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ELECTROSTATIC COATING SYSTEM

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Helping You with Downstream Optimization

While aluminum and steel producers focus on achieving CO2-neutral metals through improved core production processes, our mission is to help extend this efficiency to all downstream processes.

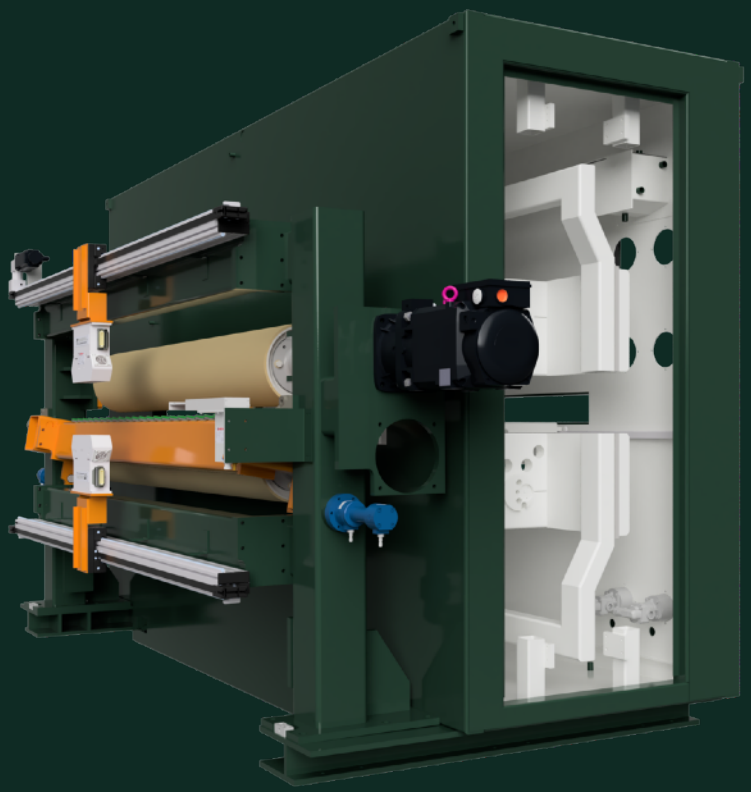
Developed in partnership with Amepa, our innovative coating system consolidates electrostatic spraying, homogenization, and film measurement into a single, streamlined solution. This integration reduces waste, enhances efficiency, and improves product quality, making it easier for manufacturers to produce high-quality, CO2-neutral steel and aluminum.

The modular design of our new system ensures it fits seamlessly into existing operations while remaining adaptable to future technological advancements. This versatility allows our customers to continuously improve their processes without extensive overhauls.

By choosing Limax, you are investing in a solution that prioritizes sustainability and operational excellence. Our system supports your production goals while contributing to the global effort to reduce environmental impact. Together, we can redefine the standards of industrial coating and build a future that is clean, green, and prosperous.

