

Perfectly clean surfaces in the furniture and panel industry



Surface Cleaning Technology



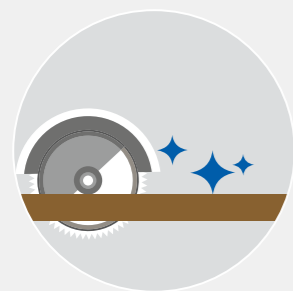
WANDRES
micro-cleaning

Effective surface cleaning for smooth production processes

Clean surfaces are key to achieving top-quality results in manufacturing. They are an integral step in ensuring production processes run smoothly. An effective cleaning procedure improves surface quality, reduces rejection rates and prevents expensive machine downtime. The compact and energy-efficient cleaning systems engineered by Wandres are easily integrated into existing production lines. They keep operations up and running 24/7 at multiple points along the production chain. Our low-maintenance Sword Brushes, along with

our highly effective Tornado Channels, deliver the best possible cleaning technology. They improve surface quality and achieve lasting increases in productivity, as well as dramatic savings in materials, energy and production costs. Irrespective of the type of surface, when it comes to furniture panels, chipboard, massive wood, MDF, HDF or plastic boards, panel flooring, sandwich panels with a composite structure or rigid foam boards, our flexible Combi Sword Brushes provide the ideal cleaning system for your application.

Watch video



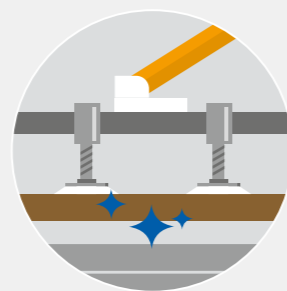
After machining

After drilling, milling, sawing or edge processing, chips, shavings and dust are removed effectively.



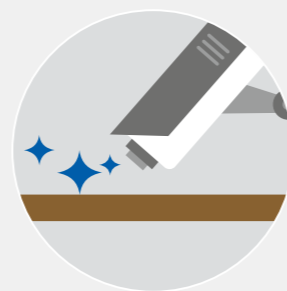
Before coating

A thorough removal of ultrafine particles prior to the final top coat application guarantees flawless surfaces.



Before stacking

Any particles clinging to the surface are removed without a trace thus avoiding scratches and surface defects.



Before inspection

Reliably prevents particle-related, false-positive defect detection at camera inspection.



/// 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 their remarkably low maintenance and operating costs.

High quality panels — from start to finish

Removing coarse shavings and ultrafine particles of sanding dust requires professional and innovative solutions. Sword Brushes always wipe crosswise to the direction of transport across the surface being cleaned. The filaments are lightly moistened with Ingromat® antistatic cleaning liquid to ensure that even ultrafine particles of dust are eliminated.

