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Closed Mould Oiling Machine for AAC Manufacturing

The Closed Mould Oiling Machine by Aircrete Europe is an automated, closed-loop system developed for precise and controlled oil application in AAC manufacturing. Designed for use in both flat-cake and tilt-cake production lines, the machine integrates an L-shaped oiling arm with five strategically positioned nozzles, zoned oiling control, and oil pressure spraying to ensure uniform 360° mould coverage. A heated and circulating buffer tank maintains optimal oil viscosity, while an enclosed filtration and recovery system minimizes oil losses and environmental impact. With cycle times below three minutes, real-time oil consumption monitoring, and seamless integration into existing factory automation systems, the Closed Mould Oiling Machine provides a technically robust solution that enhances process stability, product quality, and operational efficiency in modern AAC plants.

Fig. 1: Closed Mould Oiling Machine assembled at the Aircrete Europe workshop prior to installation in an AAC production line.

The Closed Mould Oiling Machine developed by Aircrete Europe is an automated system engineered specifically for precise and repeatable oil application in AAC mould preparation. The machine is designed to operate in both flat-cake and tilt-cake production environments, supporting consistent demoulding performance and stable product quality.

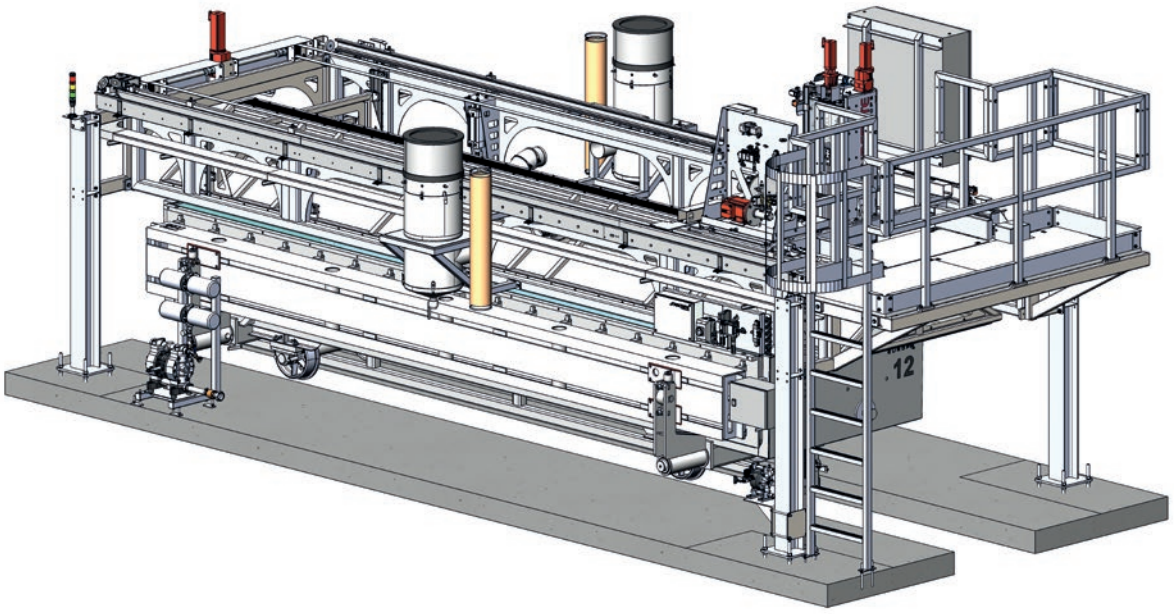

Fig. 2: 3D engineering overview of the Closed Mould Oiling Machine, including the mould.

The machine is built around a rigid mechanical frame and a fully enclosed oiling chamber, forming a closed process that isolates oil application from the surrounding production area. This design minimizes contamination, improves operator safety, and allows controlled recovery of oil particles during the spraying process.

At the center of the system is an L-shaped oiling arm that provides full 360° coverage of the mould interior. The arm is equipped with five oil nozzles, arranged with two downward-facing nozzles, two side nozzles, and one corner nozzle. This configuration ensures uniform oil distribution across all mould surfaces, including edges and corners.

The mould surface is divided into eight independently programmable oiling zones. Each zone can be configured individually via the operator panel, allowing the oil quantity to be adapted to specific mould geometries, product types, or production requirements. This zoned approach enables high precision and repeatability across different AAC formats.

Oil is applied using oil pressure spraying, rather than compressed air. This method provides accurate deposition of oil onto the mould surface while avoiding excessive mist formation. The result is a cleaner oiling process with improved control over film thickness and reduced oil losses.

Fig. 3: 3D model of the oil supply and pump system for controlled mould oiling.

