Aircrete Europe, 7575 EJ Oldenzaal, The Netherlands

State-of-the-art solutions for aging Hebel plants – Part 2

Building on the exploration of large-scale modernizations for Hebel plants, this second article shifts focus to smaller, modular upgrade packages that address specific needs of aging plants. While full-plant upgrades with Aircrete's flat-cake technology, like SYC Korea and Holcim Romania[1], offer a comprehensive transformation, smaller upgrades provide a flexible and cost-effective solution for plants seeking targeted improvements without the expense or downtime of a complete overhaul. This article outlines how incremental upgrades can significantly improve production efficiency and product quality for existing Hebel equipment. By focusing on specific components, such as the mould circulation and cutting line, plants can achieve gains in equipment reliability and product quality, and reduction in waste levels. This article also demonstrates practical cases where such upgrades have effectively extended the lifespan and capacity of aging facilities, providing them with a competitive edge in an evolving AAC industry.

Mixing and dosing

Upgrading the mixing and dosing area offers significant efficiency and quality improvements for aging Hebel plants.

One impactful step is replacing old and worn mixers with modern Aircrete design (Fig. 1), ensuring consistent batch quality and optimized cycle time, as well as reducing power consumption. Furthermore, Aircrete's automatic high-pressure mixer cleaning system (Fig. 2) can minimize manual labour and significantly reduce downtime for cleaning, allowing the plant to produce a higher number of cakes. Heated water used in the automatic high-pressure mixer cleaning system lets the mixer keep the temperature

Fig. 1: Modern Aircrete design mixer discharging the mix into the mould

Fig. 2: Automatic high-pressure mixer cleaning system (pre-assembled)

and, thus, maintains the consistency of the mixing process in the long run. The reduction of material build-up inside the mixer also ensures that no large lumps end up in the cake that can cause problems in the following production steps.

Transitioning to a new slurry density measuring system (Fig. 3) can further enhance quality control. The new generation Aircrete design is that of the proven U-pipe, but instead of slurry flowing through it continuously, now slurry only enters the U-pipe for a limited time interval. Not only the new design can achieve measuring precision of up to 9 kg/m³, the U-pipe is filled with water on the standby mode that allows automatic recalibration for every measurement cycle. A detailed article on the new slurry density measuring system will be published in AAC Worldwide, issue 2, 2025.

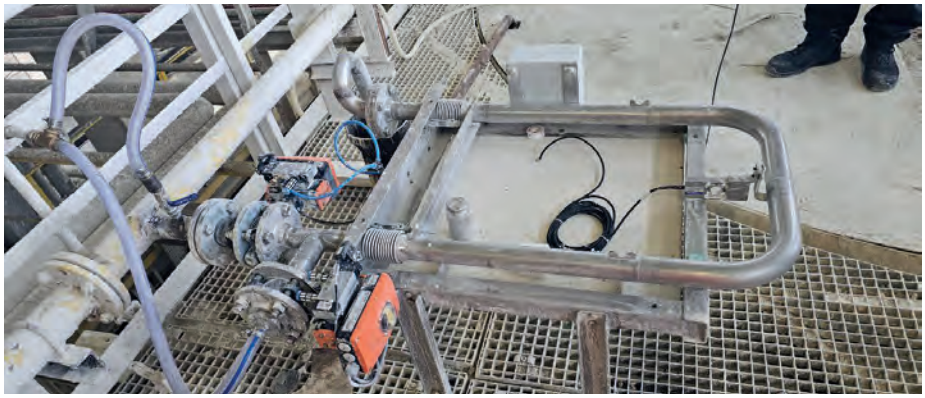


Fig. 3: New generation slurry density measuring system at an Aircrete customer in Türkiye

Undoubtedly, dosing aluminium is a vital step in AAC manufacturing. To increase safety, reduce transportation and storage costs, many plants are converting from aluminium powder to paste. For this reason, Aircrete has developed a new generation aluminium paste dosing system (Fig. 4) to ensure decisive improvements in terms of safety, precision and efficiency when handling pastes. The new design is able to achieve the dosing precision of ±10 grams within a cycle of three minutes with aluminium paste being prepared on a batch-by-batch basis. The entire machine is supplied in a pre-assembled state that can be installed under three days. Read more about the new Aircrete aluminium paste dosing solution in "New Generation Aluminium Dosing System" in the 4th issue of AAC Worldwide in 2023.

Fig. 4: New aluminium paste dosing system at Holcim, Romania

Mould circulation

In many Hebel plants, the continuous movement of moulds is standard. However, to allow the cake to rise properly, the moulds ideally should remain as stationary as possible. Aircrete's mould circulation system addresses this by limiting mould movement

Fig. 5: Aircrete's mould rising area and moulding traverser car at Holcim, Romania

strictly to essential transport stages: moving from casting to the rising area, and then to the cutting machine. Most of their time, moulds remain stationary in the rising area. Aircrete's mould circulation (Fig. 5) enhances reliability by reducing unnecessary mould movement, increases flexibility with independent mould movement, enables greater automation opportunities and reduces cycle time through a leaner, more streamlined system. Such a solution, however, only makes sense if the client is looking to replace the old moulds. This then also allows to integrate an efficient mould oiling system.