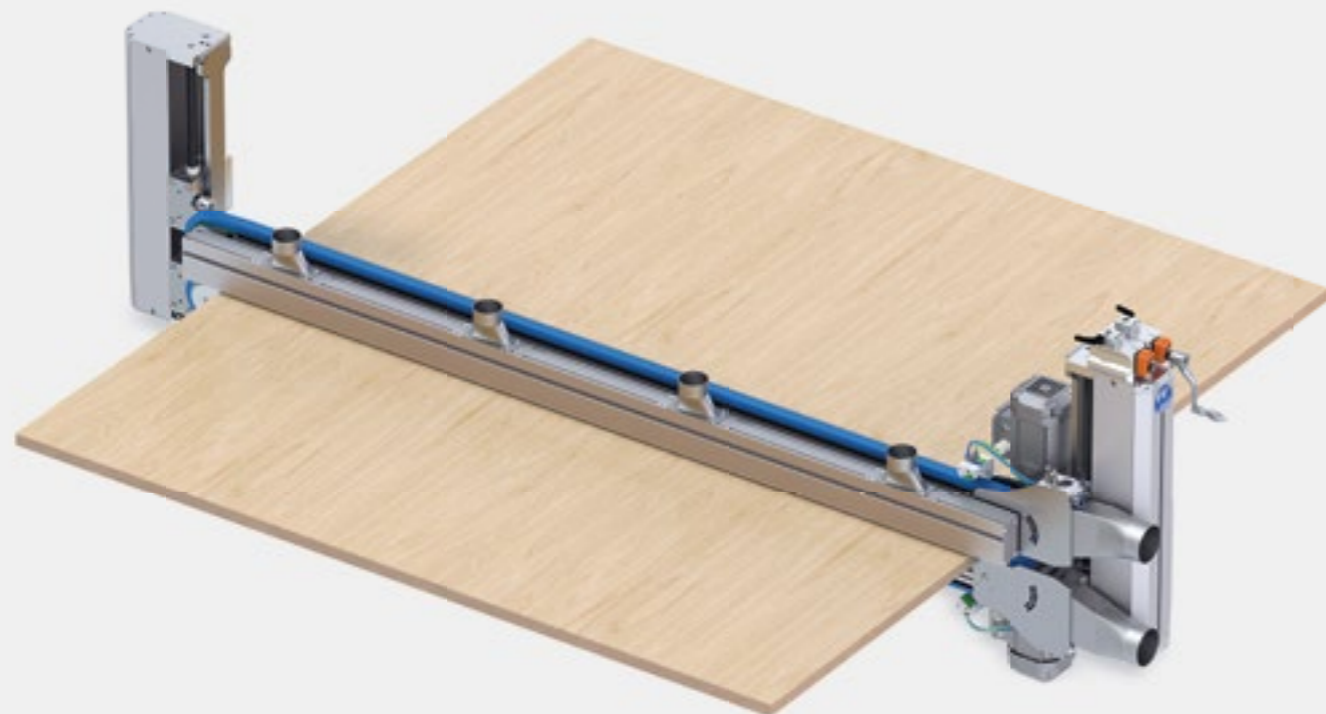
Due to forces of adhesion, particles cling to the micro-moistened filaments of the circulating linear brush and are propelled towards the self-cleaning unit. The particles are detached from the linear brush here and disposed of by vacuum extraction. The surface remains dry and can be painted or coated immediately.

After sawing / edge processing

Before stacking / packing / panel turner

Constant wiping force Una X 121 with Trans-Vac-Unit for pre-cleaning (optional)

The Trans-Vac-Unit TKL 46 is deployed initially after processes such as sawing to extract substantial quantities of coarse dust. This lightens the workload for the Sword Brushes that follow, effectively removing any remaining fine dust using the Ingromat® Method and cleaning the upper and lower surfaces of the panels efficiently.



Before priming / laminating / wrapping

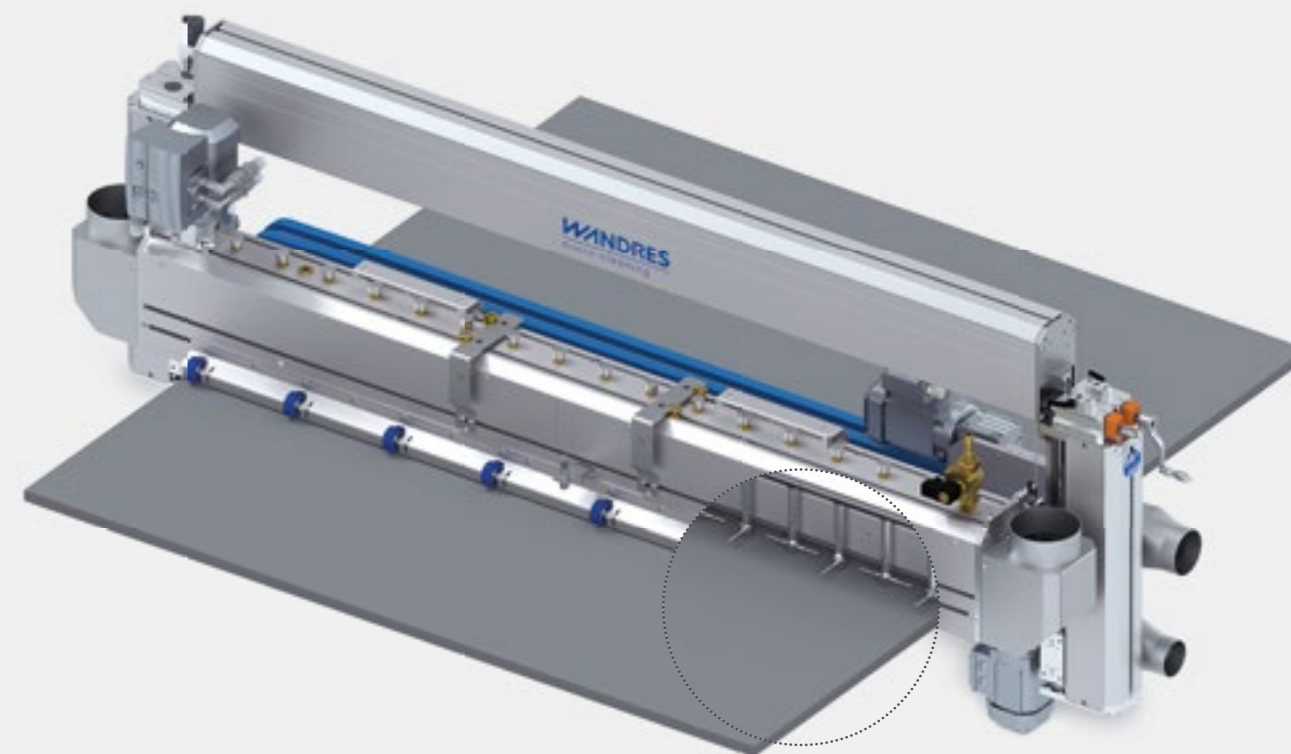
Powerful against dust Una H-ZL 521 with Power Sword Brush from above

