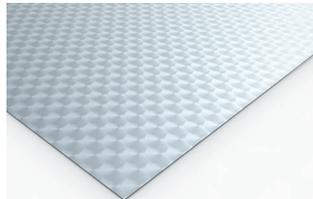
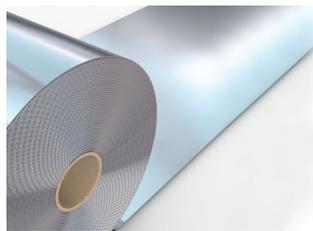
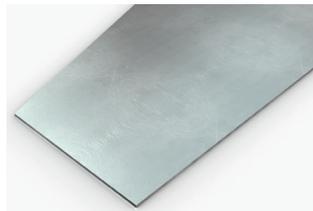


# Effective surface cleaning for blanks and coils

Sword Brushes deliver measurable cleanliness

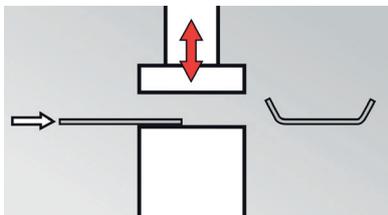


**WANDRES**  
micro-cleaning

# Convincing, effective solutions – Wandres provides for clean surfaces

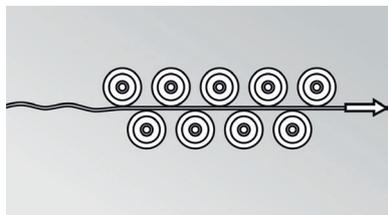


## Typical cleaning applications



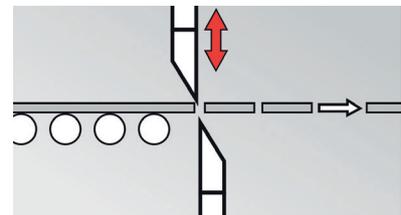
### Before transforming

In order to avoid particle-related damage, Sword Brushes remove these before the blanks are transformed.



### Before levelling

Dusts and particles on metal coils are removed before the levelling process.

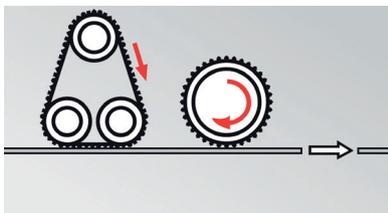


### After cutting, splitting, stamping

Cutting and stamping processes produce particles and tinsel-shaped contaminants. Sword Brushes effectively remove this type of debris.



During the production of high-end products, surfaces need to be dust-free. During the transforming procedure, minute particles and dust deposits may cause a loss in quality, lead to rejections and impose retouching works. Wandres cleaning systems reliably and efficiently clean subject surfaces. Due to their narrow footprint, they may easily be integrated into existing production lines.



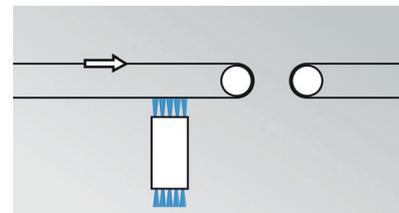
#### After sanding

Effective removal of sanding dust is essential for subsequent processes such as converting, lacquering or transforming.



#### After laser cutting

Sword Brushes drastically reduce the amount of minute dust particles that are produced during laser cutting.



#### During material transport

Sword Brushes clean rollers and conveyor belts to avoid adhesive particles being dragged along the production process.