Cedric Maresch
General Manager Limax

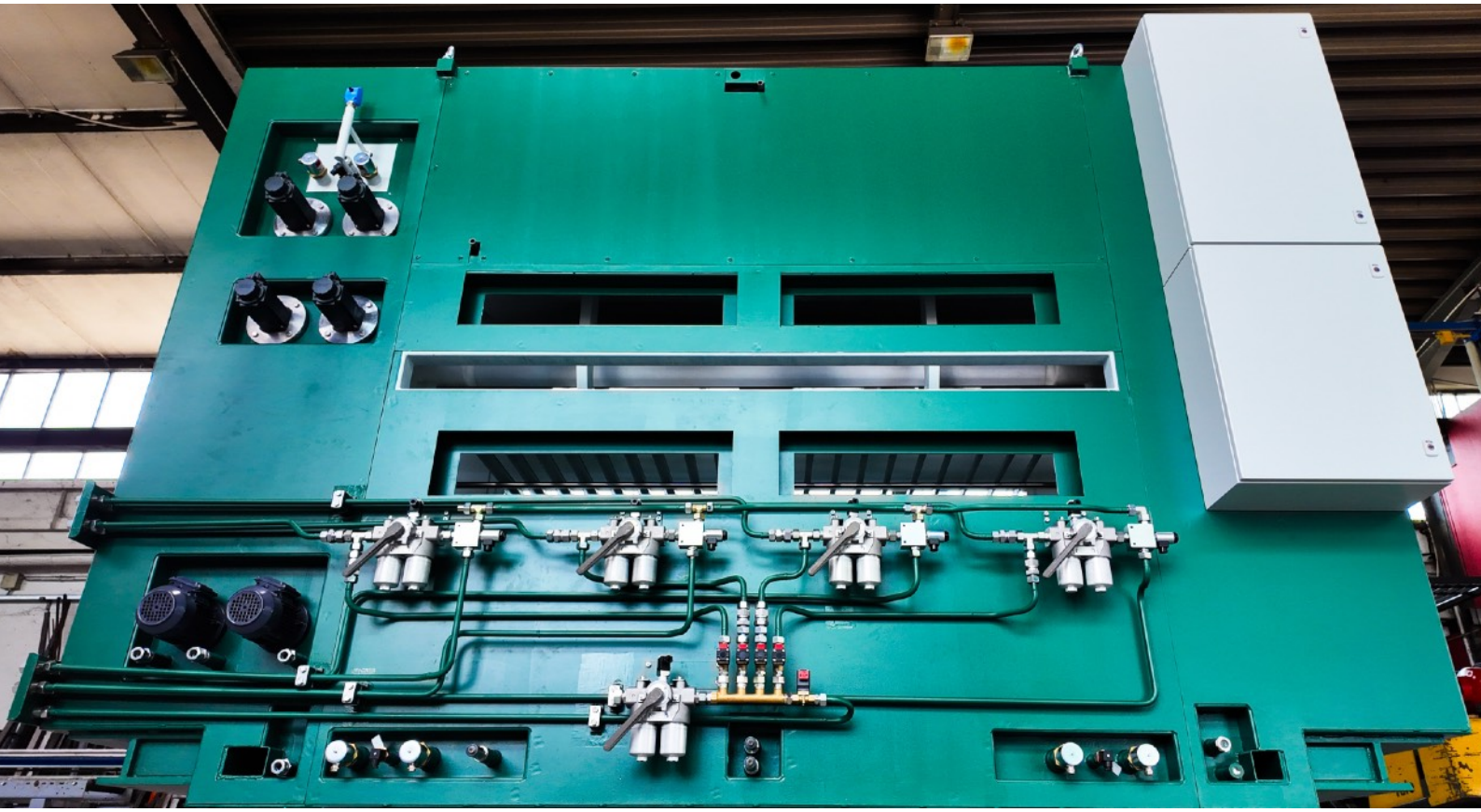
Our Modular Coating Solution



Innovating for a Sustainable Future

At Limax, we are dedicated to creating innovative solutions that enhance industrial efficiency while promoting environmental sustainability. Our new Electrostatic Oiling System embodies this commitment, offering a cutting-edge, modular design that meets the diverse needs of steel and aluminum producers. This advanced system integrates various components, ensuring precise and efficient oil application.

The modular design allows for easy customization and scalability, while real-time oil film measurement ensures consistent quality and reduces the risk of defects. The differential dosing system provides precise oil control, minimizing waste and optimizing resource usage. Additionally, the smart maintenance features extend the lifespan of the equipment and enhance overall productivity. By integrating these advanced technologies, the Electrostatic Oiling System not only supports CO2-neutral production but also drives cost-efficiency and operational excellence. Join us in redefining industrial coating standards.

