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Clean blanks for modern press lines

Wandres presents the refined Evomat, the EVO 501, at the exhibition Euroblech. Its technology is the key to cost-effective and flexible cleaning of blanks.

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The Evomat EVO 501 cleans blanks in front of the press at high transport speed.

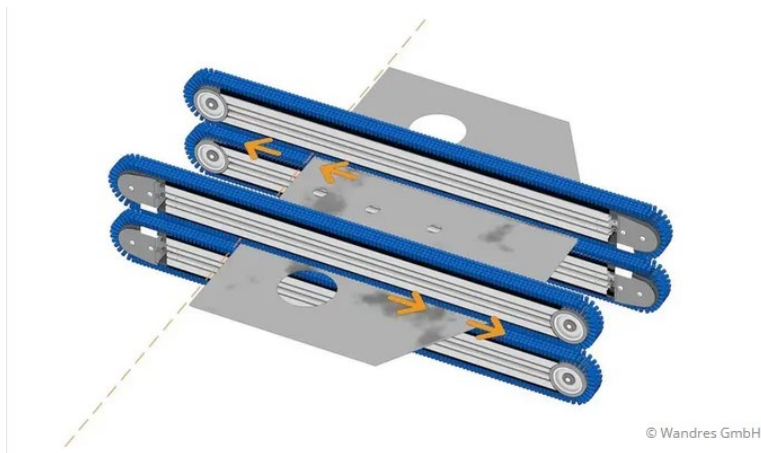
The daily output of an industrial forming press is around 30,000 press strokes per day in 24/7 continuous operation. With each pressing stroke, the smallest metal chips can be embossed in the blank or in the tool, which can subsequently lead to rejects, tool damage and unplanned downtimes. Therefore, a reliable and reproducible blank cleaning is indispensable before entering the press.

Requirements for Blank Cleaning

In practice, clear demands are made on a cleaning solution: it must be easy to integrate into the press line and can reliably clean all the usual blanks for car bodies including tailored blanks with different sheet thicknesses in 24/7 operation. A flexible alternating operation between oiled steel and aluminum blanks coated with dry lubes should be possible without problems. At the same time, it must be possible in modern production lines to clean at a high transport speed in order to follow the cycle of the press. Only installations that meet all these conditions are able to permanently prevent particle-related damages to blanks and press tools, thus ensuring consistent quality and production performance.

“Counter Wiping” for precise transport

Wandres has further developed the existing Blank Cleaner Evomat. Among other things, the conveyor system at the infeed and at the outfeed was optimized to be able to convey the blanks safely and precisely through the unit. The combination of transport rollers at the bottom and double pressure rollers at the top is intended to ensure a stable throughput of the sheet metal blanks. The conveying speed is infinitely variable and can be adapted to different process speeds. The Evomat EVO 501 is equipped with four Quadro R6 linear brushes from Wandres’ own Black Forest brush production. The brushes are robust, durable and well suited for continuous operation in pressing lines, reports the manufacturer. The front and rear linear brushes wipe in opposite directions. This “counter wiping” is intended to compensate for wiping forces and ensures an accurate transport. At the same time, the opposite movement increases the cleaning effect, because particles of different geometries can be absorbed more efficiently by the brushes.



“Counter Wiping” means that the front and rear Sword Brushes wipe in opposite directions across the surface of the blanks. The wiping forces are compensated, and the blanks are transported precisely through the cleaning system.

Constant wiping power without readjustment

The working side of the linear brushes is mounted on a pneumatically controlled pressure buffer. As a result, the brush filaments stand perpendicularly on the product surface without bending over. The wiping force remains constant and material thickness differences up to ± 2 mm are automatically compensated. A readjustment of the brushes is not necessary, and tailored blanks may also be cleaned. The four circulating linear brushes remove impurities with high cleaning performance from the top and bottom of the blanks. Compressed air nozzles and mechanical elements continuously detach the particles from the brush filaments in the self-cleaning unit. The particles are absorbed and thus permanently removed from the production environment. In the case of aluminum blanks with dry lubricants (hot melt), optional heating elements are used in the deflection and suction area to make the lubricant flowable and to be able to effectively remove it from the brushes. Alternating aluminum blanks with dry lubricant and oiled steel blanks is possible without changing tools.

Optionally, a trolley is available with which the complete cleaning system including the suction filter and control cabinet can be moved out of the line for maintenance work. This is to reduce downtime and simplify maintenance. Due to the narrow footprint, the entire system can be integrated easily into new as well as existing lines, reports Wandres.

Economic benefits and amortization

The constant cleaning performance of the Evomat EVO 501 increases, according to Wandres, the proportion of products in the pressing plant that are error-free in the first run without reworking, correction or rejects – in short: the right-first-time quota (RFT). Clean blanks provide the right surface quality for forming. A consistently high cleaning effect permanently reduces the reject rate. At the same time, the load on the press tools decreases, which extends their service life and reduces costs for repairs. By avoiding particle-related damages, unplanned downtimes are less common. The cleaning system works in continuous operation with reproducible results; process parameters remain stable and there are hardly any differences in quality.

The importance of blank cleaning

When metal particles enter the press via the blanks, they act like small elevations, which are pressed into the board during forming and trigger punctiform material disturbances and microdefects. Adhering particles change the contact conditions between the punch and die, whereby the pressure is distributed unevenly, which can lead to material fatigue on the tool. Even a particle of a few micrometers influences the distribution of force and the material flow in the die.

The manufacturer concludes that the above leads to rapid amortization: savings from lower waste, reduced maintenance costs of the press and fewer downtimes offset the investment in the compact blank cleaning machine. For operators of press lines, Wandres sees higher plant availability, predictable production quality and reduced total cost of ownership. The Evomat EVO 501 is a technical and economical response to the increasing requirements of modern forming processes and is already successfully used by well-known manufacturers, Wandres summarizes. (AR)

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The Blank Cleaner Evomat EVO 501 comes complete with suction filter and control cabinet and optionally with a trolley for driving the system out of the line for maintenance purposes.