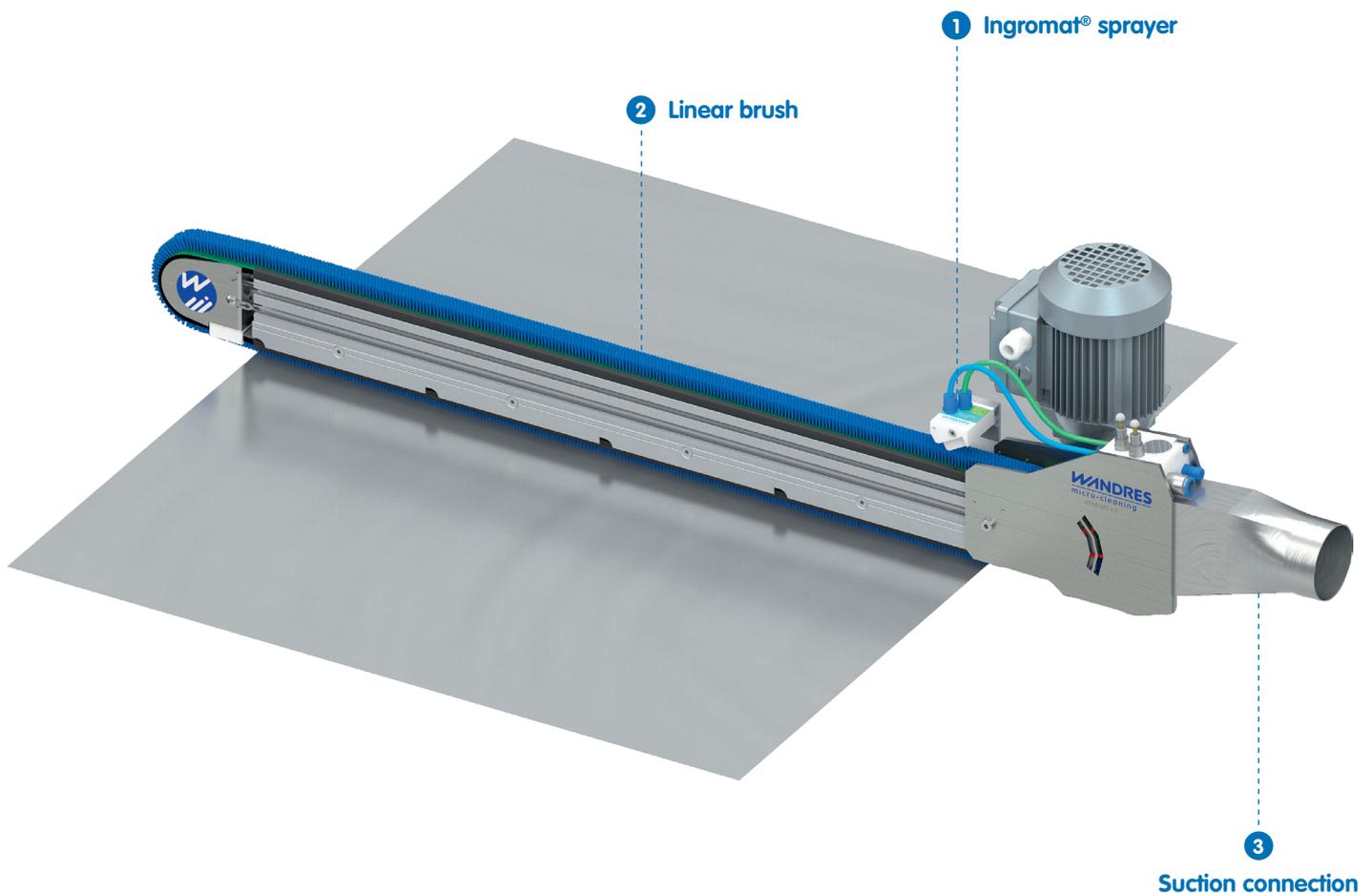
# Flexible, intelligent systems – Wandres thinks outside the box

Sword Brushes reliably remove dusts and minute particles from surfaces and are ideal for continuous operations within industrial productions.

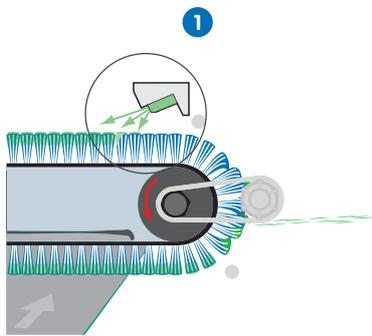
## Sword Brush technology

Sword Brushes always wipe transversally across the subject surface. Particles adhere to the brush filaments and are transported towards the suction connections at the deviation of the brush. Here, a roto-rack and compressed air nozzles will remove the particles from the brush so that they are disposed of by the suction system.

The Ingromat® system uses capillary attraction to bind particles to the micro-moistened brush filaments. Thus, even the most tiny dust particles are removed effectively whereas the subject surface itself remains dry during the cleaning process.

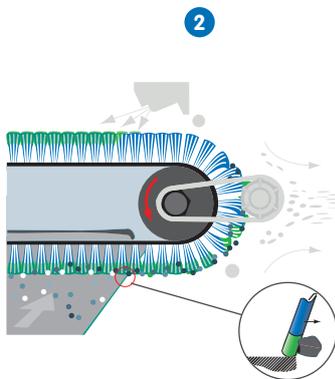


## Ingromat® system provides for optimal results



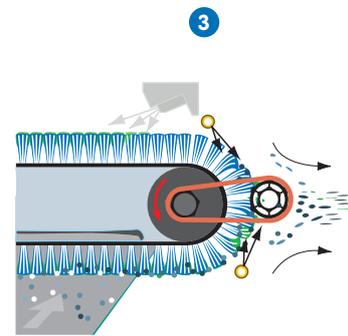
### Micro-moistening of linear brush with Ingromat®

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



### Cleaning of product surface

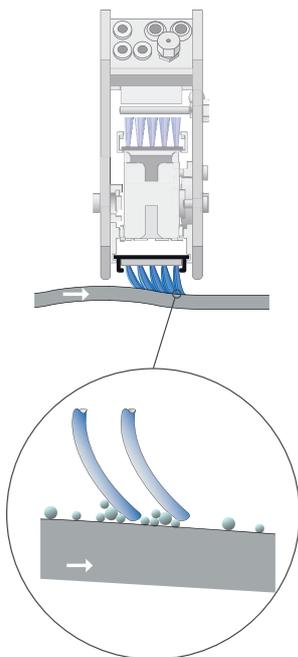
The linear brush wiper transversally across the surface. It binds particles to its micro-moistened filaments transporting them safely towards the suction system.