Power Sword Brushes clean surfaces using twin linear brushes that run in parallel. They are therefore particularly effective at removing copious amounts of extremely fine dust. In most cases a standard Sword Brush will suffice to clean surfaces from below.

Before coating

Brilliant combination Una H-ZL 721 with contactless pre-cleaning

The Tornado Channel TKR 200 powerfully eliminates particles from sanding grooves by means of rotating compressed air nozzles. This pre-cleaning procedure is followed by precision cleaning using brush cleaning technology. One Power Sword Brush cleans from above while a standard Sword Brush cleans from below.





After drilling / CNC machining

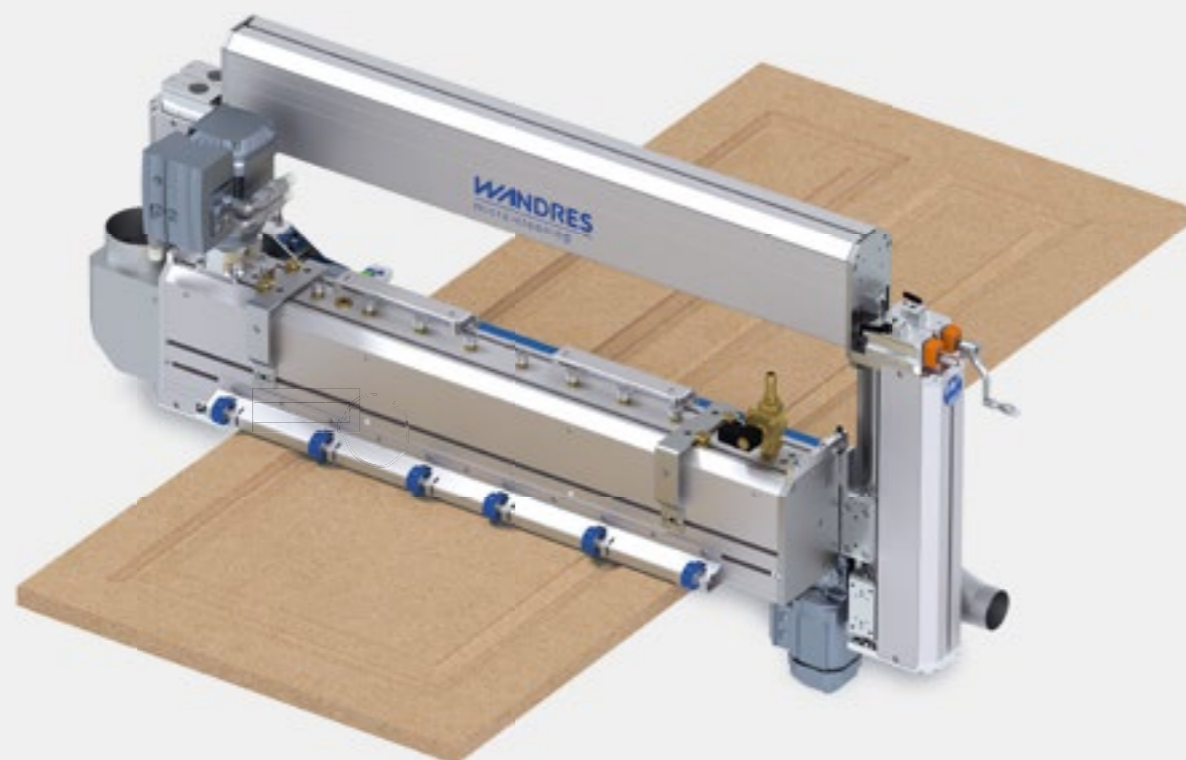
Thorough cleaning of drill holes Una H-X 421 / Power Nozzles

