



WANDRES
micro-cleaning



Surface Cleaning Technology for Industrial Production



We provide the best cleaning technology wherever particles and dust on surfaces cause flaws and rejects during production.



Claus G. Wandres, founder of the company





1981

Wandres GmbH micro-cleaning was initially established by Claus G. Wandres as an engineering consultancy firm.

> 80 %

In-house manufacturing of parts offers flexibility and control. Insourcing not only ensures high quality standards but also secures short lead times.

140 +

Employees in the Southern Black Forest develop, produce and market the Wandres cleaning systems.

< 20 μm

The diameter of fine dust particles captured is only one-third the width of a human hair! Sword Brushes reliably remove extremely fine particles of dust.

> 55 %

A high proportion of direct exports proves that Sword Brushes are in action globally—in the automotive industry as well as in the industrial production of furniture boards and panels.



Dipl.-Ing. Stephanie Wandres, Dipl.-Ing. Claus G. Wandres, Sylvia Wandres (Business Administration), Dipl.-Ing. (FH) Thomas Spehr

A modern family-run business with a tradition

For the past 40 years we have been developing and manufacturing cleaning systems for industrial production.

The headquarters of our medium-sized company are located in the South of the Black Forest where the traditional craft of brush-making has been practised for centuries. At the very heart of our cleaning systems, and core to our brush cleaning technology, are the industrial brushes manufactured in-house. The inventive spirit and ingenuity of Claus G. Wandres, the company's founder, drove the innovation that made the company world leaders in several target markets. Today, the next generation, represented by Thomas Spehr, Stephanie and Sylvia Wandres, are set to continue the expansion of Wandres GmbH micro-cleaning — for a clean future in industrial production.

40 years of ingenuity and not a speck of dust in sight

'Tempora mutantur et nos mutamur in illis' — 'Times are changing and we are changing with them' is inscribed on the foundation stone of the production plant in Stegen.

The key to success as an entrepreneur is the willingness to adapt and to readily take on new challenges time and again. Even if 40 years have now passed since the company was first established, the original motivation and innovative spirit of Claus G. Wandres is as much in evidence within the company today as ever. A milestone in the history of the company was the discovery of cleanroom production and the development of the Tornado Nozzle for contactless cleaning. Almost 30 years ago, the invention of the Ingromat® method helped to achieve a breakthrough in the cleaning of surfaces using micro-moistened brush filaments. Far from resting on our laurels and relying on past achievements, progress is ongoing and we must innovate and adapt accordingly. In an ever-changing world, we will constantly strive to find the best possible solutions to meet the cleaning demands of industrial production.



Driving innovation through team spirit

The continuous development of our products contributes to the steady growth of the company and brings new and exciting challenges.

Over 140 employees produce 80 % of the components for our machines in-house at our site in the Southern Black Forest. In the long term, this secures the availability of our component parts, guarantees flexibility and safeguards the high quality standards of our cleaning systems. In-house production also creates a large number of interesting jobs and training opportunities. We are committed to providing training for young people as they are the work force of the future. After completing a traineeship scheme, most of our trainees choose to continue working here and bring a welcome breath of fresh air into our teams.





The heart of the Sword Brush created in a Black Forest house

Our sister company Wandres Brush-Hitec GmbH produces high quality linear brushes with an ultralong service life.

Our linear brushes are used in the most demanding applications and harsh environments in industrial production and still have a service life of more than 4000 hours, possibly considerably longer depending on the specific use. Naturally, not a single brush filament can detach from the closed loop belt during the cleaning process. For this reason, our linear brushes must meet the most stringent quality standards. Quality and a long lifespan are not the only features of the brushes worthy of mention: the brushes are also extremely versatile. Wandres Brush-Hitec specialises in producing exactly the right brush, no matter how diverse the requirements or how challenging the conditions. The brushes can be engineered, for instance, with rounded filament tips for particularly scratch sensitive materials.