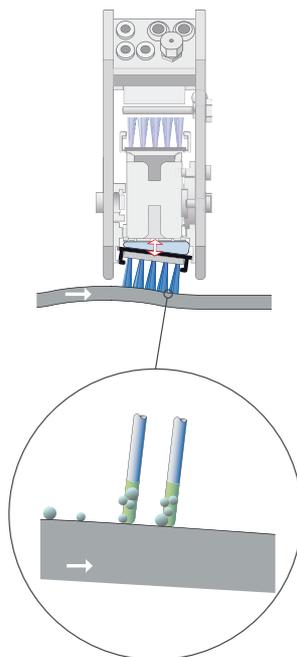
### Self-cleaning mechanism of linear brush

A rotating rack and compressed air nozzles provide for a constant cleaning mechanism of the filaments so that they can continue to absorb new particles.

## Pressure buffer exerts constant wiping pressure



Without pressure buffer



With pressure buffer

### Flexible bedding of linear brush

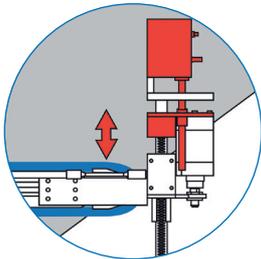
An integrated pressure buffer allows a flexible bedding of the contact area of the linear brush. The buffer is regulated via compressed air and will thus exert a constant wiping pressure onto even slightly uneven surfaces. Filaments thus pass the surface in a vertical position ensuring optimal cleaning results. Tailored blanks that have different thicknesses may also be cleaned effectively as the pressure buffer compensates these differences. The pressure buffer also ensures that blanks are safely transported through the cleaning process without any lateral displacements.

# Cleaning of blanks and body skin components

The Evomat® Cleaner cleans both dry lube aluminium blanks and oily steel blanks from above and below. All particles that cling to the surface are effectively removed before the blank enters the press. This avoids particle-related damage at the press tools or to the blank itself.

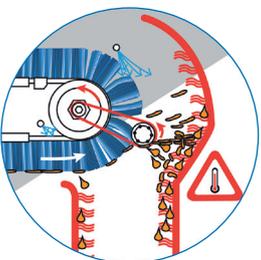
Due to its compact design, the Evomat® cleaning machine may easily be integrated into existing press lines. Clients may switch from aluminium blanks to steel blanks and back due to a self-cleaning mechanism that uses the Ingromat® liquid.

Surplus hot melt lubricants will be separated thermally by the brush filaments at the self-cleaning mechanism and eliminated via a cyclone separator. The Evomat® is mounted on a trolley with an oil pan and may be removed from the production line for maintenance purposes.



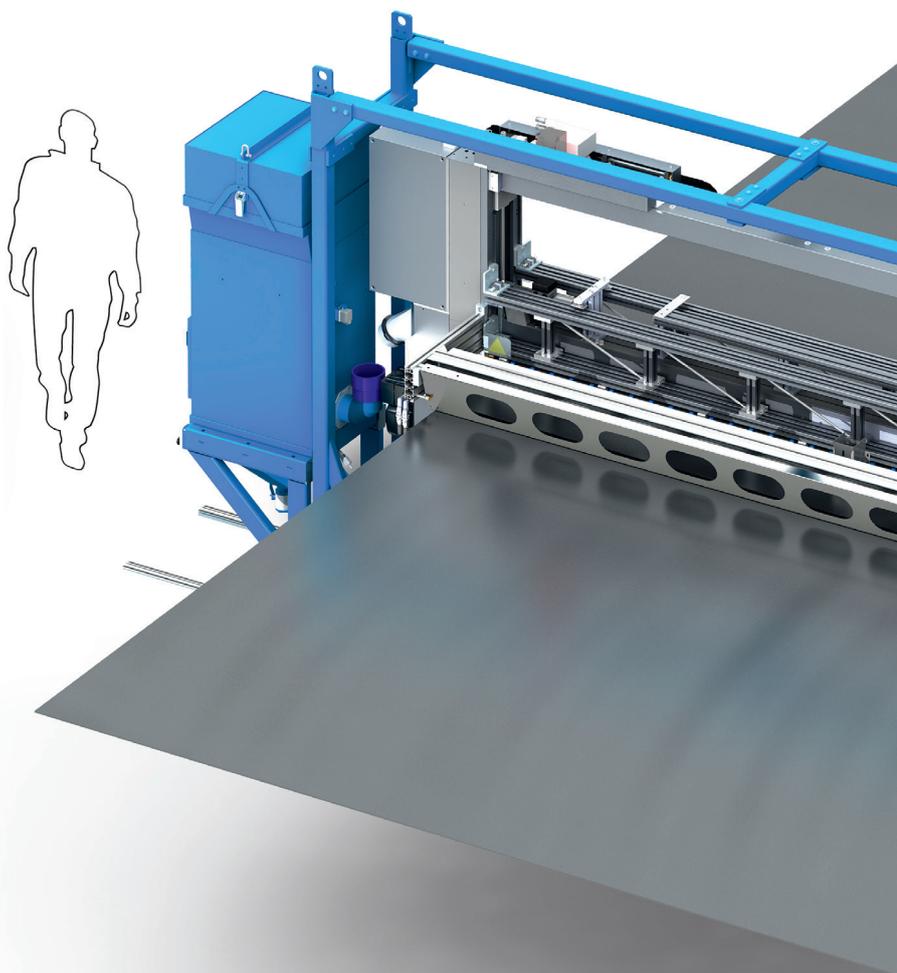
## Easy maintenance

For maintenance purposes, Sword Brushes may be adjusted electrically in their vertical position.



