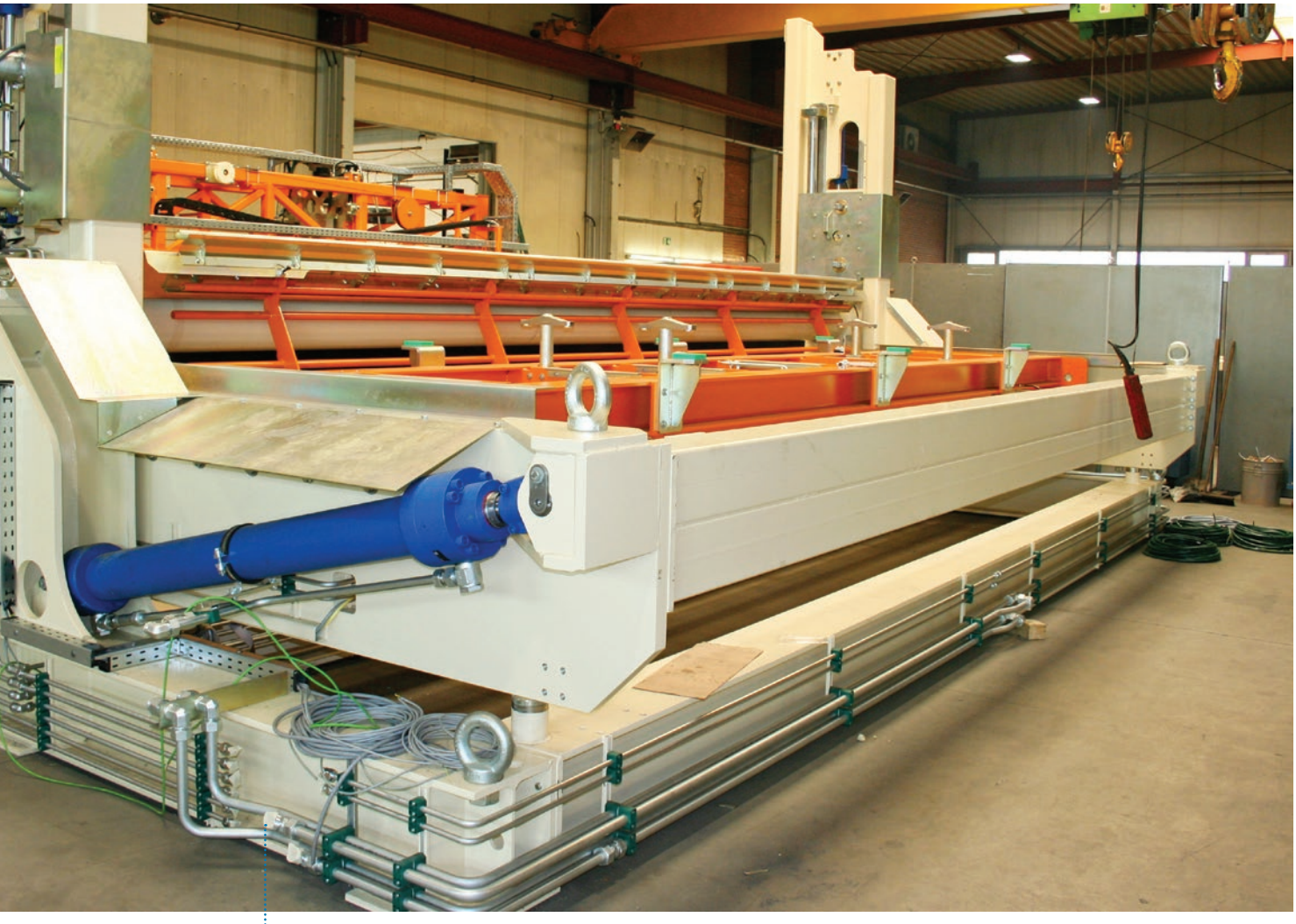
WKB Systems GmbH, 48477 Hörstel, Germany

Cutting-edge technology for AAC plant modernisation

One of the well-known German manufacturers of AAC products was convinced of the modernisation concept worked out by specialists of WKB Systems for the existing AAC plant. Now the complex modernisation project, incl. equipment production, assembly and commissioning as well as the production start, is being realised on a very tight schedule.

The team of experts from WKB Systems worked out an individual tailor-made concept for an AAC plant modernisation for one of the well-known German manufacturers of AAC products.

The WKB experts have started with analysis of every manufacturing sector of the existing AAC plant. Based on the analysis report a tailor-made modernisation solution was defined to equip the plant with innovative and high-capacity machinery of WKB Systems. Thanks to the modular design of each of the single plant components offered by WKB Systems, the production line will be modernised in a very fast and efficient way.