A perfect surface reflects our image

Clean product surfaces are an important quality requirement in many manufacturing companies and are essential to ensuring that production processes continue to run smoothly. Particles frequently compromise surface quality, increase the reject rate or cause costly machine downtime. An effective cleaning solution can reliably prevent this. The cleaning systems engineered by Wandres keep continuous manufacturing operations up and running in multiple areas of industry, from the furniture and panel industry to the sheet metal and automotive industry and the packaging and glass industry.

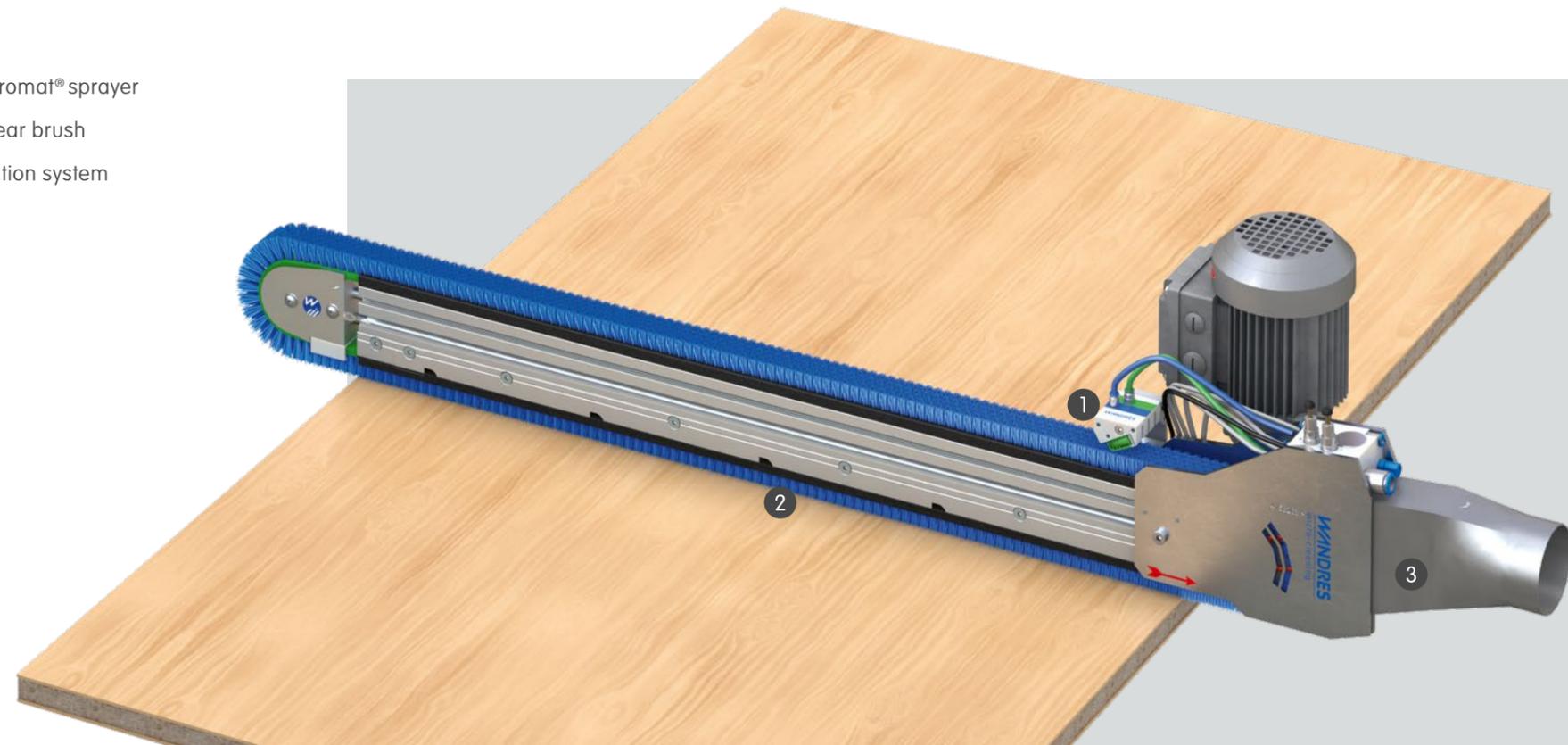


Cleaning Technology

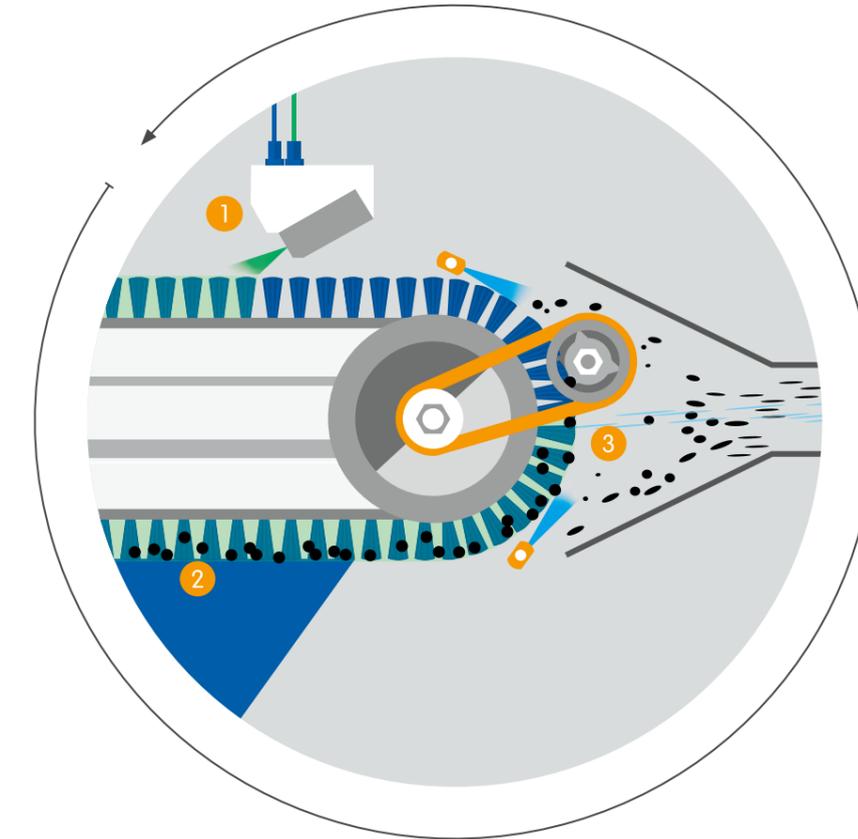
Sword Brushes for continuous operations in industrial production

Sword Brushes always wipe crosswise across the surface being cleaned. In the process, particles adhere to the brush filaments. The particles are detached from the brush in a self-cleaning unit with the aid of a rack and compressed air nozzles and safely disposed of via a suction system.

- 1 Ingromat® sprayer
- 2 Linear brush
- 3 Suction system



The Ingromat® Method—Precision cleaning with micro-moistened filaments



1 Micro-moistening of the linear brush

The Ingromat® sprayer applies a thin film of Ingromat® antistatic cleaning liquid onto the filament tips in the direction of the circulating linear brush.

2 Cleaning of the product surface

The linear brush wipes crosswise to the direction of transport, binding particles to the micro-moistened filaments and propelling them safely away from the product surface and towards a suction system.

3 Self-cleaning of the linear brush

A combination of rotating rack and compressed air jets provides a continuous cleaning function for the filaments. The detached particles are disposed of by vacuum extraction.