## Thermal self-cleaning mechanism

At the self-cleaning area of the linear brushes, hot melt lubricants are thermally separated from the brush filaments and eliminated by a cyclone separator.



### Advantages over washing machines:

High-end constant cleaning quality

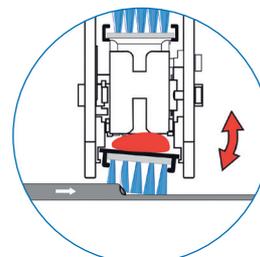
No damage caused by nip rollers

No elaborate drying process

No water treatment

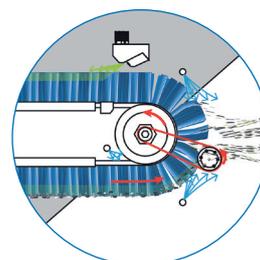
Low cleaning agent consumption

Low energy requirement



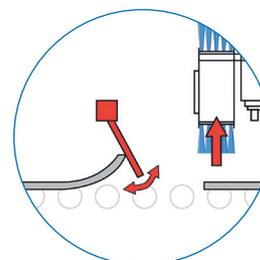
### Different blank thicknesses

The pressure buffer provides for a constant pressure of the brush filaments on the surface and ensures safe transport of the blank through the cleaning process.



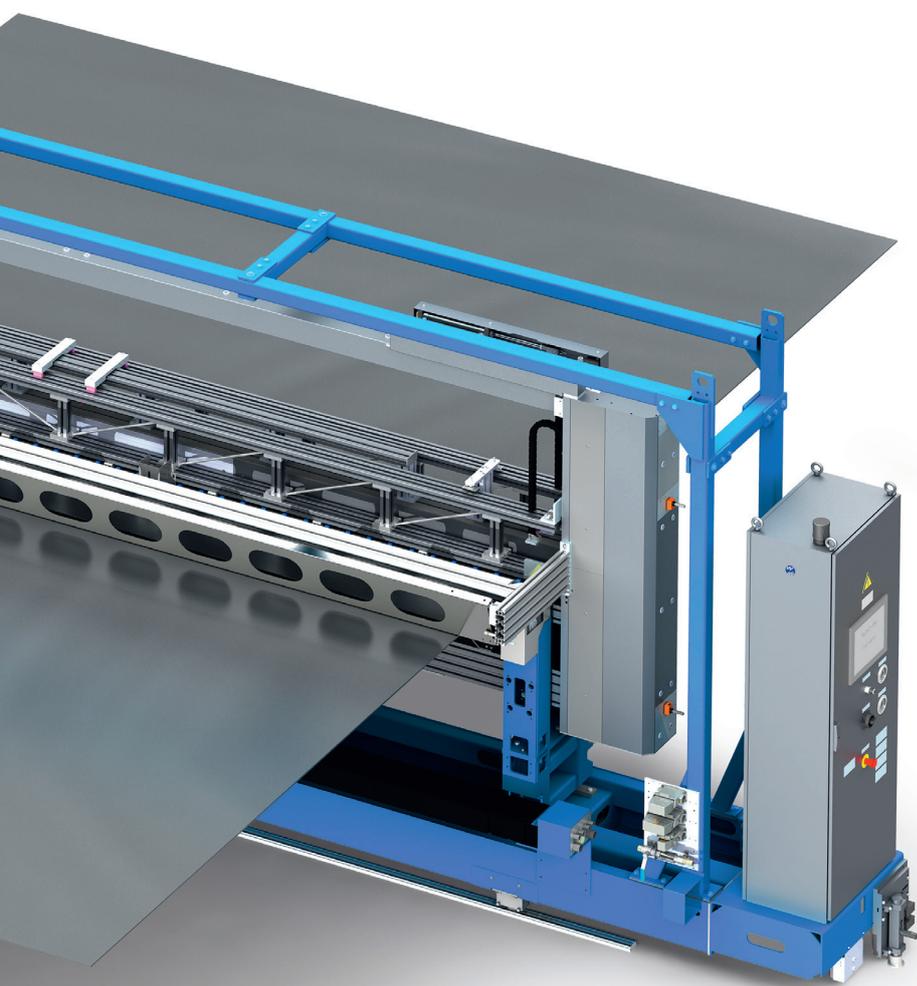
### Switching between aluminium and steel blanks

The self-cleaning mechanism of the linear brush permits switching between aluminium and steel blanks.