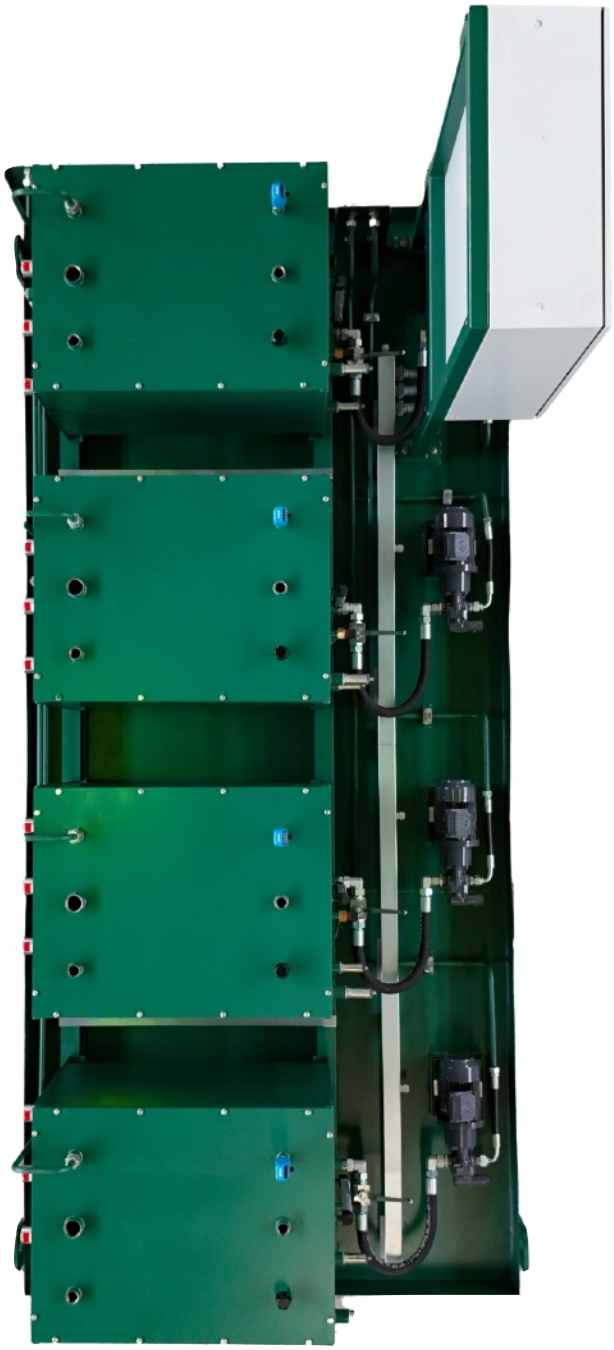


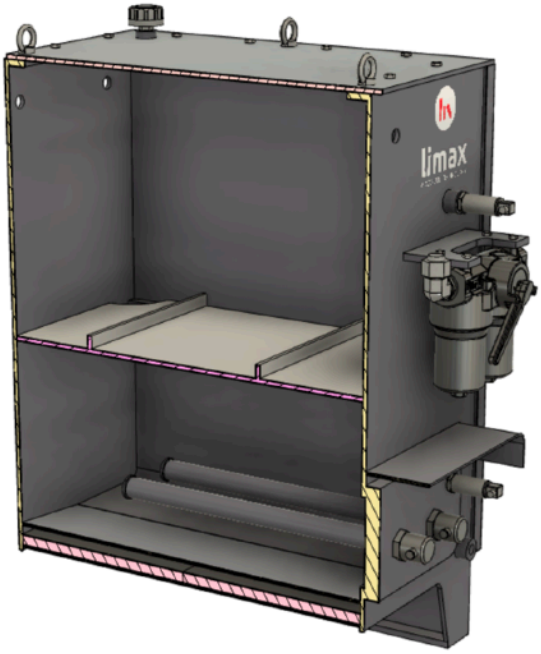
OIL PREPARATION

Our TANK STATION ensures optimal performance and environmental protection. Customizable tanks are tailored to your needs and placed on an oil pan to prevent leaks. Each tank features integrated heating and safety systems, maintaining the oil at process temperature and preventing overfilling.

We also offer solutions for interfacing with your main oil supply, enabling maximum automation and seamless integration.

This comprehensive approach enhances efficiency and sustainability, making the Tank Station a critical component of the Limax system.



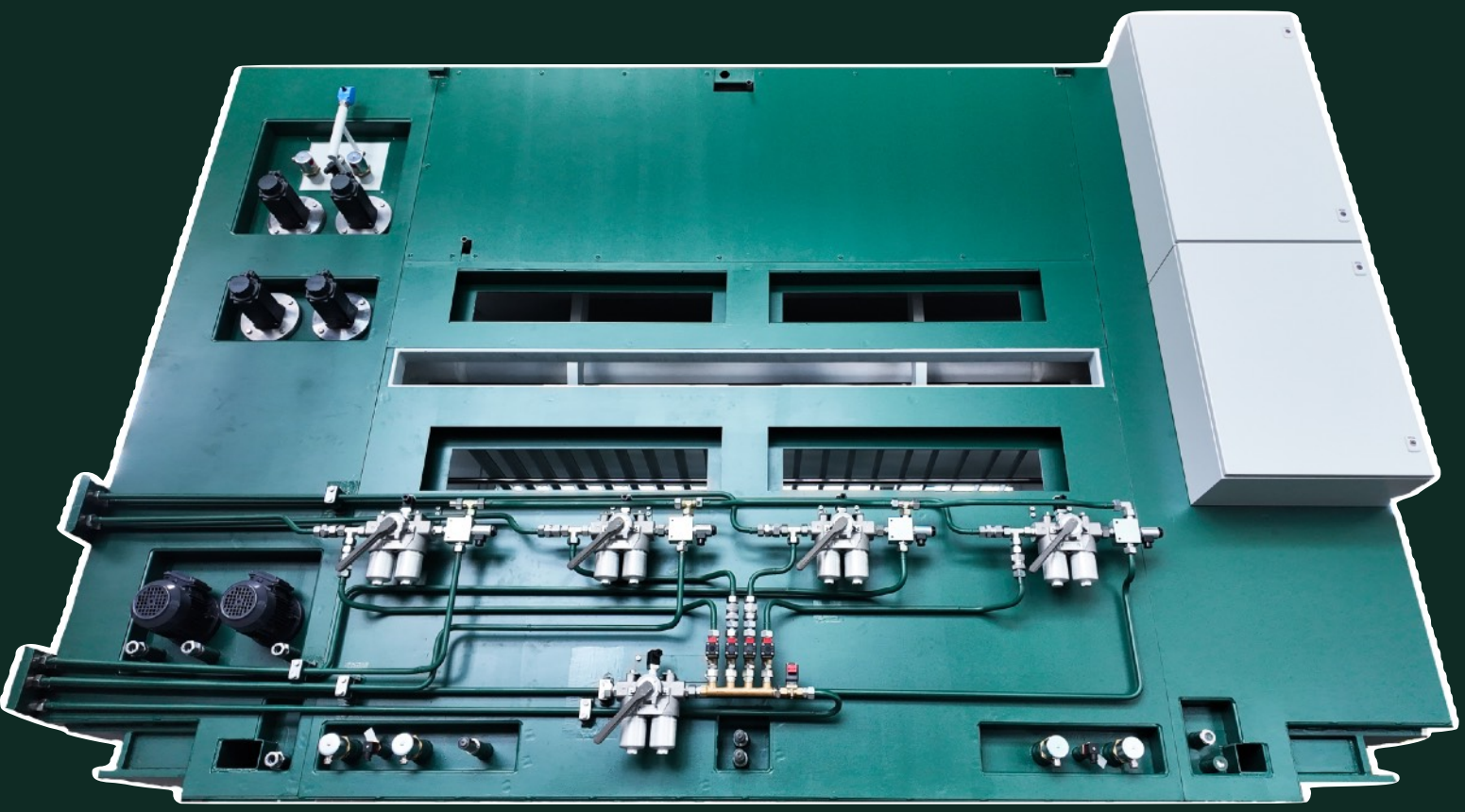


Our tanks are engineered to handle both regular oils and hot melt media with exceptional efficiency. Each tank includes gear pumps mounted inside to be heated to process temperature, ensuring consistent oil flow. The tanks are equipped with insulation frames, allowing for optimal thermal management and versatility.

