



Parts Cleaning. Systems and Solutions.



Strautmann
Hydraulik GmbH & Co. KG:
Energy-efficient
parts cleaning



User report

Energy-efficient parts cleaning

In the search for better cleaning capacities for turned- and milled parts, the hydraulic specialist Strautmann with the spray cleaning machine MAFAC ELBA has been proven. The heat exchanger module MAFAC HEAT.X is also there for new acquisition. It allows energy-saving heating of cleaning media.

Two things were important for Strautmann's technical team for purchasing the cleaning machine: the new unit should be flexible to use and perform a reliable cleaning process. At the same time, they should make a noticeable contribution to energy-saving during cleaning. "The resource-saving operation of production lines is indispensable for the always increasing energy costs. Thus, we are utilizing all opportunities in order to reduce our energy consumption," declares Boris Hoffmann, who is responsible for maintenance and repair at Strautmann.

The well-thought expansion of capacities led to the decision to add a MAFAC ELBA to the current cleaning park. Not only would this cushion peak workloads and allow faster throughput times, it would also further increase quality, which could be sustained for as long as possible. "We strive for stable growth and are aware of our responsibility towards humans, the environment and the climate. Thus, it was certain that we want to invest in a high-value water-based cleaning technology, which leads to saving resources over time along with reliable cleaning results," declares Michaela Strautmann, head of quality management.

The company Strautmann Hydraulik, Melle

The products from Strautmann also focus on reliability and durability. The company established in 1983 produces hydraulic cylinders, hydraulic control blocks and special cylinders with 200 employees in an area of 20,000 square meters. They are involved in various roles, like in machine- and system engineering, in agricultural- and construction machines, in the commercial vehicle industry, in lifting- and conveyance technology, the food industry, the processing industry or in the field of offshore- and wind energy. In all fields, they have to fulfil high requirements in functional- and structural stability. The hydraulic components are produced in a large and modern machine park. Michaela Strautmann says about this: "Using continuous modernization of our production, we achieve a high level of automation, precision and productivity. Similarly, we can fulfil demanding criteria of operational safety and environmental protection."

Spotless hydraulic components

To enable adherence to these high quality standards, the produced turned-/milled parts, which are subsequently installed in hydraulic components, are cleaned carefully. The work pieces differ in size, length and diameter, but all of them are complex and have undercuts, precise edges, holes, threads as well as dipping structures. They undergo an extensive turning-/milling process before cleaning and thus have contaminations likes emulsions, oil,



The spray cleaning machine MAFAC ELBA (in special paint), together with the heat exchange module MAFAC HEAT.X, is integrated in a space-saving way as a compact unit in Strautmann's machine park.



chips, pastes or grease on them. After cleaning, they are either welded, manually deburred or preassembled and/or final assembled and then stored or dispatched. Depending on the production step, the MAFAC ELBA helps in intermediate- or final cleaning. In both cases, the sensitive precision parts are fixed in parts racks in the cleaning cages and then cleaned carefully and reliably. It is most important that the parts are hundred-percent dry, spotless and protected from corrosion, mainly before the final cleaning. Around 150,000 units of various types of the mentioned steel- and stainless steel parts are cleaned daily. For this large quantity- and variety of parts, we need a machine which can be configured quickly and flexibly," says Boris Hoffmann. Similarly, it was important that the new unit saved space in the machine park and that the paths between cleaning and the individual production steps remained short.

The compact single-chamber machine MAFAC ELBA as effective solution

The MAFAC ELBA could fulfil all these requirements. The spray cleaning machine is especially designed for use after machining processes and with its two-bath technology, it offers flexible options for

commercial pre- or post-treatment processes. According to your specific demands, the two baths can be used for a main washing or rinsing process. The machine has a rotating, multi-faceted spray system with counter-rotating basket receptacle system, which holds several adjusting screws for nozzle pressure, motion sequences of spray frames and the basket receptacle system or the cycle time, which allow a wide spectrum of process- and program variants. "Currently, we have installed six different programs, with which we can effectively process a large variety of cleaning tasks and parts variants. A big advantage is that the programs do not last longer than five minutes," says Boris Hoffmann. The parts to be cleaned are cleaned in the MAFAC ELBA with a speed of five to six batches per hour. For this, an employee fills the goods carrier in three layers and feeds the goods in the tray into the cleaning cell using a crane, saving effort and stress on joints.