### Crash recognition

If there is a crash situation (e.g. a damaged blank), the mechanical seesaw will be triggered. Pneumatic cylinders will promptly propel the upper Sword Brush into a safe position.

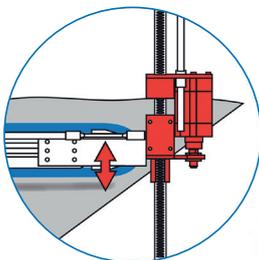


# Cleaning of endless materials and coils

The Cevomat® Cleaner is ideal for cleaning endless materials from above and from below. Cleaning takes place before rollers, before the leveller or before applying a protective foil. This compact cleaning machine may also effectively clean wavy and sharp-edged metal strips.

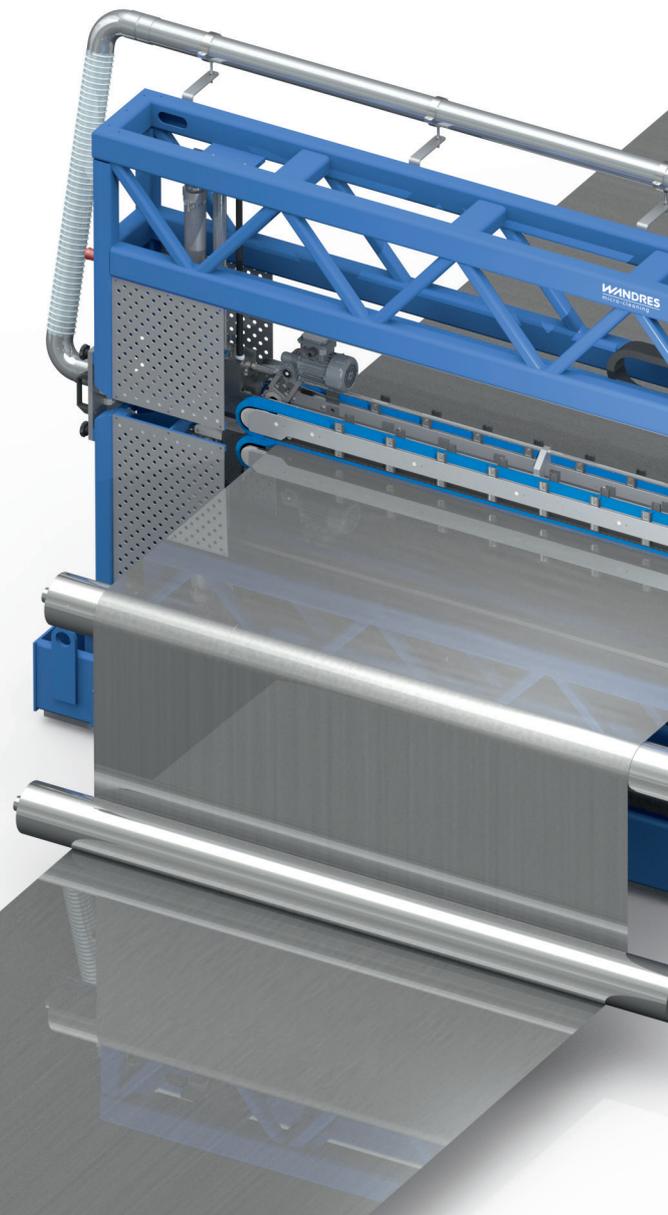
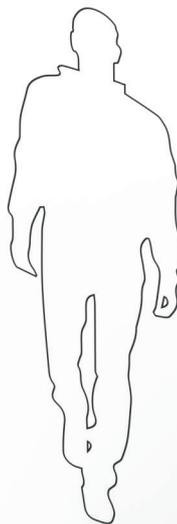
The system consists of 4 Sword Brushes that are normally surrounded by a c-shaped protective frame. Linear brushes are mounted on flexible pressure buffers, allowing them to adapt to the wavy surface of the metal strip. At the strip's edges, the linear brushes are lifted so that they are not sheared off at the sharp material's edges (razor blade effect).

The offset positioning of the Sword Brushes ensures that the entire width of the material is cleaned from the centre to the edges. If the Cevomat® is equipped with a trolley, it may be taken out of the production line for maintenance purposes.



## Rapid coil change

The Sword Brushes may be rapidly removed from the coil by activating a pneumatic stroke. The difficult transition area between the end of the old coil and the beginning of the new coil may thus pass the Cevomat® machine without damage occurring.