A unique heat distribution plate, designed specifically for our tanks, ensures efficient heating. The heaters are mounted directly onto this plate, which effectively warms the tank walls. Additionally, our anti-convection design prevents cooler refill oil from mixing too quickly with the heated oil, maintaining a stable temperature.

Constant temperature control is integrated into each tank, providing precise management of oil temperature. This meticulous design guarantees that our tanks are always ready for hot melt oil applications, ensuring seamless operation and superior performance.

Elektrostatic Oiling Unit



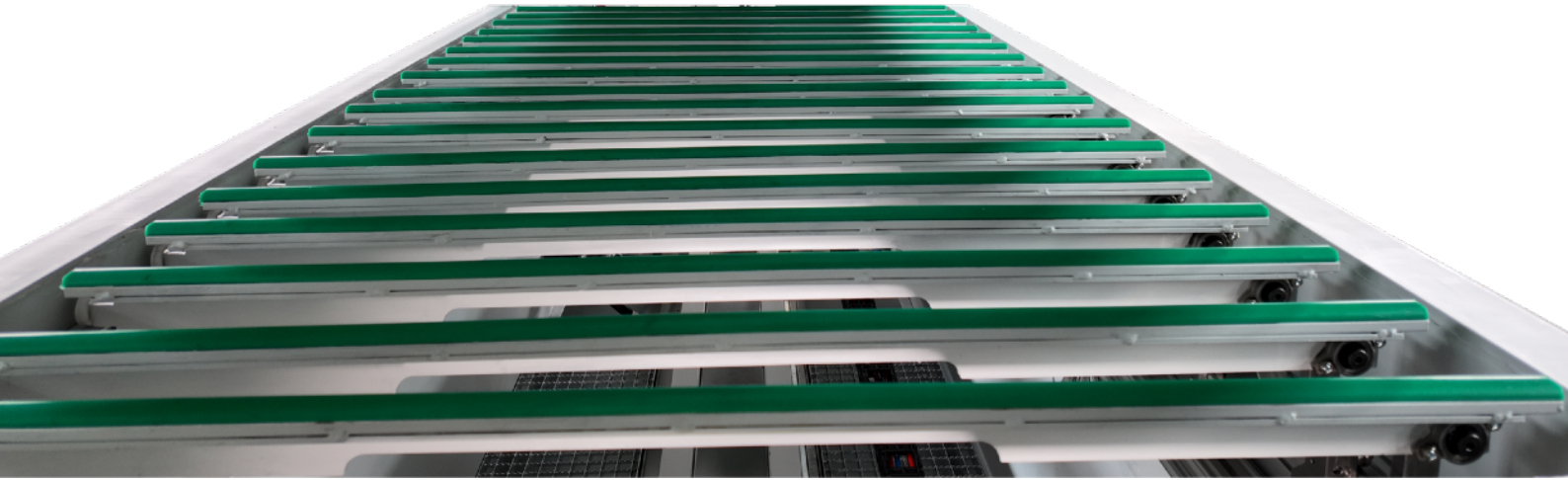
Threading Table

The Electrostatic Oiling System features a built-in threading table within the machine cabin, designed to support the smooth feed of new strips into the production line. This threading table plays a crucial role in preventing strip ends from entering the machine's interior, thus avoiding potential damage and production delays.

Key Features

- Automatic Operation: The threading table automatically drives in and out, facilitating efficient strip feeding without manual intervention.
- Smooth Conveyance: Special plastic gliding bars are attached to the table, ensuring smooth and frictionless conveyance of the strip.
- Maintenance Flexibility: For maintenance purposes and to allow service technicians access to the machine cabin, the threading table can be swiveled to an upright position, moving it out of the way.

This design enhances both operational efficiency and safety, ensuring that your production process remains uninterrupted and damage-free. The threading table is an integral component of our system, reflecting our commitment to innovation and reliability.



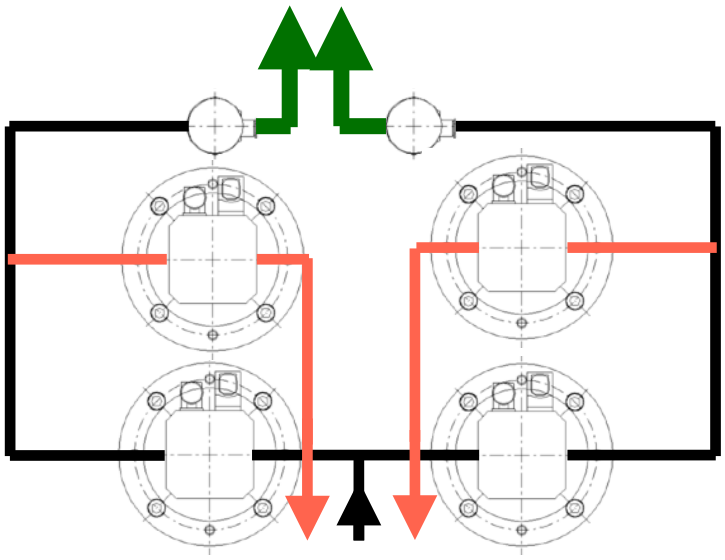
Cabin Heating

Our System features an innovative cabin heating design that enhances operational efficiency and extends maintenance cycles.