The Tornado Channel TKF 200 is equipped with Power Nozzles fitted across the entire width of the machine and featuring needs-based activation by means of valves. Powerful jets of compressed air drive particles and shavings out of drill holes. Subsequently, Sword Brushes deep clean the panel using the Ingromat® Method.

After CNC machining

For surfaces with profiles Una H-X 323 / Tornado Nozzles

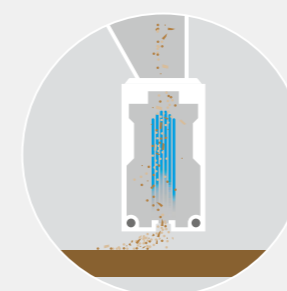
CNC machining leaves behind huge amounts of coarse and fine dust on surfaces and in recesses and grooves which need to be removed. Rotating Tornado Nozzles and powerful air technology perform pre-cleaning while Sword Brushes follow through with precision cleaning on both sides—an ideal combination of technology.



Contactless cleaning with innovative air technology

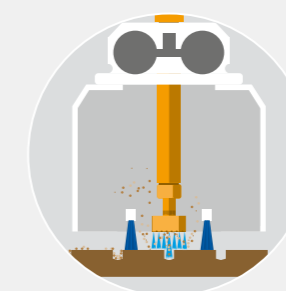
Our cleaning systems are engineered to offer the perfect solution for every cleaning application. This may involve single or double-sided cleaning, with or without air technology for flat, textured or porous surfaces and surfaces with profiles or panels with holes or grooves. Depending on the specific application, up to four cleaning machines can be combined on the height adjustment unit of a Combi Sword Brush.

The combination of air technology and brush cleaning technology in particular is ideal for many applications. In case of large deposits of dust and debris on surfaces, a pre-cleaning process using air technology removes particles from recesses and lightens the load for the Sword Brushes. Coarse particles are dealt with using non-contact vacuum extraction. Adhesive fine dust is removed perfectly with brush cleaning technology and the Ingromat® Method.



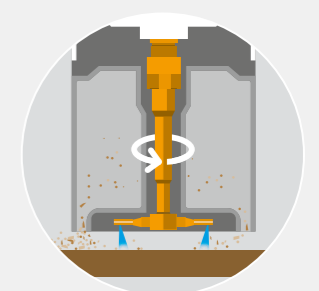
Trans-Vac-Unit

The Trans-Vac-Unit can be installed at the infeed to the Sword Brush as an effective pre-cleaning measure to tackle high concentrations of dust.