Fig. 6: Cross cutter with double-oscillating shafts with pneumatic tensioning at Q-Con, Thailand

Cutting line

Cutting line, as the heart of every AAC plant, requires high-quality, demanding maintenance. Aircrete, as traditional flat-cake technology supplier, knows precisely how to take care of your Hebel cutting line. The Hebel cutting process is flat-cake cutting where the cake is stationary during the cut: first, it is placed for the cross cut by the casting crane, then the cake is cut vertically with a moving vertical cutter, and, finally, after removing all waste layers the cake is taken away for curing.

A standard Hebel cross cutter, that is integrated into the cutting machine, is equipped with two single-oscillation shafts where the wires are tensioned with mechanical springs. Here, Aircrete has a solution to integrate its proven double-oscillating shafts with pneumatic tensioning (Fig. 6). This not only ensures that the wires oscillate alternatingly, but improves the tensioning on the wires. Aircrete's pneumatic tensioning solution improves cutting tolerance, while the double shafts ensure that the wires move in opposite directions, reducing stress on the cake during cutting.

After performing the cross cut, the moving vertical cutter is slicing through the cake standing on the table. Several old plants do not have movable lamellas, meaning that for cake compacting they rely on pushing the cake together with force. Aircrete is able to supply a new cutting table with movable lamellas that first compact the cake after cross cutting, and then open up the gaps after vertical cutting

Fig. 7: New lamella table and pusher during testing in Aircrete workshop before departure to Celco, Romania

to eliminate sticking (Fig. 7). Aircrete also offers a solution to tension the vertical wires pneumatically to replace the existing spring-tensioning system (Fig. 8). While every Hebel plant has their ways to remove end and side crusts, Aircrete provides upgrades that increase the automation of the crusts removal (Fig. 9), adhering to a more optimized cutting cycle. Once the vertical cut is complete and the cut cake is taken away, the lamella table must be cleaned and oiled. Aircrete offers upgrade packages for both the lamella table[2] and the cleaning/oiling equipment that allows plants to improve production efficiency and product quality.

Handling systems

Aircrete offers comprehensive upgrades to enhance efficiency and streamline handling operations in aging Hebel plants.

For mould handling, Aircrete provides supply of complete Hebel moulds (with or without movable mould doors) tailored to upgrading and optimizing handling equipment. A key innovation here is the automatic cleaning and oiling system for moulds and side plates, which reduces manual labour, ensures consistent quality and eliminates sticking issues.

Aircrete upgrades extend to curing frames, autoclave cars, and overall plant logistics. Aircrete offers frames replacement and advanced automation for tasks such as stacking pin handling (Fig. 10), improving precision and reducing operational delays.

In upgrading the unloading line for aging Hebel plants, Aircrete is able to provide a wide range of tilting table and manipulator solutions[3] for enhancing efficiency and reducing operational costs (Fig. 11). Together with automated pallet feeding and positioning, these upgrades are to streamline the unloading and packing operations.

Aircrete offers heavy-duty moulding and unloading cranes upgrades by converting lifting mechanisms from hydraulic to electric, and adding new, high-performance grippers to increase load stability and extend equipment life (Fig. 12). Transition to electric lifting and gripping mechanisms eliminate supply chain issues, as the hydraulic spare parts are not being manufactured anymore. Additionally, electric mechanism offers significantly higher handling precision and speed over hydraulics, adhering to a more optimized cycle time and higher product quality, as well as reducing the overall power consumption.

Control systems

Modernizing control is essential for maintaining efficiency and reliability in aging Hebel plants. Aircrete offers complete replacements of outdated control systems with the advanced Siemens S7 TIA (Totally Integrated Automation) platform. This upgrade provides a user-friendly interface that enhances operational control and monitoring capabilities across the plant.

