



Efficient cleaning of sheet metal in the manufacturing of white goods

THE FABRICATION of sheet metal parts for white goods requires a multi-step process involving levelling, cutting, deburring and forming. Cleanliness is a key factor within the manufacturing process chain when it comes to quality, as particles on the surface of the metal will quickly cause defects and disrupt production. The Neff GmbH has integrated Sword Brushes engineered by Wandres GmbH micro-cleaning into their production lines and achieving optimal results.

Cleaning technology from the Black Forest

Sword Brushes developed by the Wandres Company are being deployed to clean surfaces effectively and reliably worldwide and across multiple sectors of industry.

The linear brushes used for this purpose are manufactured according to strict quality standards at the company's production site in the Southern Black Forest. The brushes circulate around a sword-shaped guiding element and wipe crosswise across the surface being cleaned.

The linear brush is cleaned continuously in the turnaround area with the help of rotating pins and a jet of compressed air. A suction system then removes any contamination that has been dislodged. As a consequence, consistently high-quality cleaning results are guaranteed in 24/7

industrial production. The contact area of the linear brush is fitted with a pneumatically regulated flexible pressure buffer. The buffer compensates for small variations in the material and ensures that a constant force is exerted onto the surface. Dry surfaces profit from micro-moistening the filaments with the Ingromat® cleaning agent to bind even ultrafine particles of dust to the brushes. When dealing with oily metal surfaces, Ingromat® can also be used from time to time to refresh and clean the brush filaments. Combi Sword Brushes are equipped with an adjustment unit and are therefore easily integrated into existing lines. Sword Brushes can be

precisely adjusted to the pass line to enable cleaning from above and from below and to accommodate the thickness of the material. Electrical adjustment coordinated with the overall line control system is available as an option as well as a pneumatic quick-adjustment feature.

Cleaning metal coil before levelling

Even tiny particles can leave behind indentations in the metal strip after the leveller and cause damage to the levelling rollers. Any debris or fine metallic dust building up in the transport cassette due to abrasion has to be removed manually in a time-consuming and cost-intensive process. Cleaning the metal strip on both sides before entry to the leveller will deliver long-term benefits by preventing downtime and cutting manufacturing costs.

At the headquarters of the

BSH Home Appliances group, the Neff GmbH deploys the Combi Sword Brush Una X 121 for precisely this application. Thanks to a space-saving footprint, the cleaning machine can be integrated right before the levelling machine. Roller guides and a roller support stand are positioned after the uncoiler to ensure the material is transported securely through the cleaning installation.

Cleaning metal blanks before forming

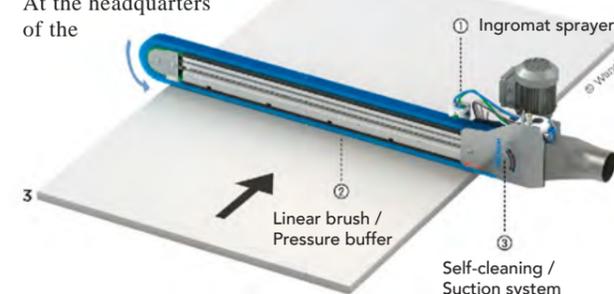
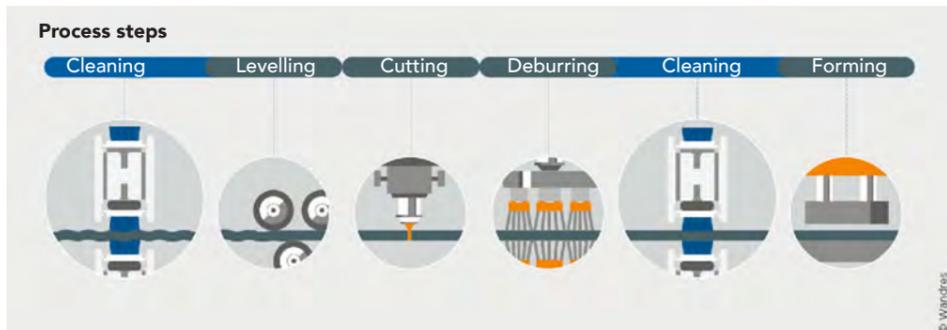
When it comes to sheet metal forming, clean surfaces are crucial to achieving an error-free process. Due to the powerful forces applied onto the sheet metal during bending or pressing, even microscopic particles can leave behind impressions in the surface of the metal blanks and damage the press brake tooling.

At Neff GmbH, cut-to-size sheet metal blanks are initially deburred in the bending machine. Deburring and grinding usually leave behind dust particles and grit that cling tightly to the surface. This means it is essential for a high-performance and reliable cleaning procedure to follow up. At this point a second Combi Sword Brush from the Wandres Company is deployed. Conveyor belts and pressure rollers transport the material through the cleaning unit which cleans the sheet metal from above and from below.

Stable results in continuous operations

The first cleaning machines were installed at the main facility in Bretten in 2013/14 and have been running ever since in continuous operations and delivering incredibly reliable results. The linear brushes have an ultralong service life and only need replacing during annual maintenance, as a rule. Summing up, the facility planner at Neff GmbH, Jörg Bühler, had the following to say: 'We could never have imagined beforehand what a huge difference the cleaning

systems would make. What's more, the additional installation of Combi Sword Brushes has boosted the productivity of our manufacturing lines even further.' Since the demand for high-quality kitchen appliances has increased significantly in recent years, the company is eager to make optimal use of the existing production lines and to expand these. Further Combi Sword Brushes are already on order to equip both new and existing lines with exactly the same effective cleaning technology.



- 1 Sheet metal parts are cleaned from above and from below after deburring. The blanks then proceed to the bending machine for the forming process (not shown in the picture).
- 2 The Combi Sword Brush was integrated immediately before the levelling machine and cleans the coil-fed metal strip on both sides.
- 3 Sword Brushes wipe crosswise across the surface and achieve consistent and high-performance cleaning results in 24/7 operation.