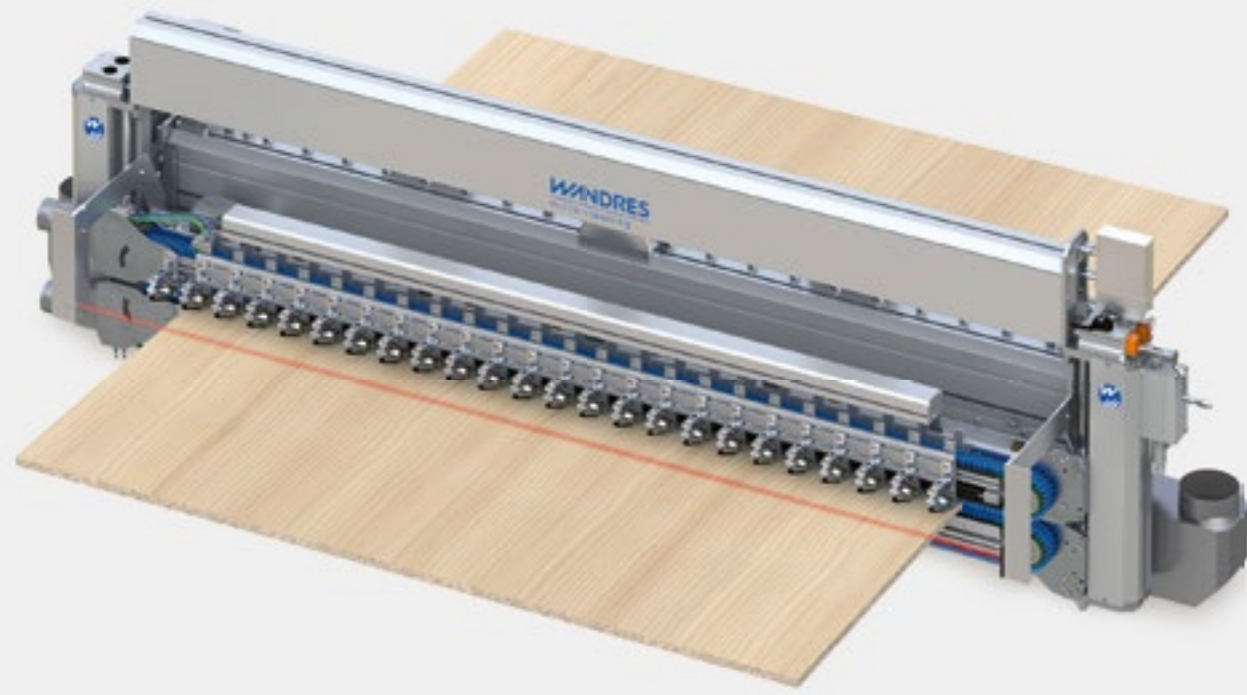
Power Nozzle

Power Nozzles blast high-impact jets of compressed air onto the panel surface and dislodge particles from drill holes and grooves.



Tornado Nozzle

Electrically driven Tornado Nozzles, spinning at high velocity, enable highly effective, contactless surface cleaning results.



After short cycle press / edge trimming

For coated chipboard Una H-XFT 621 with TSE

Sword Brushes remove edge strips and coarse fragments after trimming. The upper linear brush adapts perfectly to the surface thanks to the flexible pressure buffer and touch control elements TSE. The chipboard is then cleaned in a contactless process from above and below by Tornado Nozzles rotating at high speed.

Before stacking / during transport

Zero transfer of particles Sword Brush BIX 51

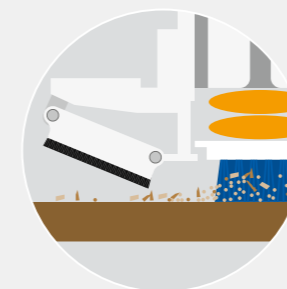
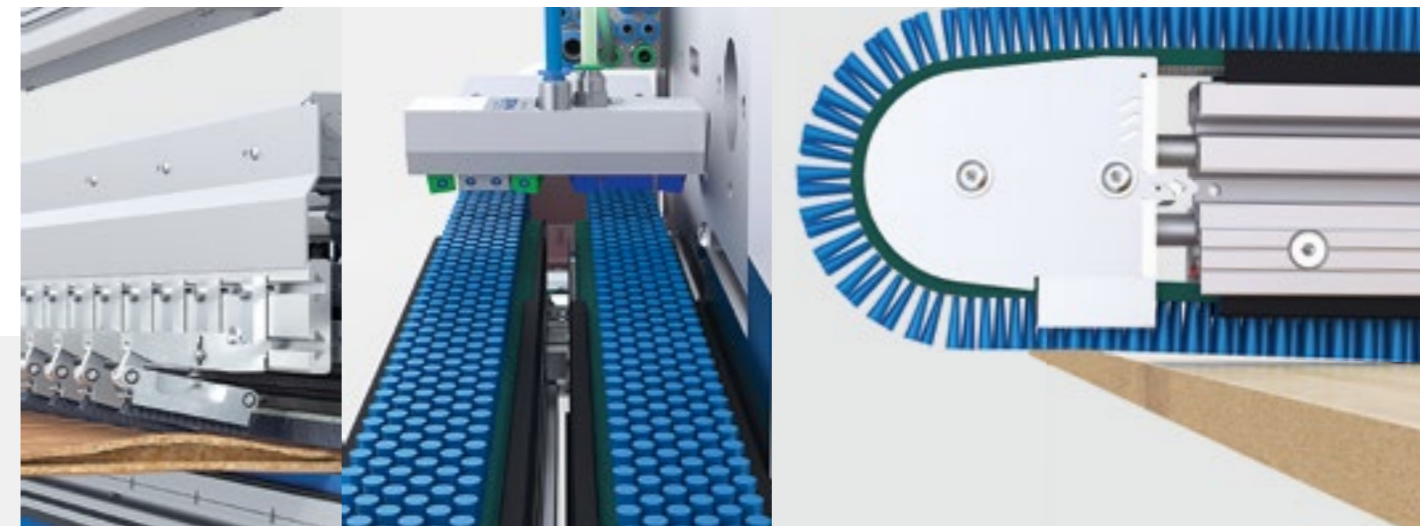
Contaminated conveying systems such as vacuum conveyor belts can cause surface defects and scratches on the panels. Continuous cleaning of the conveyor belts prevents particles from being dragged along the line and ensures the surface of the product remains flawless.