The sump functions as a tank, heating thermo oil that circulates through a closed circuit integrated heating system. This setup warms the entire cabin, with the heated sump ensuring consistent bottom warmth and wall-integrated radiators heating the top.

This design allows excess oil to flow easily into the sump, reducing buildup and extending cleaning intervals.

Eliminating air heaters prevents additional airflow that could interfere with the atomized oil, resulting in a cleaner and more reliable operation.



DIFFERENTIAL DOSING

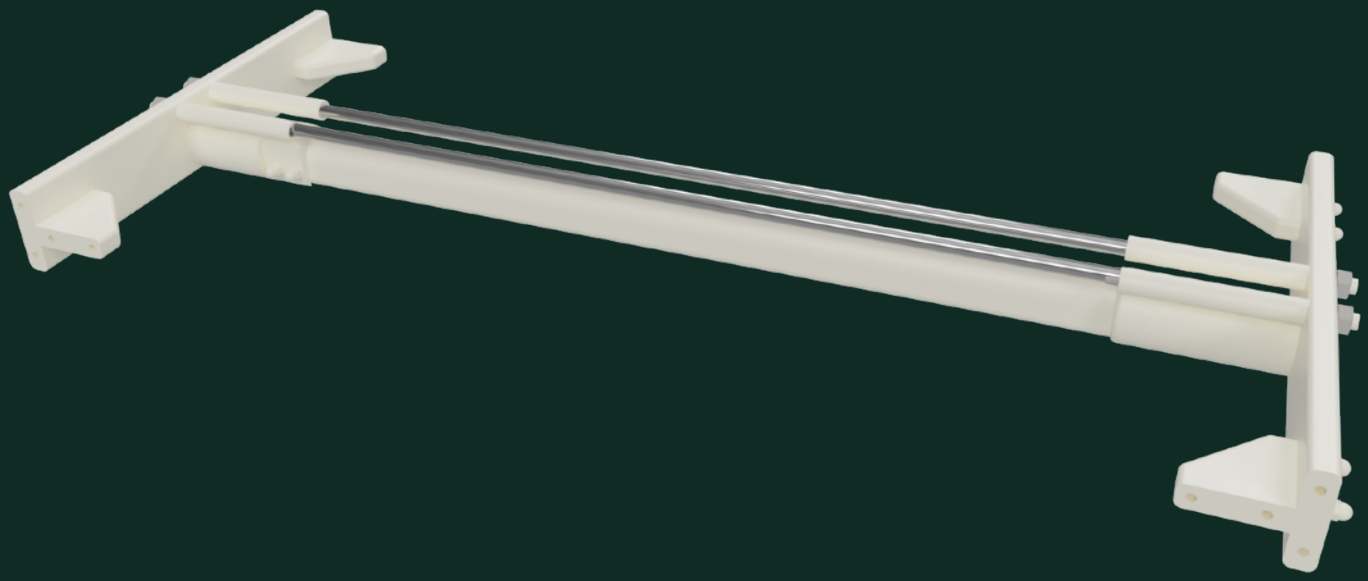
The ELECTROSTATIC OILING SYSTEM incorporates an innovative differential dosing mechanism that ensures precise and stable oil flow.

This system uses four pumps: two running forward and two backward.

By having one forward pump and one backward pump operate at the same speed, the system can achieve a stable oil flow range with exceptional accuracy. When both pumps operate in opposite directions, they balance each other out, allowing for minute adjustments in oil flow without the inconsistencies seen at low speeds.

The benefits of this system include improved precision in oil application, which minimizes waste and enhances coating quality. This design eliminates the need for multiple pump sets, reducing complexity and spare parts requirements. Additionally, the consistent and accurate oil flow helps maintain optimal operating conditions, contributing to cost savings and environmental sustainability by reducing excess oil use and waste.

Spray Bars



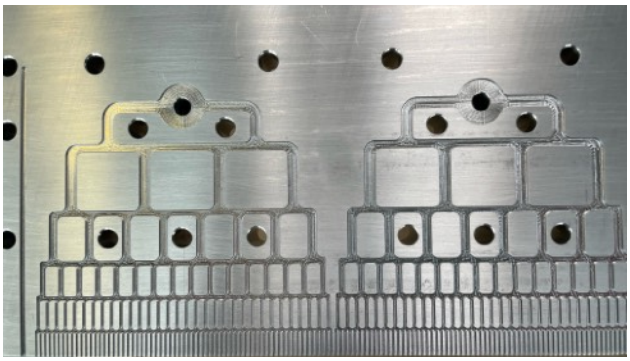
The new spray bars are designed for optimal precision and efficiency in oil application.

