



Parts Cleaning. Systems and Solutions.

A background image showing several industrial parts. In the foreground, there are two brass-colored metal components. In the background, there is a larger, more complex metal part with multiple holes and slots. The parts are set against a light, neutral background.

Merz Maschinenfabrik GmbH –  
Aqueous degreasing of small high-  
precision parts in a MAFAC JAVA



## User Report

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Carl Merz founded the Merz Maschinenfabrik GmbH in Hechingen in 1900 as a mechanics workshop. Shortly after, he started to build circular looms and circular hosiery machines. In the post-war area, the machine manufacturer concentrated on the production of dual-cylinder circular knitting machines for socks, and since 1975 more and more on the development of single-cylinder circular knitting machines with small nominal diameters for the manufacture of medical stockings and compression items. The company from Hechingen is the world leader in this market segment.

#### Reliable degreasing is a sine-qua-non

When a special problem arose, Merz decided to purchase a new parts cleaning system. Managing Director and Head of Production Siegfried Keck explains: "In general, our components were clean enough." But not clean enough for one specific process: Problems occurred repeatedly when gluing the delicate metal bars into the knitting cylinders. Before gluing, the bars had to be very thoroughly degreased to ensure high mounting reliability and reproducibility.

From the start, the decision-makers at Merz's agreed that they would only look at aqueous cleaning processes, under consideration of several aspects. "We were using only one last hazardous material for manual cleaning: acetone. In the course of

the acquisition of a new parts cleaning system, we wanted to eliminate it completely," the Managing Director recalls.

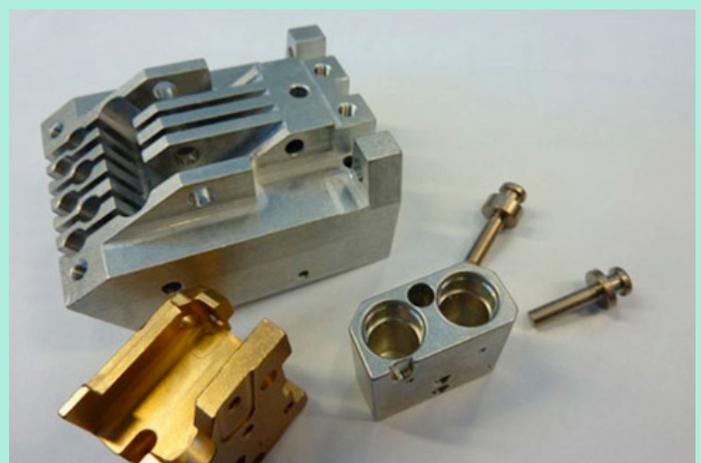
The first contact with MAFAC was made in early 2012. Soon after, cleaning test runs with selected components took place in the manufacturer's Alpirsbach Technikum. "In parallel, we were looking at competitor systems and did test runs with them as well," Keck says. "MAFAC gave us excellent support right from the start. The JAVA we bought in the end proves to be a flexible, future-oriented high-end solution the extensive possibilities of which we are now getting to know step by step to use them successively.

#### Matches many different applications

Merz set the parts washer up on the shop floor in close vicinity to the tool store. Purchased originally only for cleaning the metal bars before gluing them into the knitting cylinders, the classical island solution is being used increasingly for other applications and loaded by the employees responsible for the respective task.

The tool store team, for example, uses the parts washer to clean the shafts for turning and cutting tools, says Otto Dieringer, foreman of the pre-assembly department: "With the new process, we not only achieve much better cleaning results but also a significantly higher efficiency, thanks to the short distances on the shop floor."

Also for cleaning after frictional grinding, the cleaning machine is highly beneficial. "All components run through the vibratory grinding



unit at least once. After each run, all resulting grinding dust, chips and particles must be reliably removed. There is a specific program stored in the machine," says Dieringer.

The machine is flexible enough to clean cast parts directly after circular grinding. To this end, it has a special program for degreasing large single workpieces such as bearing flanges and support plates while simultaneously applying an effective corrosion protection agent. Meanwhile, the labour-intensive manual anti-corrosion treatment has been completely replaced by this automatic process. Keck says: "This gave us significant improvements in quality and process reliability. And we achieved similar advantages by means of intermediate cleaning of cast parts before the next machining step.

### **Reproducible cleaning results**

Almost all parts which the mechanical engineering company has to clean are high-precision small and very small components with complex geometries. For this reason, it was clear from the start that spray-flood technology was a basic requirement. The flooding is necessary to remove dirt reliably for example from the intricate threads and bores. While bath 1 is intended for flood cleaning, a second bath is provided for rinsing and preserving. To be prepared for a potential future increase in quality requirements, the machine is equipped for connection of an ultrasonic unit.

With the spray and flood process, the technology of a counter-rotating system can be used for all types of

components, whether bulk goods, batches, or individual workpieces. The spray system with its full-spray nozzles counter-rotates to the loading system, which is likewise rotating. This provides for reproducible cleaning results, in particular with cleaning in flow direction for all conceivable sequences and angle situations. The technology of basket-and-nozzle counter-rotation is also the technical basis for hot air flow drying. "Because the different parts are extremely dependent upon cycle times, drying is a very important process in our factory. The rotating flow drying improves our efficiency by about 45 per cent in total," Keck reports.



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