Cleaning Technology

Air technology and brush cleaning technology effectively combined

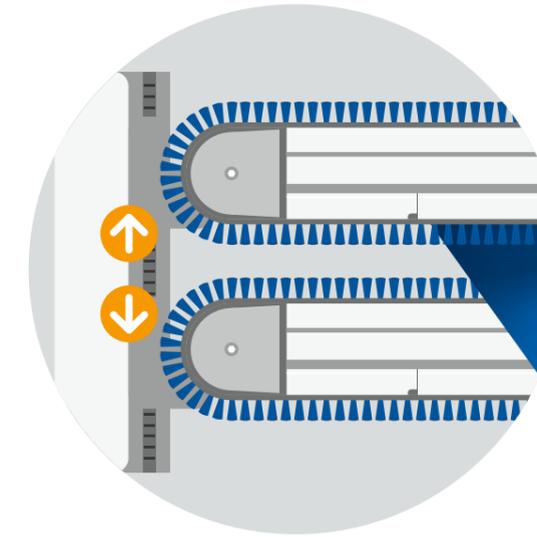
Combi Sword Brushes deliver the ultimate combination, enhancing the mechanical impact of the brushes with the benefits of contactless air technology. A Tornado Channel is often positioned at the infeed to perform a pre-cleaning process using air technology. Sword Brushes see to the removal of extremely fine particles and dust at the outfeed.

- 1 Height adjustment unit
- 2 Sword Brush
- 3 Tornado Channel



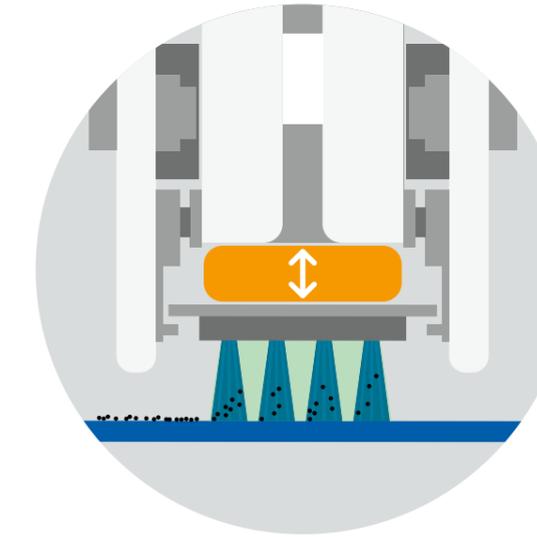
Combi Sword Brushes for optimal cleaning results

Combi Sword Brushes have a modular design and are individually engineered to clean surfaces from either one or from both sides according to the specific cleaning requirements. Up to four cleaning machines, Tornado Channel and Sword Brushes for instance, can be mounted on the height adjustment unit.



1 Height adjustment unit

The height of the cleaning modules can be adjusted in parallel, either manually with the aid of a crank or, if the positioning system is electrical, via an actuator with integrated control. In addition, pneumatic cylinders offer a rapid adjustment function.



2 Sword Brush with pressure buffer

The linear brush is flexibly mounted on a pneumatically regulated pressure buffer. The pressure buffer compensates for uneven surfaces and variations in material thickness, thereby guaranteeing a constant wiping pressure and high-performance cleaning results.



3 Tornado Channel with Tornado Nozzles

Tornado Nozzles rotate at high velocity. The nozzles emit jets of compressed air at several times the speed of sound and eliminate particles and dust from structured or profiled surfaces highly efficiently.



Boards and Panels

Perfectly clean surfaces in industrial production

Various combinations of Sword Brushes and Tornado Channels are deployed all along the chain of production to remove shavings, particles and fine dust. A customised solution is created for each cleaning application and can include single or double-sided cleaning, with or without air technology and designed for flat, textured or profiled surfaces or boards with drill holes or cut-outs.



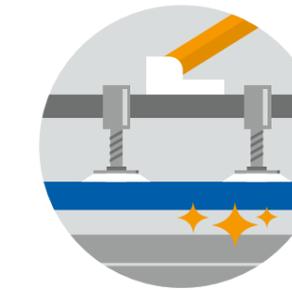
After machining processes

Drilling, milling and sawing processes generate large amounts of shavings and dust which can disrupt production and compromise quality.



Before camera inspection

Quality control often occurs using an automated camera inspection system. Particles on surfaces interfere with monitoring and can trigger false positives.



Before stacking or packing

Any particles still present during stacking are pressed into the surface leading to damage and indentations. Particles frequently cause scratches during transport.