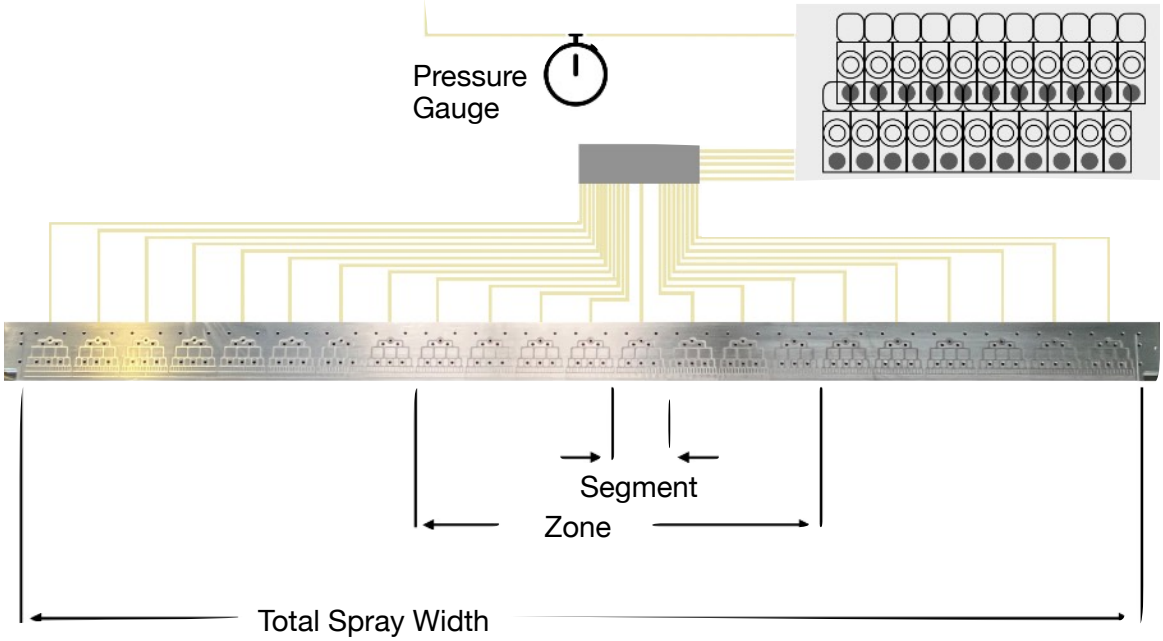
Our spray bars incorporate a gap-free PET design with an internal metal oil distribution plate, ensuring consistent and even oil spray across the entire width. This design eliminates common issues with incorrect spacing and simplifies maintenance.

Additionally, the heated spray bars are equipped with a secondary high voltage system and additional electrodes, enhancing oil atomization for finer droplets and a more uniform oil film. This results in reduced oil usage, minimized waste, and superior coating quality.

Our spray bars come with an innovative internal metal core distribution pattern. This design ensures precise and even oil distribution across the entire bar, facilitating finer atomization of the oil. The internal metal core uniformly disperses the oil before it exits the spray nozzles, creating a consistent and controlled spray pattern.

This advanced distribution pattern leads to finer oil droplets, enhancing the atomization process. Finer atomization results in a more uniform and efficient oil film on the target surface, reducing the risk of dry spots and excessive oil application. This precision not only improves coating quality but also minimizes oil consumption and waste.



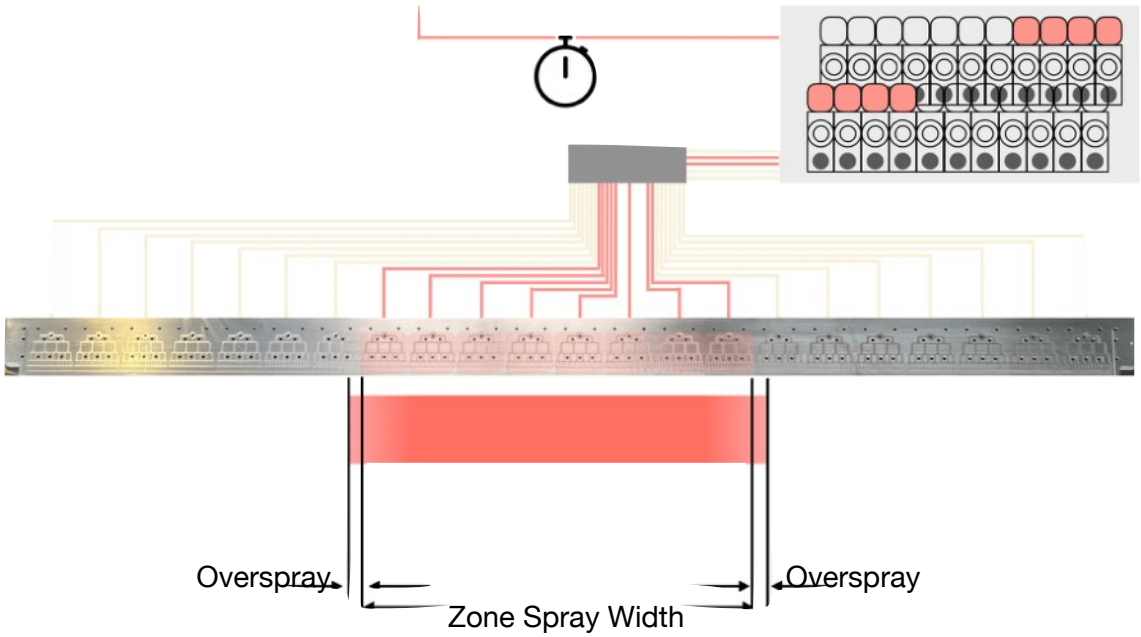


The spray bars feature a segmented core design, with each segment measuring 100mm. This segmentation, combined with an automatic valve station, allows precise control over the spray width.