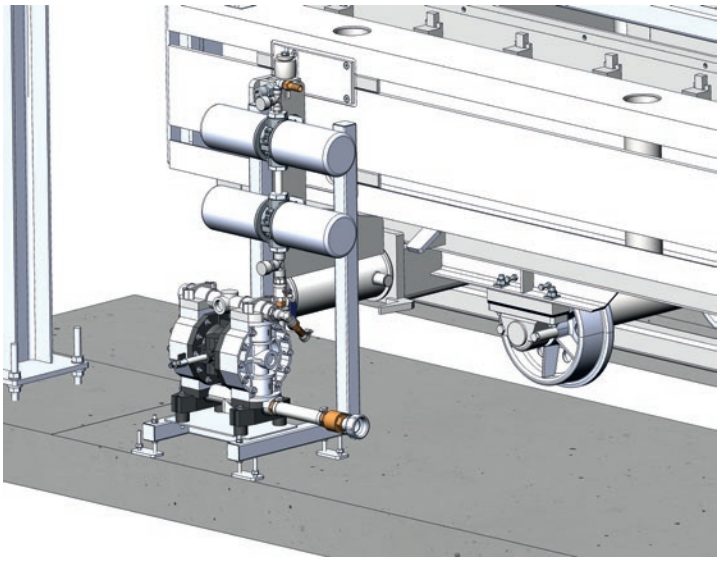

Fig. 4: Detail of the oil distribution manifold used for precise oil pressure spraying inside the mould.

The oil supply system includes an integrated 24-liter buffer tank with controlled heating and continuous circulation. This ensures that the oil remains at a stable operating temperature, maintaining a kinematic viscosity of 135–150 cSt (mm²/s), typically measured at 40°C. Consistent viscosity is essential for reliable spray characteristics and uniform surface coverage.
During operation, the oiling area is enclosed by a steel cover incorporating an air circulation and filtration system. Oil particles generated during spraying are captured, filtered, and returned to the system. This closed-loop concept significantly reduces environmental impact and keeps the surrounding production area clean.

Excess oil is collected through an integrated drip collection system, allowing residual oil to be recovered and reused. In combination with the filtration unit, this design contributes to reduced operating costs and improved sustainability of the mould preparation process.

Oil consumption is continuously monitored by an integrated flow meter, providing accurate measurement and transparency for production control. With a typical oil consumption of 0.7–0.9 liters per mould and a mould volume of 5.4 m³, the resulting consumption is approximately 0.13–0.17 liters per cubic meter of AAC, supporting efficient and predictable operation.

The Closed Mould Oiling Machine operates with a stand-alone control system based on a dedicated Siemens PLC and touchscreen operator panel. The interface allows operators to manage oiling parameters, monitor system status, and adjust zone settings with clarity and precision. Signal exchange is prepared for integration into the customer's existing factory automation system.

Mechanical features include a centering device to ensure accurate mould positioning and a dedicated maintenance platform with stairs to provide safe and easy access for inspection and servicing. These elements support reliable long-term operation and simplified maintenance routines.

The complete oiling cycle is performed in less than three minutes, enabling the machine to operate efficiently within high-capacity AAC production lines. The system is suitable for both open and closed mould configurations, and in tilt-cake factories with closed moulds, the cutting platform can be oiled separately if required.

The machine is prepared for connection to external oil storage, such as standard 1,000-liter IBC tanks or larger bulk oil tanks. Installation and commissioning are typically completed within 4–5 days, allowing rapid integration into existing plants. The Closed Mould Oiling Machine provides a robust, precise, and scalable solution for modern AAC manufacturing.

Open Mould Oiling Solutions

Besides closed mould oiling technology, Aircrete Eu rope also provides solutions for AAC plants operating with open mould configurations. The company's Open

Fig. 5: Inspection of electrical and pneumatic control system during commissioning.

Fig. 6: Aircrete Europe engineers assembling the mould oiling system during workshop installation and testing.

Mould Oiling Systems are designed to ensure reliable and uniform oil application while maintaining simple operation and easy maintenance. Depending on plant layout and production requirements, Aircrete Europe can supply tailored mould oiling concepts that support efficient mould preparation and stable production performance.

Conclusion

Effective mould preparation is a key factor in maintaining stable and efficient AAC production. The Closed Mould Oiling Machine developed provides a precise and automated solution for controlled oil application in both flat-cake and tilt-cake production lines.

By combining accurate oil dosing, closed-loop filtration, and controlled oil viscosity, the system ensures uniform mould coverage while reducing oil consumption and improving production cleanliness. Its fast cycle times, reliable operation, and straightforward integration support consistent mould release and high-capacity plant performance.

Alongside this technology, Aircrete Europe also offers open mould oiling solutions tailored to different plant configurations, enabling AAC producers to implement efficient mould preparation regardless of their production setup.

Together, these solutions demonstrate Aircrete Europe's commitment to practical, technically robust innovations that enhance process reliability, product quality, and operational efficiency in modern AAC manufacturing.

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