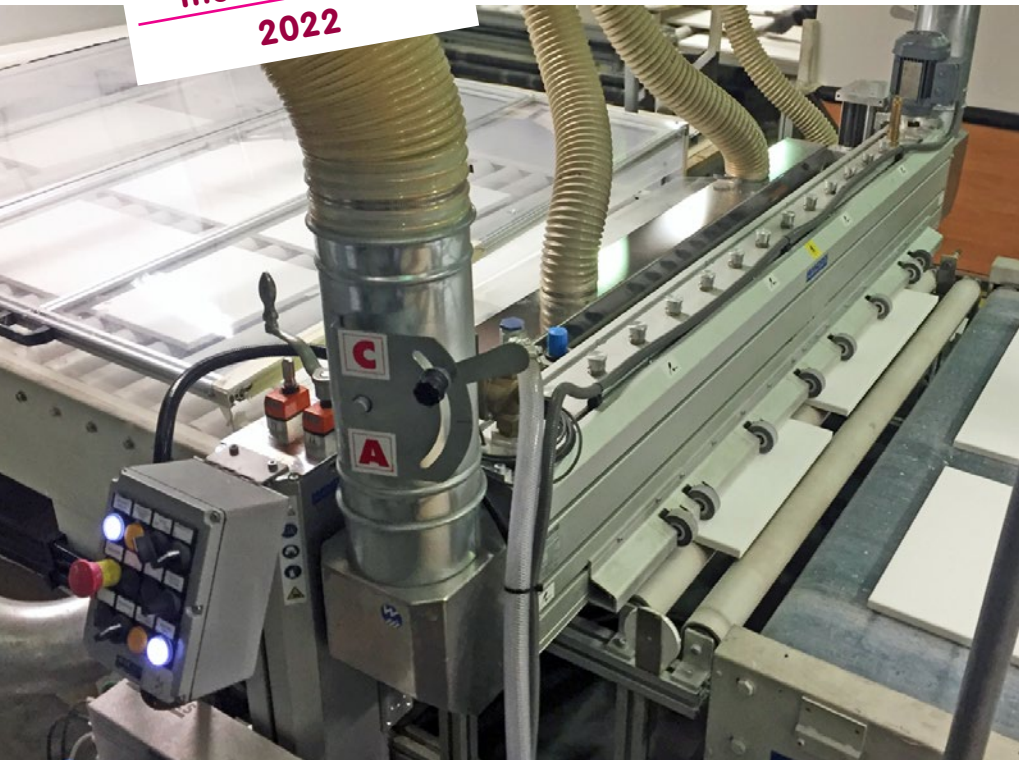


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A hybrid solution defeats fine dust

Air technology for pre-cleaning and linear brushes
for precision cleaning eradicate dust particles

When it comes to high-end surface finishes, fine dust is the problem to beat. Unless it is removed without a trace, fine dust will cause high reject rates. A combination of air jets and Sword Brushes prevents this and offers the perfect solution for dust-free surfaces.

As a rule, various cleaning devices such as compressed air nozzles or a slot-shaped vacuum manifold are positioned at the outfeed of sanding machines. Following this contactless cleaning procedure, however, large quantities of fine dust are often still left clinging to product surfaces. A cleaning process that uses round brushes is not usually equal to the task of removing the huge amounts of dust created. Fine dust rapidly clogs up the round brushes and the process fails to provide stable results and process reliability in the long term. Wandres GmbH micro-cleaning from Stegen in the South of the Black Forest has developed

cleaning technology that reliably removes fine sanding dust even in 24/7 industrial production. Numerous manufacturers have already integrated this technology into their installations and have since been profiting from stable production processes and low reject rates.

Air-assisted pre-cleaning with
rotating compressed air nozzles

A Tornado Channel TKR 200 is installed at the infeed to the cleaning system. At the heart of this air-assisted cleaning module, a system of compressed air nozzles rotate at

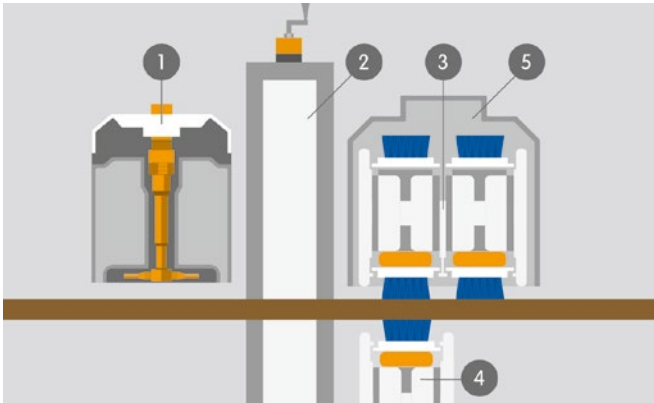
MECHANICAL MACHINING

Thanks to a narrow footprint the Combi Sword Brush Una H-XL 723 can be integrated into existing coating lines trouble-free.