## Advantages:

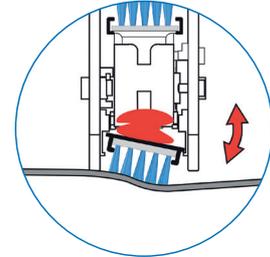
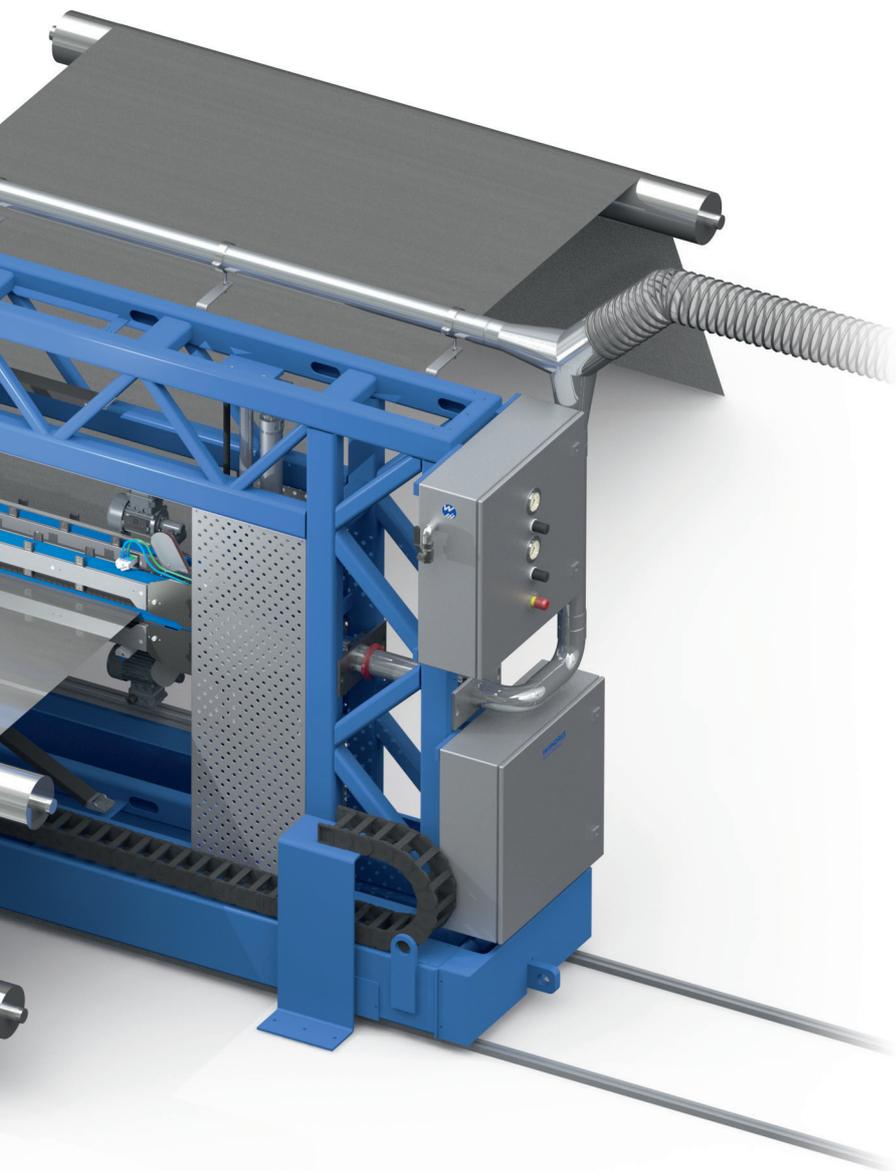
Constant, reliable cleaning quality even at high production speeds of up to 800 m/min

Suitable for steel and aluminium materials

Narrow footprint

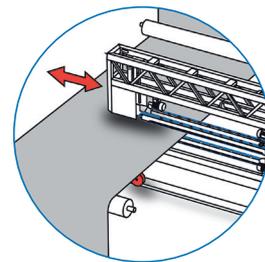
Suitable also for conti facilities

Low energy requirement



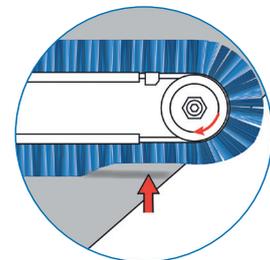
### Wavy surfaces

The flexible pressure buffer allows the linear brush to adapt to the surface and provides constant wiping pressure.



### Easy maintenance for continuous process applications

If the machine has a C-shaped protective frame, the Cevomax® may also be taken out of the line while a metal strip is being processed.