Clever technology for brush cleaning processes

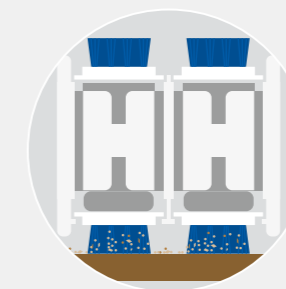
Over recent years Sword Brush technology has evolved through continuous innovation. An impressive range of cleaning systems can meet any kind of cleaning requirement in industrial production with the best possible solution. The Power Sword Brush, featuring two linear brushes and a reinforced self-cleaning function, was developed, for instance, to clean flooring panels. Laminate flooring carries high volumes of laminate dust and is transported at fast feed rates.

Chipboard, another example, may occasionally display blown areas or blisters after the short-cycle press due to a build up of thermal residual stress. Touch control elements were invented to prevent any collision and enable damaged chipboard to pass safely through the cleaning unit. A special feature was developed for panels with edge overhang or bevels whereby the linear brushes are raised on nearing the periphery, thus protecting the edges.



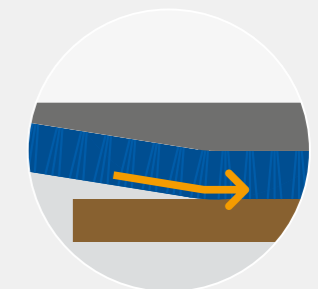
Touch control elements

The upper linear brush adapts perfectly to warped surfaces and is raised slightly to accommodate significant variations in height.



Power Sword Brushes

Twin linear brushes running in parallel clean panels extremely efficiently at high feed rates.



Lifting of the brushes

The linear brushes are lowered shortly after passing the edge and clean the entire surface by wiping in opposite directions.

Clean flooring panels all along the production chain

The processing of flooring panels creates enormous amounts of laminate dust, some of which has gathered high levels of electrostatic charge. Power Sword Brushes, featuring two linear brushes running in parallel and an enhanced self-cleaning function, completely eradicate this dust even at fast feed rates.

Longitudinal processing Una XL 121 with twice the power

The Power Sword Brush features twin linear brushes circulating in parallel and is therefore able to remove dust optimally from the panels at high feed rates and with twice the power.

Transverse processing Una H-X 125 cleans from above

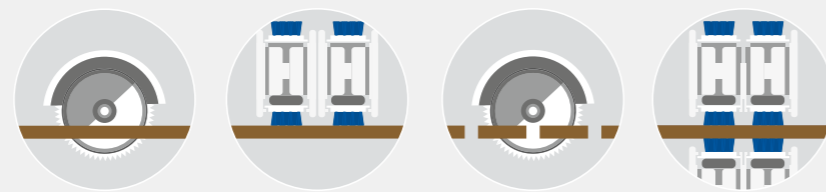
The Combi Sword Brush Una H-X 125 leverages two consecutive Sword Brushes to clean the surfaces of panels in transverse throughfeed perfectly, both before and after the panel turner.

