical agencies and a branch office in France.

For more information on aqueous parts cleaning and on MAFAC, please go to: www.mafac.de

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