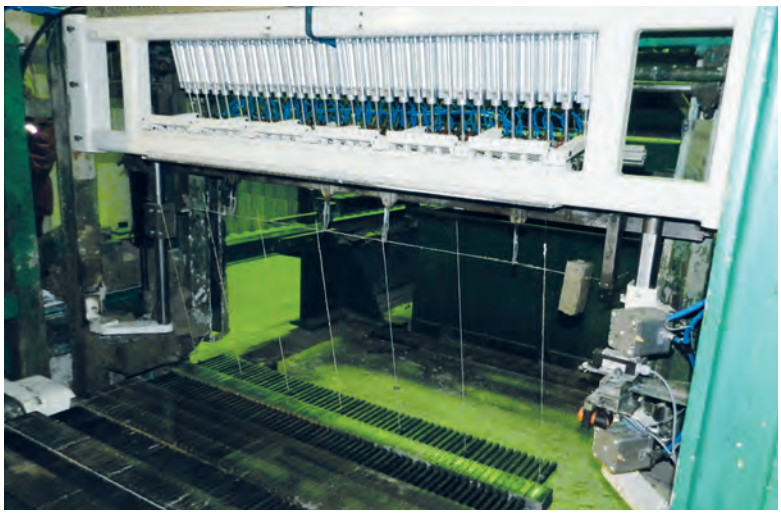


Fig. 8: Pneumatic vertical wires tensioning system in an old Hebel plant

Fig. 9: Automatic end crust removal via nail plates at SYC, Korea

Fig. 10: Multi-level stacking pin manipulator

In addition to improved functionality, the Siemens S7 TIA system offers long-term benefits with enhanced parts availability and ongoing support, ensuring that plants can easily source components and receive technical assistance when needed. This upgrade not only minimizes downtime but also future-proofs the plant's control infrastructure, supporting more reliable and efficient production for years to come. In addition, it allows Aircrete to remotely assist clients on a 24/7 basis.

Spare parts

To support the ongoing performance and reliability of aging Hebel plants, Aircrete provides a complete range of spare parts for existing equipment. Aircrete´s extensive inventory ensures that plants have access to all necessary components, from critical wear parts to specialized replacements, reducing potential downtime and keeping production running smoothly. With Aircrete, Hebel plants can confidently maintain and extend the life of their equipment.

Conclusion and final considerations

This article concludes the two-part series showcasing Aircrete's comprehensive solutions for upgrading aging Hebel plants. The first part focused on full-plant modernizations, while this second instalment highlighted how smaller, targeted upgrades can significantly enhance production efficiency and product quality for existing Hebel equipment.

Aircrete's incremental upgrade solutions span key areas such as mixing, dosing, mould circulation, cutting. Moreover, Aircrete is able offer upgrades for handling systems, control systems, and spare parts supply. By offering flexible, modular improvements, Aircrete enables Hebel plants to modernize their operations effectively, meeting current market demands while optimizing costs and minimizing downtime.

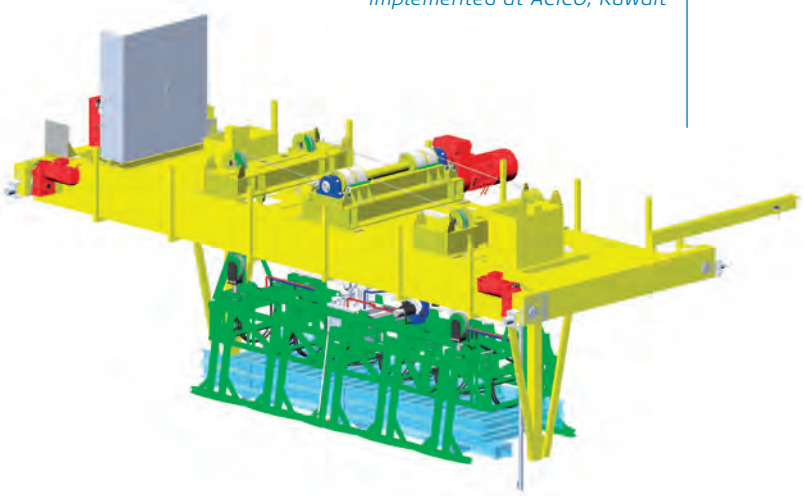
Fig. 11: Double-cake tilting table at SYC, Korea

WKB and Calsitec

Needless to point out, many of these upgrades can also be implemented in any other existing AAC plant, no matter which technology is being used. With the acquisition of international property and know-how of the former WKB Systems, Aircrete can also offer a wide range of upgrades for tilt-cake cutting plants.

Aircrete Europe is also proud to announce a new brand under the company flag - Calsitec. Considering that calcium silicate units (also known as sand-lime bricks) are a closely related building product to AAC, and with the acquisition of the intellectual property of the former WKB Systems, Aircrete has expanded the product portfolio to now also supply calcium silicate technology under the Calsitec brand.

Fig. 12: Design of the casting/unloading crane lifting mechanism upgrade, being implemented at ACICO, Kuwait



Aircrete sponsors the free download possibility of this article for all readers of AAC Worldwide. Simply scan the QR code with your smartphone to get direct access to the Aircrete Company Channel.

Aircrete Europe
Zutphenstraat 6
7575 EJ Oldenzaal, Netherlands
T +31 541 571020
www.aircrete.com

[1]For more details see "State-of-the-art solutions for aging Hebel plants – Part 1" in the 4th issue of AAC Worldwide in 2024
[2]For more details see "Staying at the top as one of Romania's leading building materials players" in the 1st issue of AAC Worldwide in 2021
[3]For more details see "Complex upgrades made easy: A holistic approach for enhanced capacity" in the 2nd issue of AAC Worldwide in 2020