Prevents false calls Una H-RL 316: air technology & brush cleaning technology

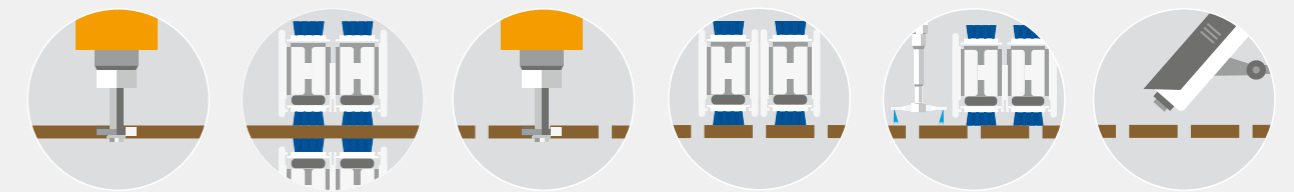
The Tornado Channel TKR 200 is ideal for the contactless pre-cleaning of textured surfaces and click parquet flooring. During precision cleaning, the linear brushes wipe in opposite directions and are lifted slightly on nearing the edges thus protecting the freshly lacquered bevels.



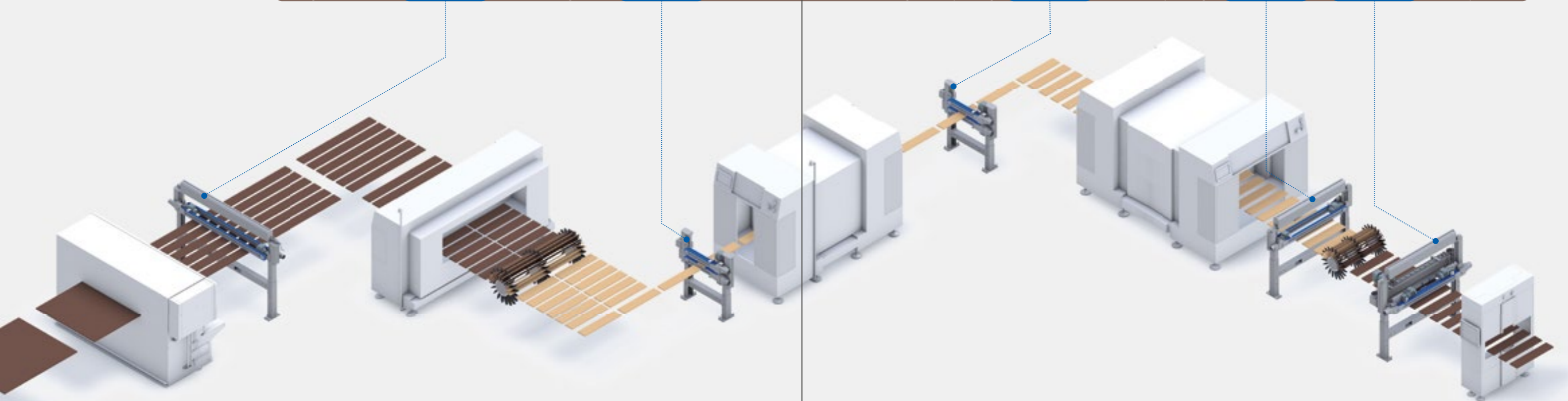
[View animation](#)



Longitudinal saw **Una H-X 125** Crosscutting saw **Una XL 121**



Longitudinal profiling **Una XL 121** Transverse profiling **Una H-X 125** **Una H-RL 316** Inspection

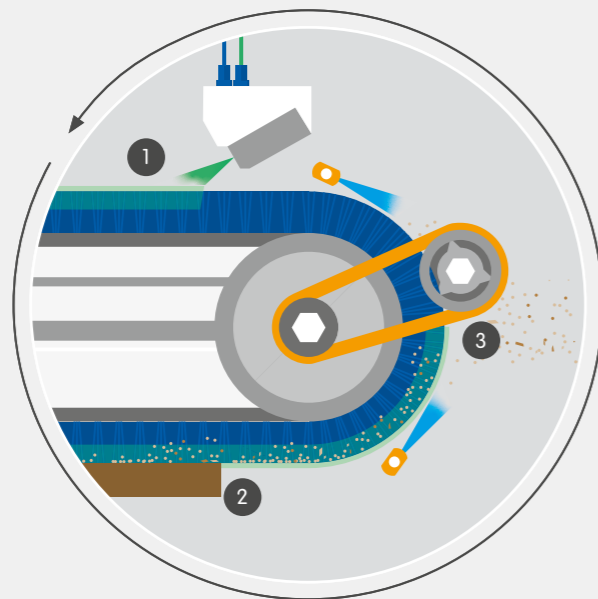


Innovative cleaning technology for continuous operations in production

Sword Brushes always wipe crosswise to the transport direction of the material being cleaned. The filament tips of the circulating linear brush are micro-moistened using the Ingromat® Method. An increase in adhesive forces causes particles to cling to the filaments. The particles are detached from the linear brush in a self-cleaning unit and disposed of by vacuum extraction. The linear brushes are flexibly bedded on a pressure buffer regulated by compressed air. The pressure buffer ensures a constant wiping force and consistent cleaning results. The linear brushes have an ultralong service life and are manufactured to the highest quality standards by our sister company Wandres Brush-Hitec in the Black Forest. The filaments can be engineered in

