



Alutec - Cleaning heat sinks in a MAFAC PALMA

User Report

Alutec

Impressive process engineering guarantees excellent cleaning results

With the PALMA, the company alutec has commissioned its sixth cleaning machine by MAFAC

Scanning the shop floors of alutec in Sternenfels for the characteristic turquoise blue of MAFAC cleaning machine, you won't spot the well-known colour. On the customer's request, the cleaning machines from Alpirsbach were painted in the typical "alutec red". Based on its positive experiences with MAFAC cleaning machines, the Sternenfels-based company, established in 1988, bought five systems of different model series over the course of the years. Now, the sixth MAFAC machine was purchased: a PALMA intended for a very special high-volume cleaning job – for the next years, a volume of 17 millions of parts is scheduled. In the three-bath system on an aqueous basis, heat sinks are cleaned the rear sides of which must be highly adhesive. This means that they must be virtually clean and virtually dry by the end of the cleaning process.

From its early days 25 years ago with a staff of ten, the company alutec metal innovations GmbH & Co KG developed into a specialist for extrusion technology and innovative aluminium solutions with a workforce of around 220 employees. Headquartered in Sternenfels, the company produces components primarily for the automotive industry and its suppliers. The product portfolio ranges from housings for motor management, air bag electronics, stroke measuring systems, ultrasonic sensors and damper sys-

tems over heat sinks for electronic air conditioning control, LED electronics and audio systems to pistons for gearbox control, wheel brake and hand brake. Furthermore, alutec is an expert for cold forming of aluminium and other materials by extrusion. The company offers special solutions for mechanical reworking, customer support in the development of new products, in-house design, and tool manufacture in its own die shop. Alutec is certified for quality management and environmental management. In 2011, the company received the "Glanzlicht der Wirtschaft" award for ecology.

Different cleaning systems for different cleaning tasks

"Over the last few years, our customers' requirements in the cleanliness of the parts have increased hugely. Today, we are cleaning all the parts we manufacture", says Managing Director Willy Kretz. This means that alutec has a lot of cleaning to do, and in many different manufacturing phases. This is done for a good reason: After having been formed in the press, the machined raw material is heavily contaminated with lubricants. They must be removed before the machining process which follows next. "We use different lubricants. Depending on the respective lubricant and the degree of contamination, different cleaning systems are employed," Willy Knetz explains. While alutec at first only used PER and TRI systems for industrial cleaning, the high environmental impact and negative results quickly convinced the management to opt for environmentally friendly aqueous cleaning systems. Today, two SF 60.40 and one ELBA



by MAFAC work in decentralised installation at the forming lines. They clean for example parts for braking systems for freight vehicles (SF 60.40) and for brake pistons (ELBA).

While drying is not important before machining – this is an intermediate cleaning process only, it is highly significant after cleaning in the final inspection phase. In the two dual-bath systems ELBA by MAFAC installed here, drilling emulsion, chips and lubricants are removed from heat sinks before they are dispatched to the customers. The entire process takes 16 minutes, exactly half of which falls to the wet phase and the other half to the drying phase. “The heat sinks must be absolutely dry before dispatch to exclude discolouration,” says Jürgen Merz, who is responsible for parts cleaning at alutec.

Cleaning system for 17 million aluminium heat sinks

“The question of which cleaning system alutec employs for which cleaning task depends upon a combination of product, volume, defined runtime and cleaning requirements,” says Willy Kretz. After

winning an order for the manufacture of 17 million relatively small aluminium heat sinks over the next years, the company had to acquire another cleaning machine for the Sternenfels factory. Convinced by the cleaning and drying results of the test runs as well as by the price, the management once more selected a MAFAC machine working on an aqueous basis. “Our experiences with MAFAC are positive. All machines installed in our factory are very reliably and run smoothly,” Jürgen Merz confirms.

However, the customer’s demanding specifications regarding the cleanliness of the heat sinks made it necessary to purchase the big MAFAC machine, the PALMA, which is optionally available with three baths. Jürgen Merz explains: “The rear sides of the components must be highly adhesive. For this reason, our test runs not only comprised the determination of residual contamination but also glue tests.” The results of the tests done at MAFAC’s were so convincing that alutec ordered the PALMA.

Convincing process technology: spray-flood cleaning

Since the autumn of 2012, the PALMA has been removing contamination from the heat sinks in the form of chips from sawing, swarf from deburring, and volatile lubricant. To clean away this dirt, three holding tanks are used in a sequence of cleaning – cleaning – rinsing. The time-proven process technology of spray-flood cleaning developed by MAFAC is employed. This means that the cleaning chamber is fully flooded during the entire wet phase. The spray system counter-rotates to the loading system, which is likewise rotating. “We can load the heat sinks as bulk goods into the specifically coated loading system. This makes it possible to run around 3,000 parts per day through the PALMA in one-shift operation,” says Jürgen Merz.

The entire cleaning process takes 25 minutes. 30 per cent of this time falls to cleaning, 20 per cent to rinsing, and 50 per cent to drying. “The heat sinks must be absolutely dry, not only because they must be highly adhesive but also to prevent yellow discolouration,” Jürgen Merz explains. The parts are dried by

means of hot air pulse blowing. The workpieces 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. Also during drying, the loading system counter-rotates to the blowing system.

Highly efficient bath care specifically for the rinse bath

A cleaning agent in a concentration of four to five per cent must be added to the two holding tanks the PALMA uses for cleaning; the tanks have a volume of 720 and 600 litres. All three holding tanks are equipped with highly efficient chips filtration. The integrated coalescence oil separator separates foreign particles carried in into the fluid and collects them in a separate container. The 500-litres holding tank 3 – the so-called rinse bath – is free of additions and filled only with DI water with a conductance of under 50 (10 µS). It is connected to a rinse water care module via a bypass. In this way, contamination films are removed to keep the water quality at a constantly high level.



alutec metal innovations GmbH & Co.KG

Ferdinand-von-Steinbeis-Ring 40 | D-75447 Sternenfels
www.alutec-online.de



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, www.mafac.de

You can find more
user reports on our website
www.mafac.de