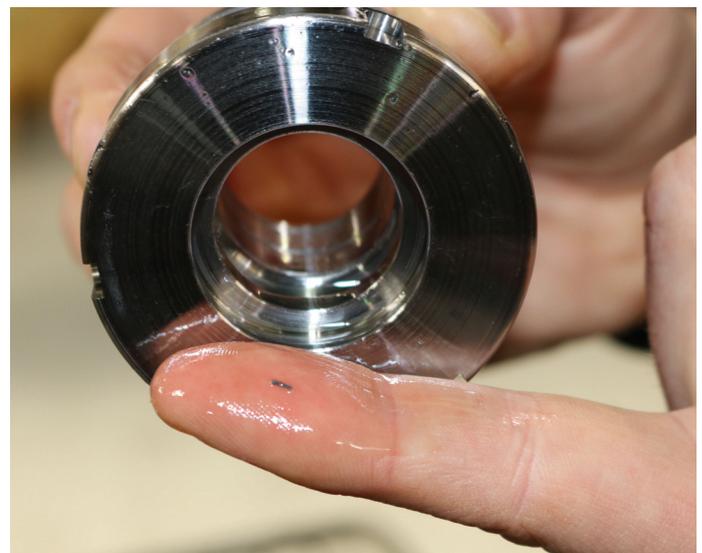
The cleaning takes place in two steps and begins with a cleaning phase from tank 1, which is filled with a mild cleaning medium. This medium is pressurized in the spray process, whereby oil- and emulsion residues as well as abrasives and chips are partially dissolved and cleaned out by the spray mechanics.

Thereafter, the rinsing process from tank 2 makes sure that the cleaning agent residues are rinsed off and the parts are coated with corrosion protection. After this, the complete drying takes place using hot air pulse blowing system and hot air drying system. Michaela Strautmann appears very satisfied with the cleaning results: "The surfaces are left free of residue, absolutely dry and corrosion-free after the process. Even spots or water rings are not a problem, since the machine is equipped with a complete desalination unit." Similarly pleasing and effective is the oil separation by the coalescence separator with integrated floating suction device in medium tank 1. This shows itself in the lasting effectiveness of the process water and the long bath service lives. "With the MAFAC ELBA, we could fill an important gap in our cleaning park and fulfil our requirements of 'short set-up times, high use of machines, high output and low utilization of space'. In addition, we also achieved noticeable energy savings with the help of the heat exchange module MAFAC HEAT.X."

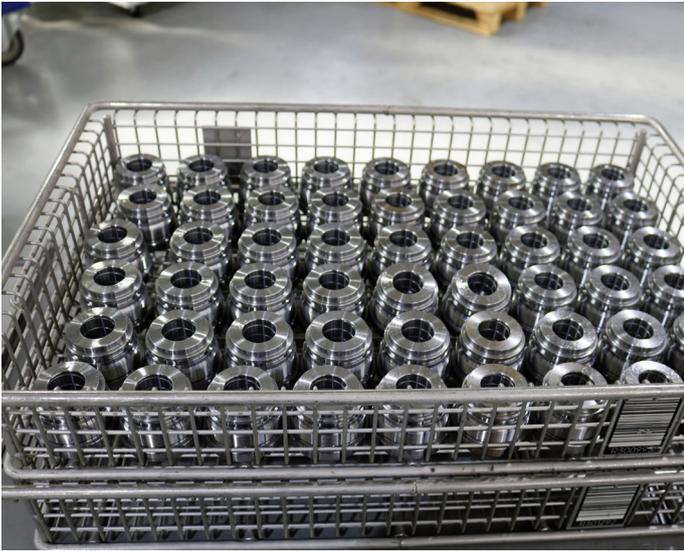
Energy-saving with heat exchange

For the energy-saving effect, the module absorbs available heat from a block heating station and brings

the cleaning bath to a temperature of 52 °C with a highly efficient heat exchange process. "The module ensures a constant heat exchange and thus guarantees process-safe operation in favour of uniform cleaning performance. Moreover, the heat in the heat exchange is available clearly faster than in conventional current operation. It shortens the lead times and short-term temperature losses are balanced out faster," says Peter Ruoff – Head of Marketing and Sales for MAFAC. At Strautmann, MAFAC HEAT.X achieves an energy saving of 37 percent in comparison to our previous cleaning.



It cleans turned- and milled parts, which are complex and have undercuts, threads and dipping structures. After the turning-/milling process, the components have contaminants like emulsions, oils, chips, pastes or grease.



Due to their sensitive design, the parts are fixed in a tray in the work piece carriers and stacked in compact batches.



A crane is used to feed the batches into the cleaning machine in a way that does not stress the joints or the back.



A last touch of the hand ensures placement of the parts to be cleaned in the MAFAC ELBA.

Six programs are available depending on your cleaning requirements. Changes in the contaminants or in the assortment of parts can be quickly dealt with by new programs or re-programming.



After the two-step cleaning and drying, the parts are removed from the cleaning chamber.



The surfaces of the hydraulic components are now free of any films or particles as well as are absolutely dry.



Process residues like oil, emulsions or swarf are carefully removed and the surfaces are completely dry. The components are protected against corrosion and are ready for assembly in the subsequent production- and assembly steps.



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