Each 100mm segment can be individually activated or deactivated via the valve station, enabling the spray width to be adjusted according to the width of the strip being coated.

This capability to adjust the spray width to match the strip width offers significant cost savings.

By only spraying oil where it is needed, excess oil usage is minimized, reducing waste and lowering operational costs. This precise control ensures that no unnecessary oil is applied, enhancing efficiency and contributing to a more sustainable production process.



Film Measurement Unit

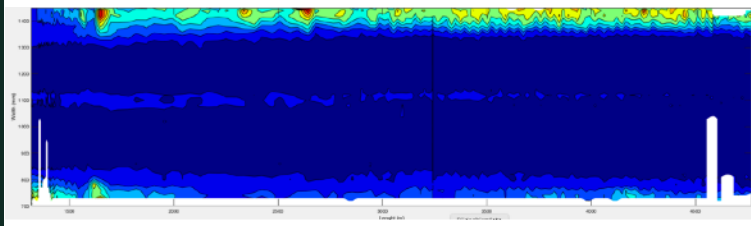
Our ELECTROSTATIC OILING SYSTEM includes an advanced film measurement unit, ensuring precise control over the oiling process. This unit utilizes infrared spectroscopy sensors from AMEPA, mounted on linear drives that traverse the top and bottom of the sheet. These sensors provide real-time, non-contact measurements of oil film thickness, enabling accurate monitoring and control.

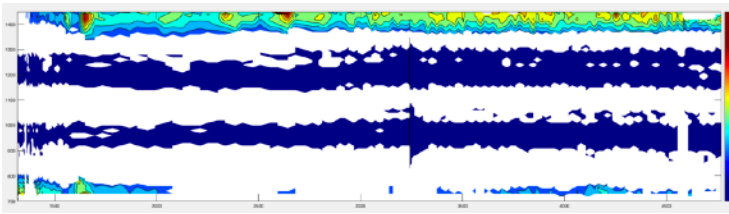
The sensors work by emitting infrared light, which passes through the oil film and reflects off the metal surface. The amount of light absorbed by the oil at specific wavelengths indicates the thickness of the film. This data is continuously collected and analyzed, allowing for immediate adjustments to maintain optimal oil coverage.

By integrating this measurement unit with our system's PLC and evaluation software, we can detect potential issues such as dry stripes or over-application.

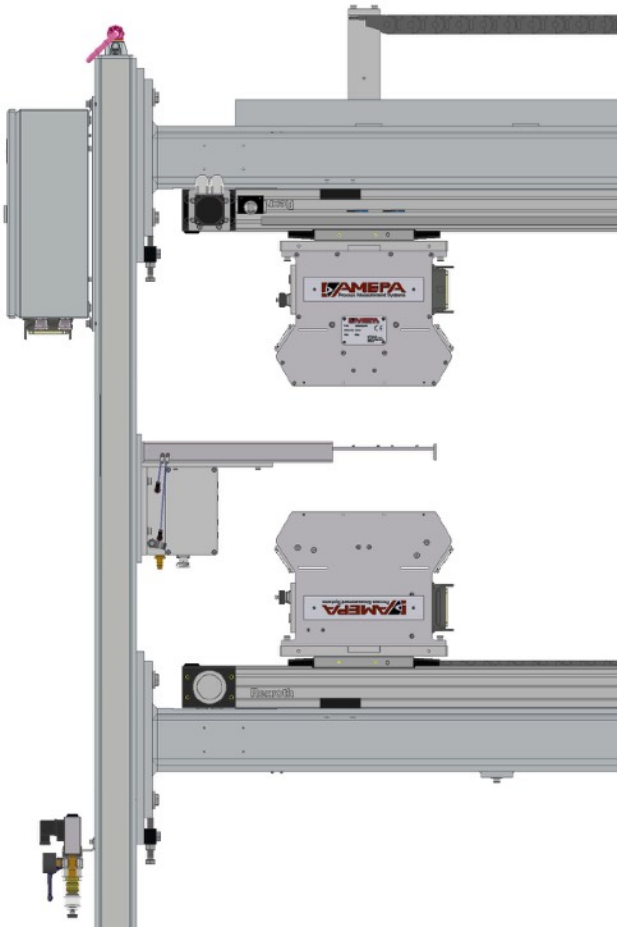
This ensures that the oil film remains within specified thickness ranges, improving product quality and reducing waste. The real-time feedback and data logging capabilities also support smart maintenance recommendations, enhancing overall operational efficiency and sustainability.