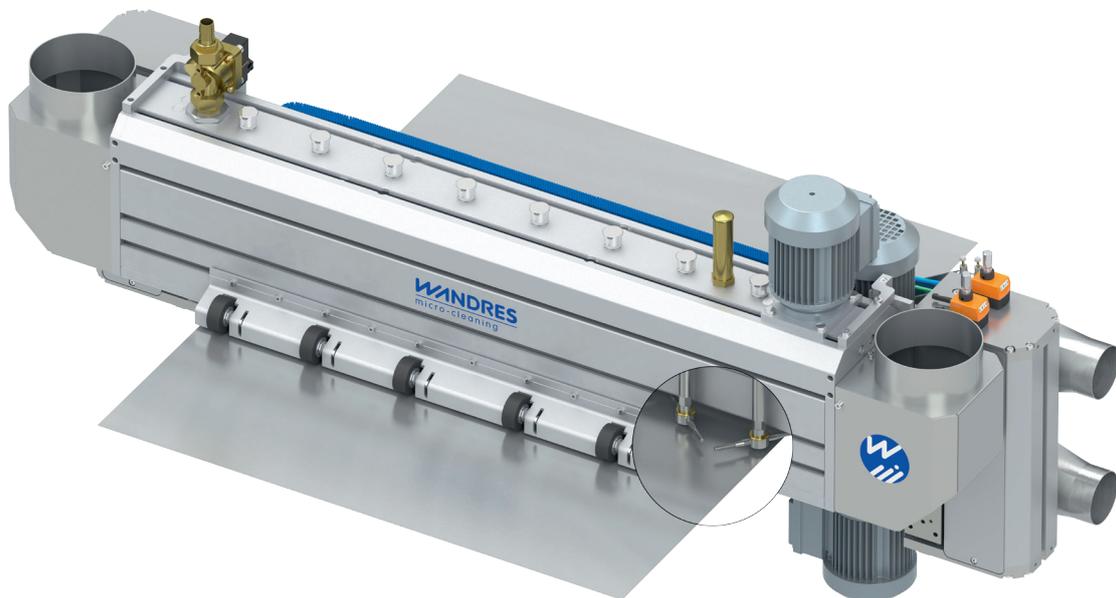


### Sharp edges

The linear brushes will touch the surface only after having passed the material's sharp edges. The offset positioning of the 4 Sword Brushes ensures that the entire width of the material is cleaned from the centre to the edges.

# Cleaning after sanding

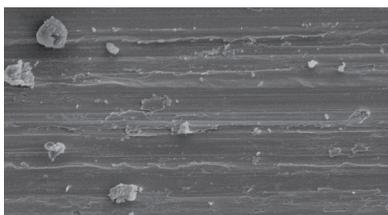
The sanding of metal surfaces produces large quantities of fine dusts that are hard to remove. Combi Sword Brushes are ideal for cleaning surfaces of this type unilaterally or from above and from below. The well-proven Ingromat® system makes use of capillary adhesive forces to effectively remove even the very tiniest particles.



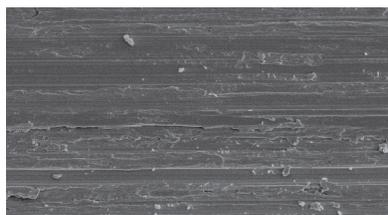
## Brushes and air-assisted cleaning Combi Sword Brush Una X 321..

The Combi Sword Brush Una X 321 combines both features: Linear brushes and air-assisted cleaning elements. At the infeed of this compact cleaning system there is a Tornado Channel. Electrically driven Tornado nozzles rotate at speed levels above the speed of sound thus providing for an effective pre-cleaning process. At the outfeed, the Sword Brush will remove the fine dust particles from the surface.

## SEM pictures with a magnification of one thousand times



Sanded stainless steel surface before cleaning



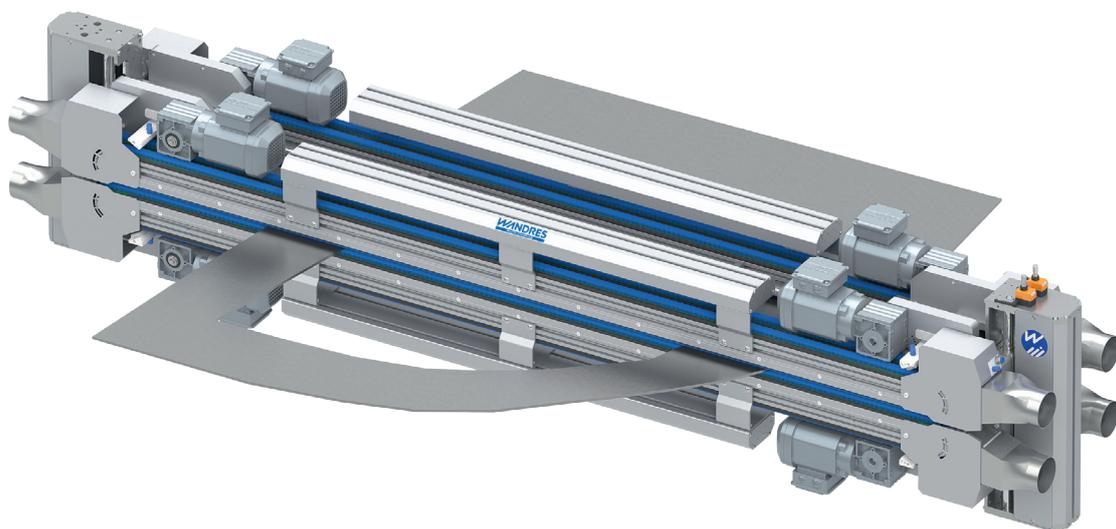
Result after air-assisted cleaning with Tornado Channel TKR 200



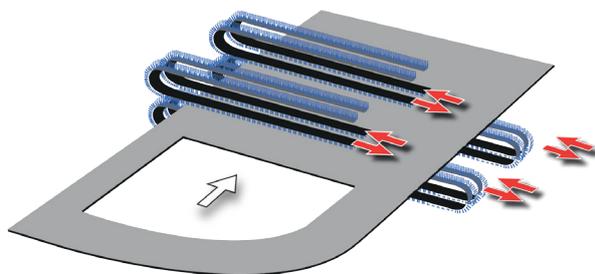
Result after cleaning with Combi Sword Brush Una X 321 (brushes and Tornado Channel)

# Cleaning after laser cutting

Laser cutting produces very fine particles at the cutting edges that will lead to interference during subsequent processes. The Combi Sword Brush Una RL.. is a compact cleaning machine consisting of 4 Sword Brushes which clean metal surfaces from above and from below.



