HEMO
THE CLEANING SYSTEM

Investment in new Technology

Push-Through System for Parts Cleaning

A metal processing company from Herzogenaurach, Germany, is focusing on diversification and now offers parts cleaning as a service. In doing so, this company is stepping straight into the top tier: low-particle cleaning with high throughput for the automotive industry.

Founded in 1994, Walter Metallverarbeitung is one of the region's most capable service providers. Until now, the family-owned company with around 200 employees had primarily focused on turning metal parts, as well as various testing and inspection services on behalf of customers, up to final parts packaging.

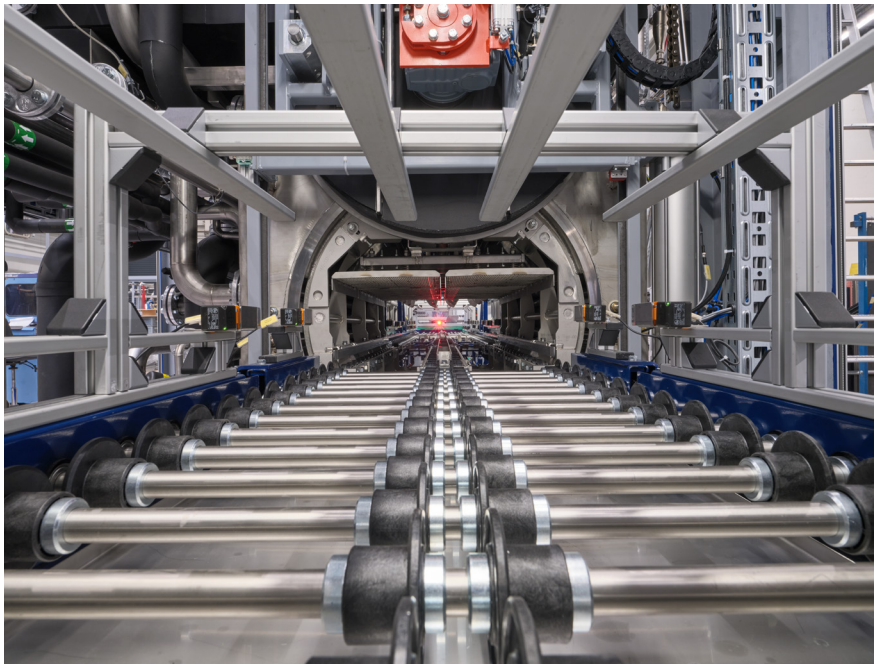
A request from a major automotive supplier for industrial parts cleaning services became the catalyst for company founder Gerhard Walter to invest in a new business area: „We have always made sure to have a broad portfolio, and the opportunity to enter the parts cleaning business came at exactly the right time. Since many of our customers come from the automotive industry, we wanted to meet the corresponding requirements. Thus, we had to step right into the Champions League."

In fact, in many areas of the automotive industry, parts cleaning with clearly defined residual contamination specifications and strict quality controls is standard. Anyone wanting to work with Tier 1 suppliers must meet the highest requirements. „We knew that we could only enter the market with a state-of-the-art parts cleaning system. After a brief market analysis, we chose a MODULAR particle cleaning system from parts cleaning specialist HEMO in Ötisheim. It combines everything we need: flexibility, excellent cleaning quality, high throughput, and, not least, economical and sustainable operation," explains Walter.

Push-Through System Takes the Lead

To meet the highest standards, Walter Metallverarbeitung invested in a so-called Push-Through System. The decisive advantage of this concept lies in the clear separation of dirty and clean zones: in push-through systems, contaminated parts enter the system on one side via a roller conveyor and exit clean on the opposite side. This ensures that the cleaned parts never come into contact with the system's dirty areas or the oily rollers on the loading side. With this technology, nearly all customer requirements for low-particle cleaning quality can be fulfilled.

Compared to conventional systems, which require separate loading and unloading for each cleaning cycle, a Push-Through System offered an additional advantage for Walter: „Maximizing throughput is also crucial for us, and in this respect, the simultaneous loading and unloading of the cleaning chamber reduces cycle times. With our MODULAR Push-Through System, we achieve a maximum throughput of up to three tons per hour while simultaneously eliminating the risk of recontamination," emphasizes Managing Director Gerhard Walter.



Strict Separation of Dirty and Clean Zones

To achieve this performance, the cleaning chamber is equipped with two doors, providing simultaneous access to both the loading and unloading sides. When the doors are open, the roller conveyor system continues to advance, moving cleaned parts out of the system while unclean parts enter the cleaning chamber to undergo the cleaning process. Loading is performed manually via two roller tracks. Each cleaning batch consists of six individual steel baskets, each capable of holding up to 50 kilograms of parts. The range of parts is very diverse, from individual bolts to fully assembled components—all of which are metal parts.

The six open baskets are transported to the cleaning chamber via the driven roller conveyors. Once they reach their precisely defined insertion positions, they are lifted and secured into the basket holders. This ensures that the parts remain safely in place and cannot fall out, even during assisted cleaning movements such as rotation or tilting. The actual cleaning process does not differ from that of conventional solvent systems. The Push-Through System also operates according to the well-known SOLVACS process (SOLvent VACuum System), in which all cleaning steps are carried out under vacuum or at a reduced pressure below 100 mbar.

Highly Flexible Process Technology Ensures Future-Proofing

What makes this system special is its forward-looking process technology, which allows the optional use of chlorinated hydrocarbons, hydrocarbons, and modified alcohols in the same system. Even aqueous cleaning stages can be integrated. This means that in a single system, parts can be degreased with solvent, cleaned with water, and then dried with vacuum, and — if needed — preserved with a solvent-oil mixture.

Currently, Walter Metallverarbeitung relies on the classic solvent cleaning process with the following steps: pre-cleaning, fine cleaning, vapor degreasing, preservation, and vacuum drying. „In our system, we clean using non-halogenated hydrocarbons, supporting the process with ultrasonic as well as rotational and tilting movements. The cleaning quality is just as impressive as the throughput of up to three tons per hour," confirms Gerhard Walter.

Outstanding Cleaning Results at High Throughput

The excellent cleaning results are achieved through finely tuned cleaning programs and the high solvent quality maintained via continuous distillation. Equally important, the intensive vacuum drying ensures that solvent residues are removed even from recessed areas of the parts.

To prevent recontamination after cleaning, the discharge roller conveyor is fully enclosed. Additionally, Walter handles the final packaging of parts on behalf of its customers, always including 100% visual inspection. Regularly, cleaned parts are also sampled and tested in the lab to ensure that the defined residual contamination levels are consistently met.

The system is controlled by a Siemens Simatic S7-1500 PLC. The Walter operators are particularly impressed by the high-resolution Simatic HMI Comfort Panel TP1500, featuring a 15.4-inch TFT widescreen touch display with 16 million colors.

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The visualization of all process steps is extremely clear. All process parameters, such as temperatures, pressures, and cycle times, can be set and adjusted via the control panel. A total of eight different cleaning programs is used.

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