

# MAFAC

Parts Cleaning. Systems and Solutions.



Bertrandt AG - Cleaning with the MAFAC JAVA in the sector of prototype engine assembly

**bertrandt**

## User Report

### Bertrandt AG

#### Cleaning with the MAFAC JAVA in the sector of prototype engine assembly

Guarantor for accurate, comparable measuring results

The company Bertrandt AG uses the MAFAC JAVA in its workshops where prototype engines are assembled for premium class automotive manufacturers.

The ambiance at the development specialists' is very different from what you'd expect to find at any common industrial manufacturer. The room is large, brightly lit, clearly laid out, and spotlessly clean. At several workplaces, technicians are assembling prototype engines, deeply immersed in their tasks. Here, the focus is not on speed and volume but on measurable and documented precision. In view of the highly accurate work done in these rooms, it is not surprising that cleaning is an important part of the entire process. Before the individual parts are finally installed in the engine, they are cleaned repeatedly – in the JAVA parts washer by MAFAC. It washes the parts which already appear to be perfectly clean to ensure that they are really free of any residues, and that the measuring results are accurate and comparable at any time.

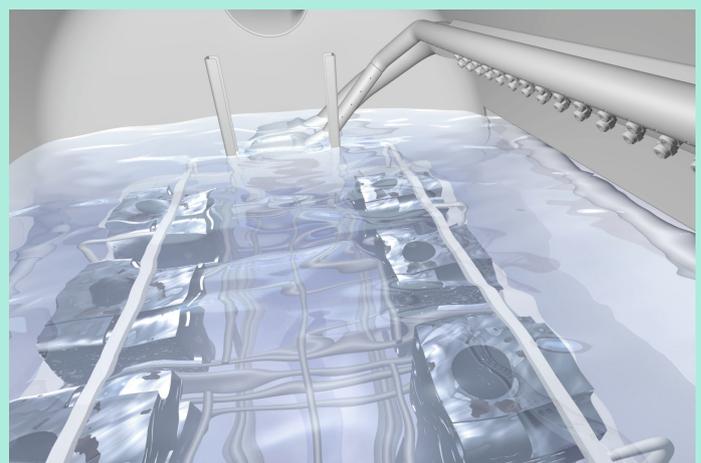
#### The project – The assembly of prototype engines

Since the summer of 2013, the Ehningen-based company Bertrandt has been making premium-class prototype motors. The project is part of the Powertrain division. In the view of the decision-makers, it expands the existing business sections and is in compliance with

the core competences of Bertrandt AG. For more than 40 years, the Bertrandt Group has developed and implemented individual solutions for international automotive and aerospace engineering. Founded by Harry Bertrandt in Möglingen in Swabia as an engineering office in 1974, the company now has a staff of more than 10,000 in 44 business locations, 2,000 of those at the Ehningen site. With its highly trained employees, Bertrandt AG covers the entire range of services required by the international automotive industry, which accounts for 90 per cent of the total company volume. These services range from the first idea over the development of parts, modules and system to the entire vehicle, and comprise various features such as quality, supplier, and project management. To meet the complex requirements posed by the state-of-the-art technologies, Bertrandt divided the individual core areas into divisions, for example "Powertrain".

#### The MAFAC JAVA – an indispensable component of the project

Right on time for the launch of a new service offer – the assembly of prototype engines – the Powertrain division in Ehningen bought the MAFAC JAVA parts washer. This machine was the only way to reliably meet the customers' demanding specifications. The project management had good reasons to opt for the aqueous cleaning system by the industrial cleaning expert from Alpirsbach: "The compact design and user-friendly operation of the system, combined with the MAFAC process technology,



guarantee optimum cleaning results,” says the project manager.

For example, the parts required for assembling an engine – about 500 – are supplied as a parts set. The parts come pre-cleaned. Nevertheless, there are residues of oil, emulsion and above all fine chips, primarily on the cast components with their inclusions and complex geometries. Accordingly, Bertrandt washes the parts directly after receipt. The large components such as valve lid, crank housing and cylinder heads weigh between 5 and 25 kilograms. As about one third of the supplied components of a parts set are cast components, the basic cleaning alone comprises an average of six cleaning runs. Once the parts are clean, the assembly of the engine starts. Also during the assembly phase, the parts undergo several more cleaning runs in the MAFAC JAVA. Another cleaning follows after measuring – “We measure to the micrometer, and even minute contaminations may affect the results” – and another after further machining, if this should be required. All parts are cleaned following the crack test, “because the parts will have paint and developer residues on them”, the Project

Manager explains. Thus, the MAFAC machine does ten to twelve cleaning runs per day.

### The MAFAC technology of spray-flood cleaning

On the JAVA used at Bertrandt's, a total of four different programs are stored. They run for an average of ten plus/minus two minutes, two thirds of this time falling to the cleaning and rinsing process. No matter what the setting, the first of the two baths of the MAFAC JAVA is always used for cleaning, the second for rinsing. During the wet phase, the spray-flood cleaning technology developed by MAFAC engineers is applied. The spray system counter-rotates to the loading system, which is likewise rotating. Only for very heavy parts, the movement of the loading system is reduced to a rocking motion while the spray system rotates. Furthermore, the cleaning cell is 50 per cent flooded during cleaning.

After cleaning, drying takes place. The parts are dried by means of hot air impulse blowing. The work-pieces are first blown off by a rotating blowing system with highly pure compressed air in a pulsed



manner. Next, ultra-finely filtered hot air is applied to the parts in a rotating manner. Similar to the treatment during the wet phase, the loading system now also moves in a rocking motion or in counter-rotation to the rotating blowing system.

Both fluid tanks of the JAVA used at Bertrandt's are operated with DI water. The cleaning agent added to the cleaning bath has a concentration of 3 per cent, that added to the rinse bath of 0.5 per cent. As both fluid tanks are equipped with a highly efficient chip filtration, the baths have a service life of three months. The installed coalescence oil separator furthermore sepa-

rates the collected foreign particles and discharges them to a separate container.

# bertrandt

**Bertrandt AG**

Birkensee 1 | D-71139 Ehningen

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

# MAFAC

Parts Cleaning. Systems and Solutions.

MAFAC - E. Schwarz GmbH & Co. KG  
Max-Eyth-Straße 2, D-72275 Alpirsbach  
Phone + 49 (0) 74 44 / 95 09-0, Fax 95 09 - 99  
E-Mail: [info@mafac.de](mailto:info@mafac.de), [www.mafac.de](http://www.mafac.de)

You can find more  
user reports on our website  
[www.mafac.de](http://www.mafac.de)