Before lacquering or coating

Surfaces must be spotlessly clean before cover layers are applied. High gloss surfaces in particular require the removal of even the finest sanding particles.



Furniture boards and panels

Sword Brushes clean flat surfaces optimally using the Ingromat® method. To deal with particularly high concentrations of dust, a cleaning machine utilising air technology can be integrated upstream.



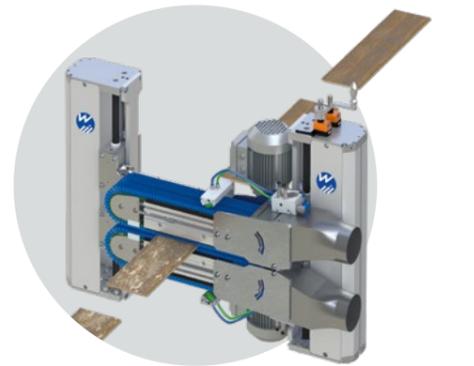
Boards with drill holes and grooves

The Tornado-Channel TKF is fitted with compressed air driven Power Nozzles that powerfully dislodge shavings and particles from drill holes and grooves.



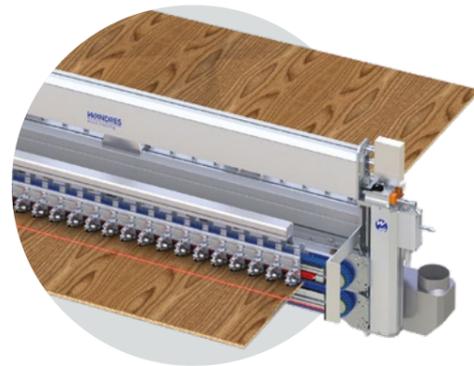
Profiled panels and kitchen units

The Tornado-Channel TKR effectively removes particles and dust from grooves and recessed areas with the aid of rotating Tornado Nozzles and compressed air.



Floor panels

Power Sword Brushes featuring two linear brushes running in parallel can remove enormous amounts of highly charged electrostatic laminate dust at fast line speeds without a trace.



Coated chipboard

Chipboard can be cleaned optimally after the short-cycle press using a combination of flexibly mounted Sword Brushes and a Tornado Channel that cleans from both sides.



Sandwich panels and MDF

A combination of air technology and brush cleaning technology reliably removes large amounts of dust and shavings after CNC milling.



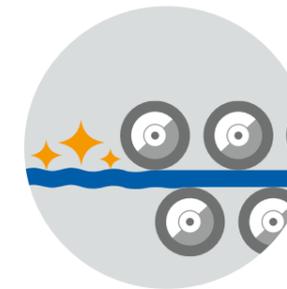
/// Dust-free surfaces are a key requirement in the production of high-end boards and panels. Particles and dust cause expensive quality issues during processing in modern production lines. Our Combi Sword Brushes deliver an extremely impressive cleaning performance in 24/7 industrial production despite remarkably low maintenance and operating costs.



Coils and Blanks

Effective surface cleaning for sheet metal in continuous production

Sword Brush technology cleans endless metal strip as well as blanks for outer body panels extremely effectively. Thanks to the thermal self-cleaning feature of the linear brushes, switching between different materials such as steel, dry-film lubricated aluminium or non-ferrous metals is trouble-free. Time consuming retooling is not required.



Before levelling

Particles must be removed from endless metal strip before entering the leveller to avoid surface defects and indentations in the material occurring.



After laser cutting

Fine dust particles accumulate on laser-cut edges and can be removed very effectively by Sword Brushes.



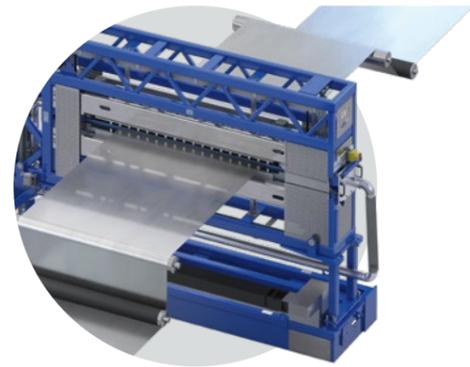
Before forming

Particles can damage the blanks and press tools during forming processes. For this reason, every trace of particles must be eliminated from the surface.