Combi Sword Brushes Una RL 145.. and Una RL 146..



## Cleaning efficiency

4 Sword Brushes wipe right across the blank. Each of them has two linear brushes that wipe in opposite directions. Both the upper and the lower surfaces will thus be cleaned 4 times with linear brushes. The opposite movements of the brushes will cancel out their wiping forces. At the same time, this configuration yields a high cleaning efficiency. With machine Una RL 146.., linear brushes are lifted at the material's edges and will only touch the blank's surface after having passed its sharp edges. This will prolong the industrial life of the linear brushes. The opposite directions of the wiping action will ensure that the entire surface is cleaned nonetheless.

# Proven technology and reliability – Wandres convinces with practical solutions



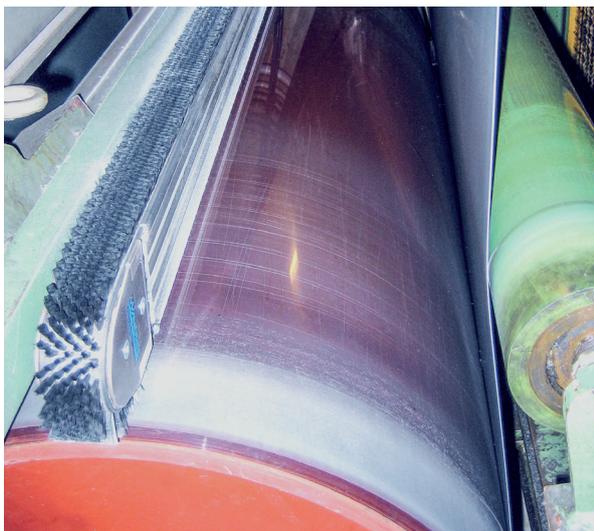
## Cleaning stainless steel surfaces

A Sword Brush removes dust and small particles after the sanding of stainless steel surfaces. Clean surfaces are an important prerequisite for the subsequent production process.



## Cleaning of metallic webs

With its narrow footprint, the Combi Sword Brush may easily be integrated into existing production lines where it effectively cleans the product's surface from above and from below.



## Cleaning of rollers

A Sword Brush removes dust and fine particles from rollers or deviation rollers. Contaminating particles will no longer be dragged along the production line.



## Cleaning of motor vehicle blanks

Double-sided cleaning of motor vehicle blanks with an Evomat Cleaner before transforming within a fully automated press plant.

## Client references



AESCULAP



**ALLGAIER**  
Allgaier-Group

amtec



**BLANCO**



B/S/H/



DAIMLER



**GÜDEL**



posco



salvagnini



**TOWER**  
AUTOMOTIVE



voestalpine  
EINEN SCHRITT VORAUSS.



# Skilled and successful – Wandres produces high quality



Product development, 3D-CAD design



Production with modern CNC machines



Pre-assembly under Clean Room conditions



Final assembly, quality control

The company Wandres GmbH micro-cleaning was founded in 1981. Ever since, it has been designing and producing reliable cleaning systems for continuous operations in industrial production environments. The systems require very little maintenance. Among Wandres' clients, there are international corporations as well as sound medium-sized companies. They are active in a wide variety of industries such as in the furniture, packing and automobile industries as well as in the paper, printing, glass and electronics industries.



Robot assisted cleaning of three-dimensional surfaces e.g. car bodies.



Cleaning of endless materials e.g. webs, coils, foils.



Cleaning of flat materials e.g. flat glass, plastic or furniture panels

### Quality and efficiency

More than 100 motivated employees, modern machines, a high level of vertical integration and elaborate control mechanisms provide for high quality products. Wandres' products are used for continuous operations and have a long industrial life and efficiency even in very harsh production environments.

Wandres has a technical centre where cleaning tests can be performed. During the tests, visitors will experience the efficiency of the machines produced by Wandres.

### Wandres worldwide

- Wandres GmbH micro-cleaning:  
Founded in 1981. Headquarters in Buchenbach-Wagensteig (Black Forest) near Freiburg in Germany. Research and development, technical centre for cleaning tests, in-house production of all know-how parts, assembly, service, quality control
- Wandres Corporation:  
Founded in 1998. Assembly, sales and marketing of Wandres' cleaning systems within the American market
- Wandres Brush-Hitec GmbH:  
Founded in 2004. Design and manufacturing of linear brushes and Ingromat®
- Wandres Cleaning machinery (Shanghai) Co., Ltd.:  
2014: Establishment of a Wandres subsidiary in China



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