

AICHELIN Increases Energy Efficiency of Third-Party Plants

Optimized insulation in heat treatment plants may reduce wall losses by 10-15%

Ludwigsburg/Germany, 10 May 2023 – The new brickwork for two industrial furnaces required due to wear provided an opportunity for AICHELIN Service in late 2022 to fundamentally optimize the thermal insulation of the plants together with the customer. AICHELIN Service has successfully implemented similar projects in the past at the customer’s plant in Gaggenau/Germany. The current project revolved around new brickwork for the heat treatment plants of a different manufacturer.

As a long-term skills partner, AICHELIN Service has been supporting Daimler Truck AG continuously with regular maintenance and repair works, as well as in projects regarding plant modernization and optimization. In Gaggenau, there are numerous heat treatment plants by different manufacturers, among them several AICHELIN plants. For the current project, the brickwork for a LOI Thermprocess plant needed to be renewed and optimized. The goal was to replace the entire brickwork in a rebuild time of only six weeks, including disassembly and reassembly, while increasing the energy efficiency of the plant and enabling significant energy savings. The result: Wall losses were reduced by 10-15%. The optimized insulation thus contributes to higher energy efficiency.

Optimized Thermal Insulation for Plants with Gas and Electric Heating

Depending on the type and intensity of plant use, the thermal insulation and in particular the brickwork in industrial furnaces wears out after around 10 to 20 years and must be replaced entirely. The isothermal annealing system in question – a coherent, U-shaped installation consisting of one high-temperature and one low-temperature furnace – has been in use at the Gaggenau plant since 1971. The high-temperature furnace is gas-fired and achieves temperatures of up to 950° C; the low-temperature furnace is operated with electric heating elements and reaches temperatures of up to 700° C.

To increase energy efficiency, the brickwork of the two furnaces should not simply be replaced 1:1. In addition to the complete renewal of the brickwork, the wall structure was to be reinforced and thermally optimized. Moreover, further customer-specific energy optimizations had to be implemented. Temperature measurements on the systems before the start of the project provided additional indications of further optimization potential, including around insulation, the burner flanges, and the outlet and door openings.



AICHELIN Service Manages the Project as General Contractor

AICHELIN Service GmbH took over the complete project planning, coordination, and implementation as general contractor. The time constraints in this project were especially challenging, as a very narrow time window of only 30 working days including Saturday work had to be met. To achieve this, AICHELIN Service successfully coordinated four project partners in order to perfectly align and execute the various works.

The project started in November 2022. After the dismantling of the heating elements by Daimler Truck AG employees, the excavation work as well as other preparatory work was carried out by AICHELIN Service and its partners, such as the removal and reassembly of the burner flanges, welding work, weld seam tests, and more. This was followed by the new brickwork and the reassembly of the heating technology before the subsequent test run in cold operation. The brickwork with an optimized wall construction was carried out with a suitably strong service team, which put together over 100 m³ of material 'brick on brick'. In total, around 20 workers from the various partners, as well as the project managers and coordinators from AICHELIN Service and the customer, were deployed during the project. The final work was completed in December. The inspection and approval by the customer were carried out after the successful return to operation in late January 2023.

Caption (Photos: © AICHELIN Service GmbH / AICHELIN Holding GmbH)

The Plant, Modernized by AICHELIN Service:



[Photo 001]



[Photo 002]

- Left [Photo 001]: The high-temperature furnace is pictured in the foreground of the plant; the low-temperature furnace is pictured behind it (towards the wall).
- Right [Photo 002]: All materials were transported into the furnace through this furnace opening. It also served as the point of entry and exit for the workers.

A Glimpse into the Works Inside the High-Temperature Furnace



[Photo 003]



[Photo 004]

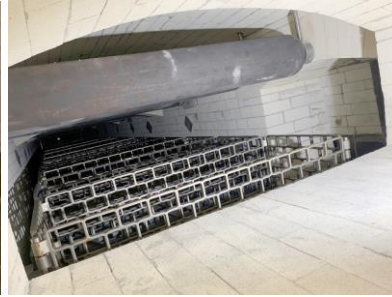


[Photo 005]

- Left [Photo 003]: During the dismantling of the brickwork and the insulation materials, the workers wear protective masks.
- Center [Photo 004]: During the progressing laying of the brickwork, things get crammed for the workers inside the furnace.
- Right [Photo 005]: Brickwork of the furnace opening/door in the high-temperature furnace



[Photo 006]



[Photo 007]



[Photo 008]

- Left [Photo 006]: A glimpse into the 16-meter long high-temperature furnace
- Center [Photo 007]: The radiant tube for gas-heating is pictured on top here, inside the completed brickwork of the high-temperature furnace; in the center, the transport system for the product carriers is pictured, and on the right is the passage to the low-temperature furnace.
- Right [Photo 008]: View from the low-temperature furnace towards the high-temperature furnace (u-shaped product carrier) and towards the electric heating elements at the inner wall of the furnace.

About AICHELIN Service GmbH

AICHELIN Service GmbH in Ludwigsburg, Germany is the competence center for all services regarding AICHELIN heat treatment plants as well as plants by other manufacturers. The Ludwigsburg site also houses the central AICHELIN spare parts depot with the dispatch logistics department and the main scheduling office for service engineers. With around 100 technicians in office and field service, AICHELIN Service supports its customers with services such as spare parts, inspections, preemptive maintenance, modification and modernization, industry 4.0 solutions, but also with trainings and seminars.

www.aichelin-service.com

About AICHELIN Group

As part of Berndorf AG, AICHELIN Group, with its headquarters in Mödling near Vienna, is a leading provider of heat treatment solutions. This includes industrial furnaces, induction hardening plants, industrial heating systems, control and automation systems, Industry 4.0 solutions as well as other services. The company's roots date back to 1868. The long-established brand AICHELIN, as well as AFC-Holcroft, EMA Indutech, SAFED, BOSIO, and NOXMAT, make up the group and together employ more than 1,200 people. AICHELIN Group ranges among the world's top 3 heat treatment companies. AICHELIN's subsidiaries in Europe are located in Austria, Germany, Slovenia, France, and Switzerland; the worldwide presence of the company includes subsidiaries and branch offices in China, India, and the US, as well as a sales network in 22 more countries.

www.aichelin.com

This press release is available at

<https://www.aichelin-service.com/en/news-events/aichelin-increases-energy-efficiency-of-third-party-plants>

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