a highly specialised process with rounded tips to clean exceptionally scratch sensitive materials if required. Linear brushes featuring the Soft Touch option treat surfaces particularly gently. Up to four different cleaning machines can be mounted on the height adjustment unit of a Combi Sword Brush. The height of the Sword Brushes or Tornado Channel can be adjusted in parallel, either mechanically, electrically or pneumatically. Thanks to the modular design of Combi Sword Brushes, our cleaning systems offer flexible combinations for custom solutions. Precision cleaning using linear brushes can be enhanced by a pre-cleaning process involving air technology, for instance, to deliver the ultimate combination.

Ingromat® Method



1. Micro-moistening

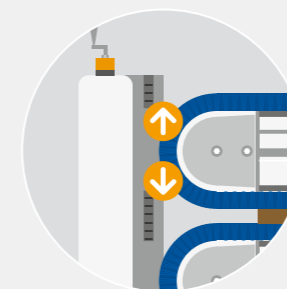
The Sprayer applies a thin film of Ingromat® antistatic cleaning liquid onto the filament tips.

2. Cleaning of the surface

Particles are bound to the micro-moistened filaments of the circulating linear brush and propelled towards a suction system.

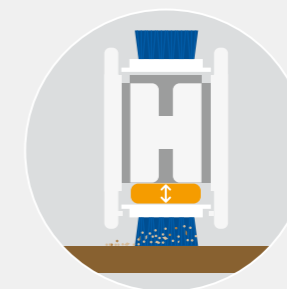
3. Self-cleaning

A rotating rack and compressed air nozzles detach particles from the filaments. They are removed by vacuum extraction and disposed of safely.



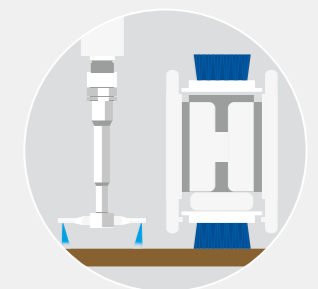
Height adjustment unit

The cleaning modules are easily adjusted to the thickness of the panels, or raised for maintenance, either manually or electrically.



Pressure buffer

A pneumatically regulated pressure buffer ensures the linear brushes exert exactly the right pressure and deliver a constant wiping force.



Air & brush cleaning technology

Combining non-contact air technology with precision cleaning using linear brushes is often the ideal solution and significantly improves efficiency.

A perfect surface reflects our image

We specialise in the development and manufacturing of cleaning systems for continuous operations in industrial production. Our client base is large and diverse as we operate across multiple sectors worldwide ranging from the furniture and panel industry to the automotive, sheet metal and electronics sector and the glass and converting industries. We collaborate with an international network of sales and service partners and have subsidiary companies in the USA and China. A team of over 140 employees develop, produce and market our innovative cleaning machines at our

production site which is located close to the city of Freiburg im Breisgau at the foot of the Black Forest. More than 80 % of the components for our machines are produced in-house here using cutting-edge machinery and technology. In-house production safeguards the long-term availability of replacement parts and guarantees flexibility. Insourcing also ensures the stringent quality standards of our cleaning systems are maintained. In an ever-changing world, we are constantly striving to find the best possible solutions to meet the cleaning demands of industrial production.



1981

Wandres GmbH micro-cleaning was originally founded by Claus G. Wandres as an engineering business.

140+

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

> 80 %

In-house manufacturing of parts offers flexibility and control. Insourcing secures short lead times and safeguards high quality standards.

approx. 1000

Sword Brushes in different versions are produced and supplied every year.

> 55 %

Rate of direct exports proves that Sword Brushes are in action globally.

43

Countries worldwide are home to our sales and service partners.



/// We have been developing and manufacturing cleaning systems for industrial production for over 40 years. At Wandres, the continuous improvement of our products is a priority.



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