Visualization of Film Thickness throughout the whole length of the strip

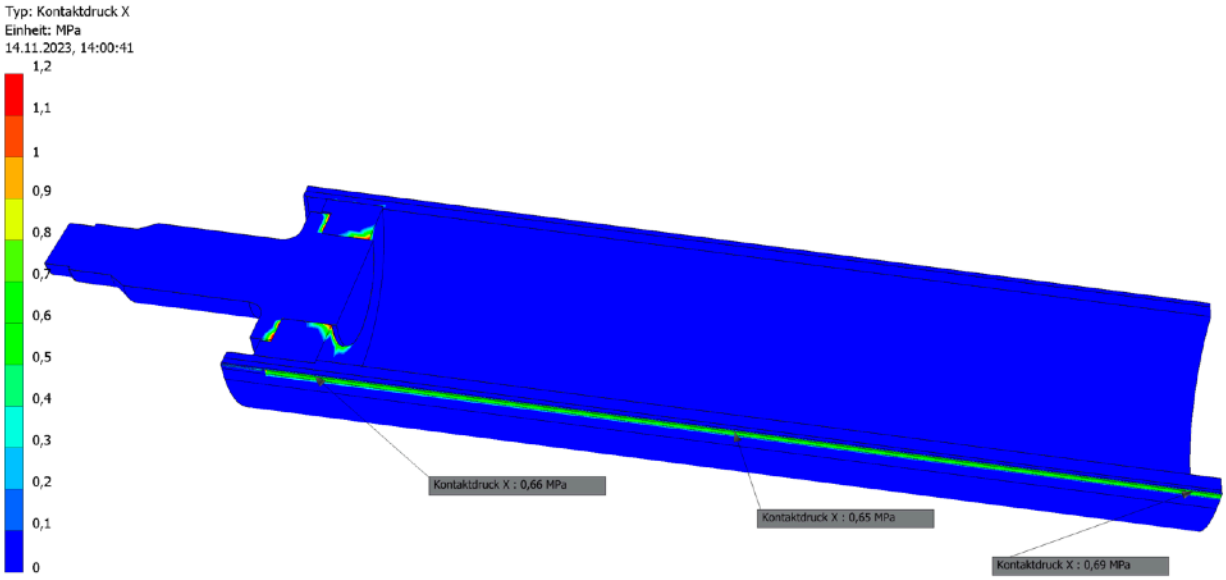




Automated surveillance of sensor accuracy via integrated calibration samples



HOMOGENIZATION UNIT

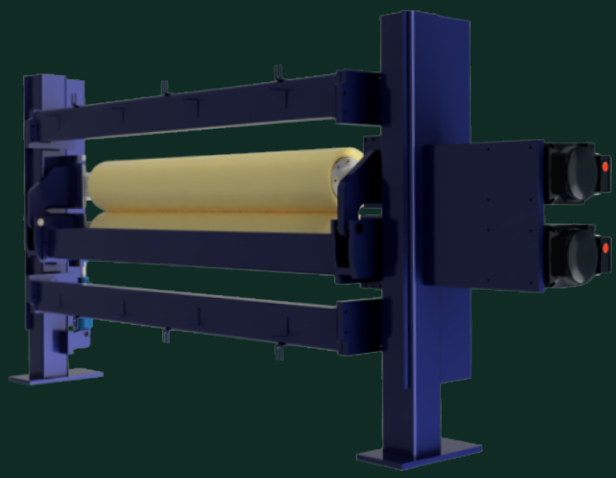


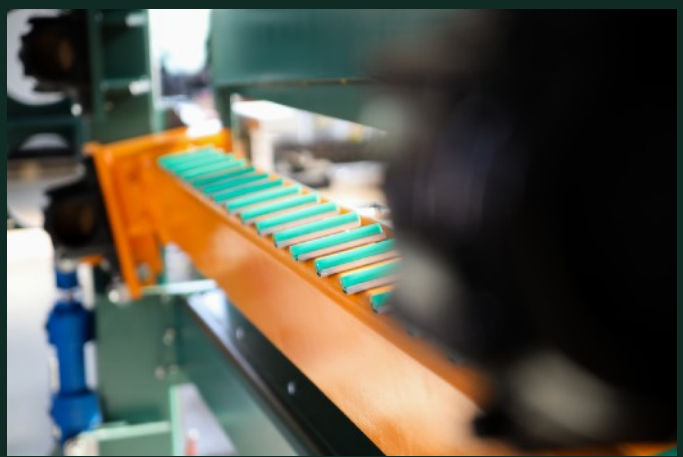
A state-of-the-art homogenization unit was designed to ensure an even oil film across the entire sheet width.

Traditional homogenization rolls often suffer from bending under pressure, leading to inconsistent contact pressure and uneven oil distribution. Limax has addressed this issue with a new design and advanced materials.

Our homogenization rolls are engineered to maintain a consistent contact pressure, with a deviation of only 3% across the length of the roll, even under varying forces. This precision is achieved through innovative design, which evenly distributes pressure along the roll's length, and the use of special materials

This ensures that the fine oil droplets are uniformly flattened, resulting in a smooth and consistent oil film. The improved consistency not only enhances the quality of the coated product but also reduces waste and operational costs by ensuring optimal oil usage.





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