Tilting table after the cutting line to tilt the cake on a hardening grate.

Active horizontal cutter – cutting-edge technology.

Main project challenges

Among the challenges of this modernisation project are an increase in the production capacity up to 250 m³/day alongside with recipe changes, a significant reduction of energy costs, automation of the production process as well as improvement of the product quality through the application of cutting-edge technology of WKB Systems. At the same time the biggest challenge is to carry out the whole project on a very tight schedule.

Tailor-made modernisation solutions based on innovation

While developing the modernisation concept the specialists of WKB Systems had to take into account individual requirements of the customer concerning the production output and product surface in respect of production recipe changes. They also paid attention to the sensibility of the end product as the packing area was analysed. Another crucial point was the utilised capacity of three autoclaves

Cross cutter with a pocket milling device.

that must be also improved in order to minimise the energy costs of the plant.

The current modernisation concept comprises i.a. the following main stages:

- The loading of two AAC cakes one upon another on a hardening carriage,
- The installation of a cutting line with an active horizontal cutter - absolutely advanced way to cut AAC blocks/panels of 50 mm to 500 mm thickness,
- The application of a Green Cake Separating Machine (GSM) for an AAC cake of 6,000 x 1,200 x 500/600 mm,
- The expansion of the existing packing line with cranes, a shuttle system and a grate unloading robot in order to reach the packing capacity of 15 units per hour.

Simple way to improve plant efficiency

The decision of WKB experts to put two AAC cakes one upon another improves the plant capacity by 60% compared to the usage of the previous production technology. Another advantage of this solution is a significant reduction in energy and operating costs thanks to the optimized usage of autoclaves.

Cutting line for blocks/panels of 50 to 500 mm thickness.

High-performance cutting technology

The cutting line used in this modernisation project is of special construction, developed by WKB especially for cutting of thin AAC blocks and panels. It implements vertical, horizontal and cross cutting of the AAC cake as well as milling of pockets and insertion of grooves and tongues.

Before cutting, a crane tilts an AAC cake by 90° on one side of the mould and forwards it to the cutting line. Here the mould with the AAC cake is fixed on the cutting carriage and the demoulding process takes place. As far as the AAC cake stands upright and is ready for further treatment, the cutting process starts.

The cake goes through the vertical cutter, where the needed block length is cut. At the next step the cutting carriage with the cake moves forward to the horizontal cutter and stops there. The active horizontal cutter goes through the cake to cut the needed block thickness as well as grooves and tongues. This innovation from WKB Systems – active horizontal cutter – is unique on its own way.

The block height as well as pockets are cut in the cross cutter. Here tensioned cutting wires rotate oscillating in opposite direction and go through the cake top down. A suction hood sucks up the top layer of the cake with vacuum. Later on, this top layer falls into the cutting trough and is returned to the production process. Finally, head sides of the cake are straightened with a groove cutter. In order to achieve optimal quality, the cake is cleaned with compressed air nozzles after the cutting process. As a result, all the material rests are removed.

The precise cutting of AAC blocks of various sizes, shapes and thickness from 50 to 500 mm is the crucial characteristic of this cutting line with an active horizontal cutter.

Increased output – improved product quality

In order to prevent sticking of AAC blocks during the autoclaving process WKB engineers advised to use the Green Cake Separating Machine (GSM). Thanks to its application the production wastes are considerably reduced alongside with a significant rise in production output.

At the same time the product quality improves thanks to better steam penetration between rows of blocks.

The Green Cake Separating Machine used in this project is a stand-alone technical solution.

More flexibility for more efficiency

According to the modernisation concept of WKB Systems the unloading and packing areas of the plant are equipped with a number of unloading cranes (incl. pin manipulator) and a robot with a special gripper.

The robot is of six axis and is able to handle packing items of up to 700 kg with an operating range of 3 m. The parallel gripper takes two block rows (double block height) at once from the hardening grate, tilts them by 90° and forwards them to the packing area.

This additional equipment in the packing area improves the resources efficiency as well as the production output.

Modernisation goals achieved

Through modernisation of the AAC plant being carried out by the specialists of WKB Systems the manufacturer will receive an AAC production line equipped with up-to-dated technology, improved end product quality, increased production capacity and reduced operating costs.

Robot with a specially developed gripper for the packing area.

WKB Systems GmbH
Daimlerstr. 5-8
48477 Hörstel, Germany
T +49 5459 8059 28
info@wkb-systems.com
www.wkb-systems.com