After sanding

The removal of sanding dust is a key requirement for downstream processes such as coating, lacquering or forming.



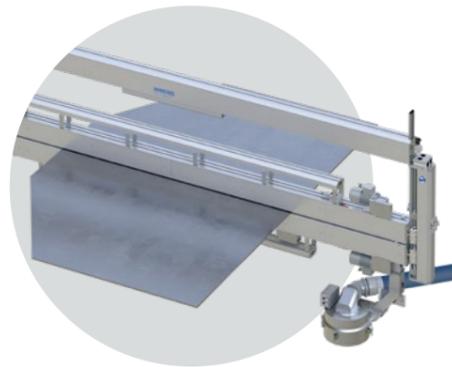
Coils

The Cevomat® cleans sharp-edged and wavy metal strip made of steel, stainless steel, aluminium and non-ferrous metals both from above and from below on high speed lines.



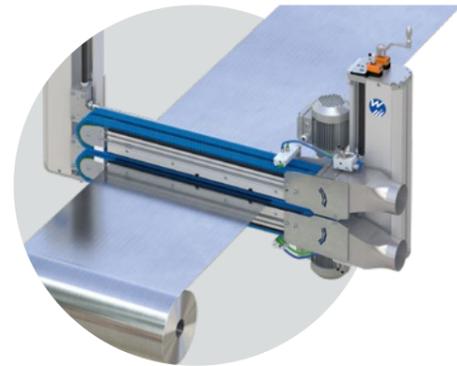
Blanks and outer body panels

The Evomat® cleans oily steel blanks as well as dry-film coated aluminium blanks before entering the press line and reliably prevents particle-induced damage.



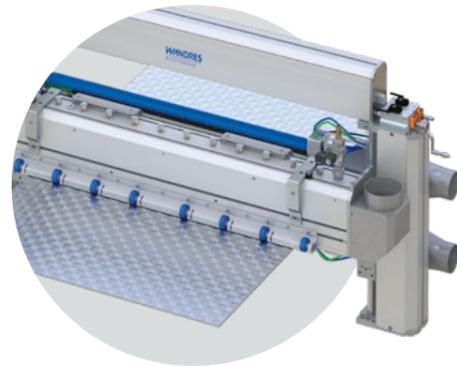
Laser-cut blanks

The Combi Sword Brush Una HZ-BB detaches particles that stick tenaciously to the edges of laser-cuts and delivers a convincing and consistently high quality cleaning performance in 24/7 production.



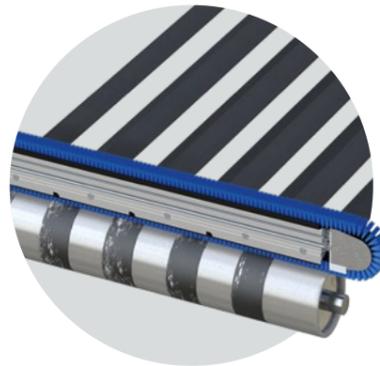
Electrical steel strip

Due to a slender footprint, the compact Combi Sword Brush Una XL can be easily integrated into existing production lines.



Textured sheet metal

The Tornado Channel utilises air technology to clean sanded and structured surfaces. Sanding dust is detached from the surface and then removed by vacuum extraction.



Conveyor belts

Sword Brushes prevent particles from being dragged along the line by wiping across the conveyor belt at right angles to the running direction of the belt.



/// Sanding particles, metal swarf or dust can instantly drive up costs during forming processes or levelling by causing quality issues, scrap or time consuming rework. Our compact cleaning systems are easily embedded in existing production lines.