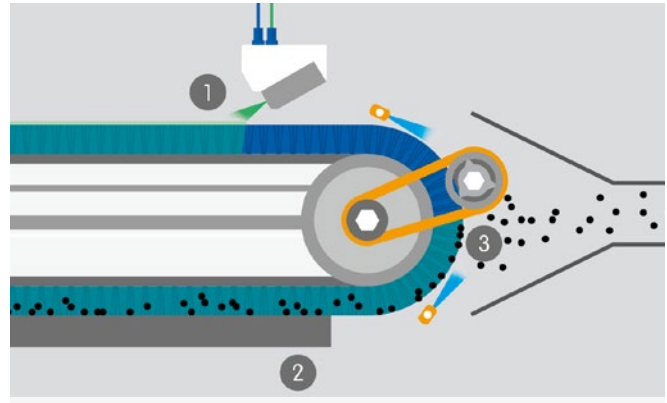
high speeds. The Tornado Nozzles are driven and synchronized by a timing belt and are positioned only a few millimetres above the surface of the product that is being cleaned. The nozzles expel compressed air at several times the speed of sound and detach sanding dust from the surface. The circular cleaning areas of the nozzles overlap so that the product surface is cleaned seamlessly across the entire width of the channel. The dust removed in this way is immediately extracted from above.

Sword Brush technology for
precision cleaning

A Power Sword Brush is positioned at the outfeed of the cleaning system. Two linear brushes wipe across the surface and remove any remaining particles from the panel. At the area of contact, a pneumatically regulated pressure buffer ensures that pressure is exerted consistently onto the surface. The Sword Brushes clean the product surface using the Ingromat Method. The Ingromat Method has already been tried and tested in multiple industrial applications. During the procedure the filaments of the brushes are lightly moistened with Ingromat cleaning agent. The resulting increase in adhesive forces means even the very finest particles are absorbed as the linear brush wipes across the surface. The surface remains dry and coating processes that follow are in no way compromised. To achieve consistently high-quality cleaning results, the Sword Brushes are equipped with a self-cleaning unit which removes the particles absorbed by means of a rack and compressed air nozzles and propels them towards a suction system. Unlike the round brushes this procedure has a decisive advantage. As the filaments are permanently being refreshed, the high-performance cleaning effects remain constant even in long-term use. Dependent on the amount of dust involved and the structure of the surface, it may be helpful to mount an additional hood to enclose the brushes thereby improving the force of the extraction airflow. Moreover, a further option of deploying an additional Sword Brush to clean the lower surface of the panel from below will prevent particles being dragged along the transport system.



(1) Tornado Channel TKR 200, (2) Adjustment unit, (3) Power Sword Brush BIX 102, (4) Sword Brush BIX 51, (5) Extraction hood



Cleaning in three steps: (1) Micro-moistening of the filaments, (2) Cleaning of the product surface, (3) Self-cleaning

Cleaning trials on sample products at the Technology Centre

In practice, the exact requirements for the cleaning process depend on factors such as the structure of the surface, the type of pre-treatment, the primer coat applied and the throughput speed. Each individual cleaning result is best predicted by running a cleaning test in close to real-world conditions on sample products supplied by the manufacturer. The Technology Centre at the Wandres Company headquarters has a purpose-built installation for demonstrating how different cleaning devices can be used in combination. Prior to the cleaning demonstration, the processing speed is determined exactly.

‘In this way we have the possibility of demonstrating the perfect solution for our clients on their own sample product surfaces’ explains Martin Tritschler, Head of Sales for the Panel & Web Industry.

‘Afterwards the best possible cleaning system can be configured according to client specific measurements and integrated into the production line. We recommend the Combi Sword Brush Una H-XL 723 for cleaning after intermediate lacquer sanding. The system has already proved to be the optimal solution in numerous coating lines at typical speeds of around 10 metres per minute.’

Thanks to the narrow footprint, integrating the machine into existing production lines is trouble-free. Adjustment to the width of the panels is carried out by the adjustment unit provided or optionally also by means of an electric control unit.

Differences in the quality of the cleaning process become quickly noticeable when the paint is applied in ultra-thin layers. Thinner layers of coating contain less material that could otherwise compensate for or conceal small particles of fine dust. As a result, the surface finish is

marred by trapped particles and broken paint skin. Even the most minute flaws are clearly visible - especially on high gloss surfaces. The consequences are high reject rates and expensive rework. The innovative new cleaning technology means these issues can be avoided and a cost-effective coating process with a mirror-like shine and high gloss surface effects can be achieved.

The combination of air-assisted and brush cleaning technology as performed by Combi Sword Brushes has effortlessly made the grade repeatedly in wood and furniture coating processes in industrial production. Wherever the Tornado Channel and Sword Brushes are deployed on modern production lines, the particle-related reject rate is drastically reduced and the thickness of the coating can be minimised accordingly.

All this has a positive effect on product quality - in particular regarding products with high gloss surfaces. Cost savings are made on the amount of paint and coating material required and operational efficiencies are also improved by preventing unnecessary downtime. The impact from dust on conditions for the workers in the surrounding production environment are much improved as fewer dust particles are present. The combination of Tornado Channel and Sword Brush delivers the technology required for the cost-effective and reproducible manufacturing of furniture panels, cabinet doors and drawer fronts with an exceptionally high-end surface finish.



Kitchen cabinets and drawer fronts with a high gloss surface finish. Pre-treatment of the surface plays a decisive role in achieving a high quality product.