

1 After unreeling, the electrical steel strip needs to be cleaned.

2 The Ingromat process consists of three steps: (1) micro-moistening of the filaments, (2) cleaning of the product surface, (3) self-cleaning with roto-rack and compressed air nozzles.



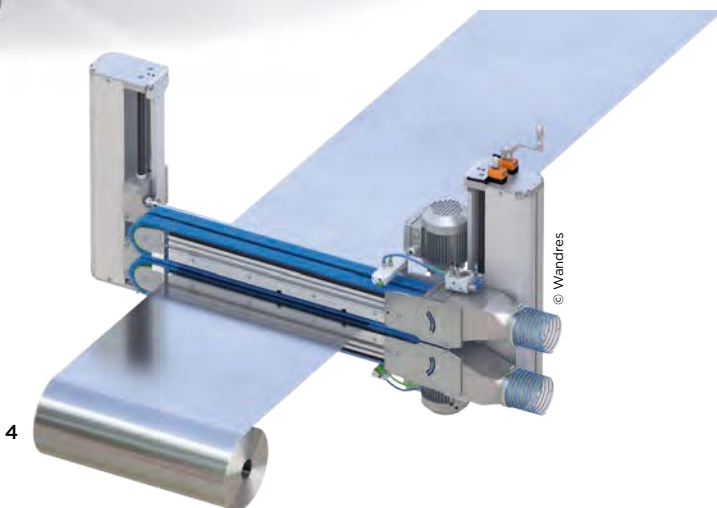
Cleaning electrical steel strip prevents short circuit in electric motor

CLEANLINESS IS PARTICULARLY IMPORTANT in the manufacture of rotors and stators from electrical sheet. Particles can damage the insulation layer and cause short circuits. To clean the steel strip from both sides before levelling, the Sword Brush technology from Wandres has proven to be very effective. It guarantees a consistently high cleaning performance in continuous operation and enables a stable and error-free production process.



3 The rotor of an electric motor consists of stacked electrical sheet.

4 The Una XL Combi Sword Brush cleans the electric strip even at high throughput speeds.



In the electric motor, the rotor and stator are the power-generating components. The actual power transmission takes place between them when a magnetic field is generated in the stator. To prevent eddy currents and increase the efficiency of the motor, the magnetic cores are not made of solid material but of thin sheets stacked on top of each other.

Electrical sheet: material for the future of electromobility

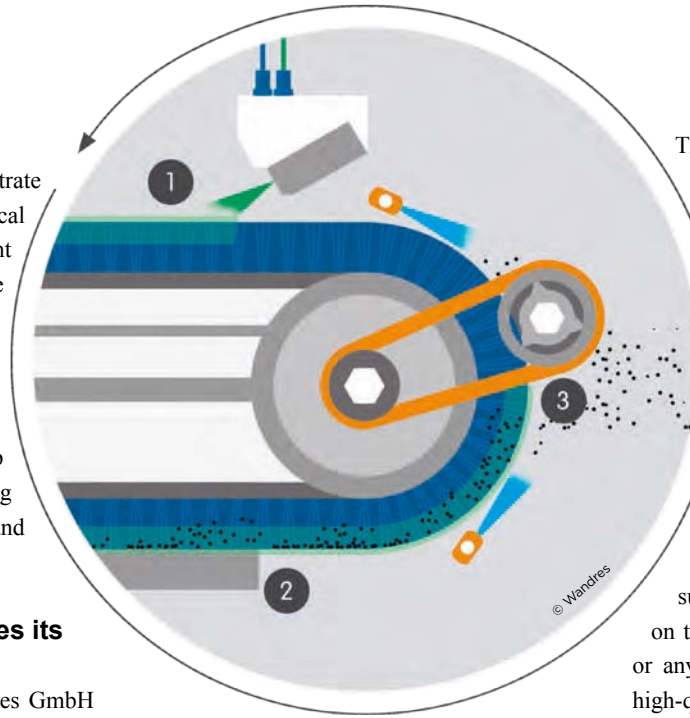
The electrical sheet, or rather the electrical steel used for it, is an alloy of silicon and iron and has a thickness of about 0.1 to 1 millimeter. For insulation and better punchability, various coatings are applied to the strip in thicknesses of 1 to 4 µm. Laminations are punched or cut from electrical steel strip and then joined to form a rotor or stator package. The electromagnetic properties of the material have an important influence on the behavior of the rotor and stator and on the energy consumption of the motor.

Strip cleaning before levelling reduces production costs

Metallic particles on the surface can penetrate the thin insulation layer on the electrical sheet, causing a short circuit. To prevent this, the electrical steel strip must be cleaned very thoroughly before processing. Particles also damage the rollers of the leveler and accumulate in transport units, where they have to be removed manually in a laborious process. Strip cleaning from both sides before entering the leveler prevents these disturbances and permanently reduces production costs.

Sword Brush Technology proves its worth in practice

Combi Sword Brushes from the Wandres GmbH micro-cleaning have a small footprint and can therefore be integrated into the production line in a space-saving manner. The Sword Brushes that are attached to an adjustment unit wipe transversely



The filaments are micro-moistened with the Ingromat® cleaning agent to increase adhesive forces. This reliably removes even the smallest particles from the surface. In the self-cleaning unit, the particles are removed from the filaments with squeegees and compressed air nozzles and sucked off. This prevents recontamination and guarantees a consistently high cleaning performance even in long-term operation.

to the transport direction. For higher throughput speeds of approx. 100 m/min, the Una XL Combi Sword Brush featuring two linear brushes is used.

The brush belt is mounted flexibly on a pressure buffer. This ensures a constant pressure on the surface and compensates for fluctuations or any waviness within a range of ±2 mm. The high-quality linear brushes usually only need to be replaced as part of the annual service. Wandres cleaning units have already proven their worth at the plants of numerous manufacturers allowing them to have efficient, fault-free production processes.

www.wandres.com

advertisement