Vehicle body shells and bumpers

Optimal cleaning of complex three-dimensional surfaces

The Robot Sword Brush Laura 160 cleans both convex and concave surfaces extremely effectively using a combination of air technology and a linear wiping technique. Rotating blower nozzles deliver an effective pre-cleaning process. The linear brush, which is mounted on a flexible buffer, adapts perfectly to curved surfaces and reliably removes the very finest particles.



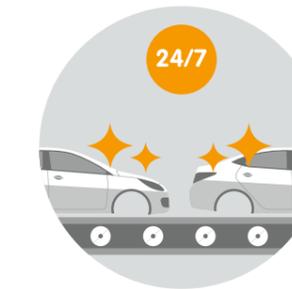
High First Pass Yield

Removing particles, fibres and dust prevents defects in the paintwork thereby avoiding costly rework.



Complex geometries

Flexible linear brushes combined with air technology clean the contours of modern vehicle bodies optimally.



Repeatable results

The continuous self-cleaning feature of the Sword Brush ensures consistent cleaning quality in 24/7 production processes.



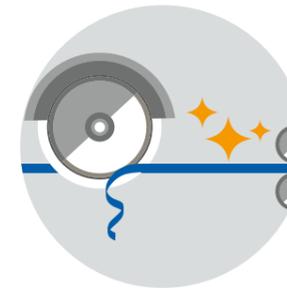
Fast cycle times

The dual design of the linear brush allows an increase in speed of movement without compromising on cleaning quality.



Paper, cartonboard, films and foils Effective cleaning of web-based materials at very high speeds

Web Sword Brushes remove dust and particles from fast moving web-fed materials in the paper, converting and packaging industries. A highly efficient and consistent cleaning performance safeguards quality in subsequent processes.



After edge trimming

Web Sword Brushes remove cutting debris and paper dust without a trace and at high feed speeds after longitudinal slitting.



Before foiling

Particles are a top concern during laminating, coating and bonding processes. Trapped particles cause defects on the web and must be removed reliably.



Before printing

Sword Brushes effectively remove even the finest particles that would otherwise lead to visible flaws in the print image.



Cleaning of rollers

A build-up of debris on rollers causes particles to be dragged onto the product surface. The non-stop cleaning process for rollers is a dependable solution.



Flat glass and automotive glass

Reliable brush cleaning technology for glass surfaces

During the manufacturing of high quality glass products, particles and dust can disrupt production and impact quality. Thanks to the effective inline cleaning of automotive glass, flat glass, solar glass or display glass, productivity is increased and production quality improved.



After destacking

Interleaving powder left clinging to the surface of the glass after destacking, clogs up the filters of washing machines. Sword Brushes offer energy efficient technology to remove this reliably.



After cutting / grinding

Made entirely of stainless steel, the Sword Brush Aqua effectively removes glass particles from wet glass surfaces. The wiping action of the brushes also has a pre-drying effect on surfaces.



Before printing

Sword Brushes reliably remove even the finest particles that would otherwise cause visible flaws during printing. Sheet glass can proceed to glass-printing applications immediately after cleaning.



Before video inspection

Sword Brushes eliminate microscopic contamination on glass surfaces highly efficiently and enable camera inspection systems to deliver accurate results without false positives.



Testing in real-world conditions

At our Technology Centre we can run tests using different cleaning systems on sample products supplied by our clients. The cleaning results are assessed on the spot using various procedures to evaluate cleaning efficacy. Panel-shaped flat surfaces as well as paper, film and foil blanks and products with three dimensional shapes can all be cleaned with a whole raft of test machines at our disposal. A modern 6-axis robot complete with a positioning track is lined up in our new technology hall to test the cleaning systems on OEM clients' bodies-in-white in close to real-world conditions.



Wandres Worldwide — International Sales and Service Support

We collaborate worldwide with an international network of distributors. Our sales and service partners will assist you in your own language with the planning and integration of new installations and offer on-site support with commissioning, servicing and maintenance. Our subsidiary company, the Wandres Corporation, produces machines for the American market and has managed service and sales in the USA since 1998. We created a subsidiary of our own in Shanghai in 2015 with responsibility for the market in Asia.



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