

Kraft Curing Systems GmbH, 49699 Lindern, Germany

Heinrich & Bock rely on controlled concrete curing

Tradition and innovation have characterised the Heinrich & Bock concrete block plant since 1969. The quest for innovative products also presumes new production steps. That is why Heinrich & Bock company management finally invested in a controlled curing system from Kraft Curing Systems for its plant in Wittenheim to ensure improved quality, just-in-time production and in-line refinement.

■ Josef Hammerschmidt,
Kraft Curing Systems, Germany ■

Heinrich Bock is a long-established and innovative family business. The passion in day-to-day work is reflected in high recognition by customers. Great design and technology know-how are guarantors of a very high level of product quality.

The family business was founded near Steinbourg in France as a concrete block plant for hollow blocks and floor blocks. The manufacturing of paving stones began in 1982. The production of patio slabs began several years later. Currently, the business owns three plants and employs 100 people. A broad range of refined products are manufactured with diverse secondary processing methods such as blasting, curling, aging and impregnation. The products are sold through building material dealers.

There is a 3,500 m² exhibition park in Steinbourg, where the broad product range of paving blocks, masonry blocks and patio slabs are displayed. To give their customers a better overview during project planning, Heinrich & Bock makes the JardiVision design software available to its customers free of charge. The software allows different products from the product range to be laid in different layout and construction zones, enabling visualisation.

An additional pillar of success is a licensing business that has been very well received by the market. The "KEOPS +" anchoring system also impresses with its certified and proven properties: resistance to tilting, pull-out, subsidence and reduction of noise pollution.

Concrete doesn't dry...concrete cures

The paths of the Heinrich & Bock and Kraft Curing Systems firms crossed in the autumn of 2015 in the course of Kraft's "Concrete doesn't dry... Concrete cures" marketing campaign. A tour of the Quadrix® System at the Betonwerk Godelmann concrete plant in Fensterbach, Germany followed. The path for collaboration was smoothed due to the positive impressions from the tour, as well as Kraft's many years of experience and the expert, customer-specific solutions approach.

Kraft's challenge in the Wittenheim plant, which Heinrich & Bock had owned since 1998, was to create a consistent day-to-day climate in the large volume chamber throughout the year in order to achieve consistent early strength and product quality. The choice fell on the Quadrix System from Kraft Curing Systems, which had already impressed Heinrich & Bock during the tour in Germany.

Additional enclosure brings benefits

The rack system had already been enclosed for several years and was closed off by a sliding door following completion of production. But the Quadrix System from Kraft also includes the enclosure of the lowerator and the finger car. This design is significantly more energy-efficient, provides a more consistent curing atmosphere and also ensures that the transfer car suffers less damage. After careful consideration and cost-benefit analysis, the Heinrich & Bock Company followed the recommendation to also enclose the transfer car, elevator and lowerator areas and, at the same time, placed the order to install the established system a few weeks later.

Only a week later, a project meeting took place. The Kraft project manager checked the insulation and discussed the enclosure of the elevator and lowerator with Mr Robert Heinrich. The Heinrich & Bock Company installed the insulation itself. Completion of the insulation was followed by the assembly of the Quadrix System with the following components:

- Quadrix circulation and heating unit, which is equipped with radial fans and a stainless steel heat exchanger.
- Nautilus™ insulated air duct piping for ±1 °C and ± 3 % rh uniform distribution throughout the curing chamber with an air velocity of less than 1 m/s.



Heinrich & Bock headquarters in Steinbourg



Exhibition garden in Steinbourg



Enclosure of the transfer table aisle and the elevator and the lowerator ensure an energy-efficient system and protect the finger car.

- Five sensors for display and control of consistent temperature and humidity of 35 °C and 95 % rH.
- AutoCure® control for automatic or manual climate control. The Kraft Curing control system is specifically produced and designed for each individual customer. Recording of energy consumption data to provide an energy management overview is also possible.
- Humidity control with the AutoFog® system, which fogs water when humidity is too low and extracts excessive moisture from the chamber.



The Quadrix® circulation and heating unit stands behind the chamber and takes up little space. The control cabinet and humidifying system stand nearby.



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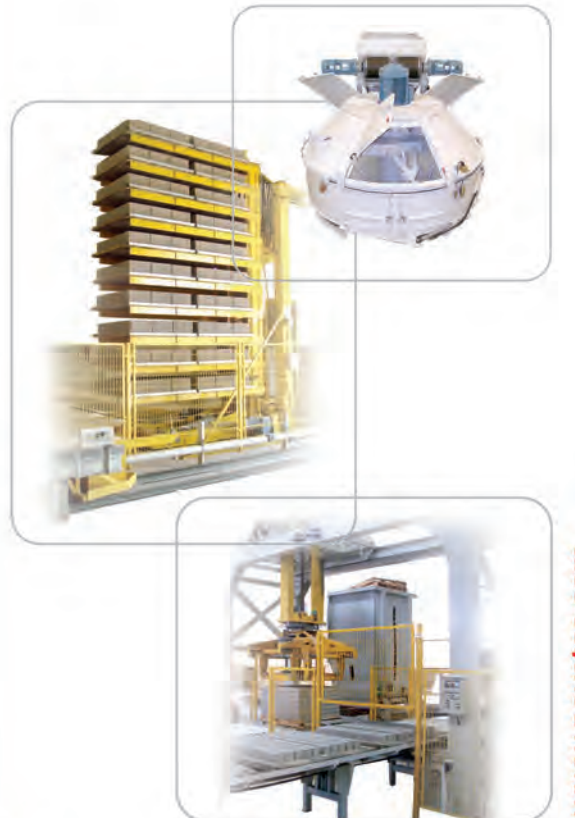


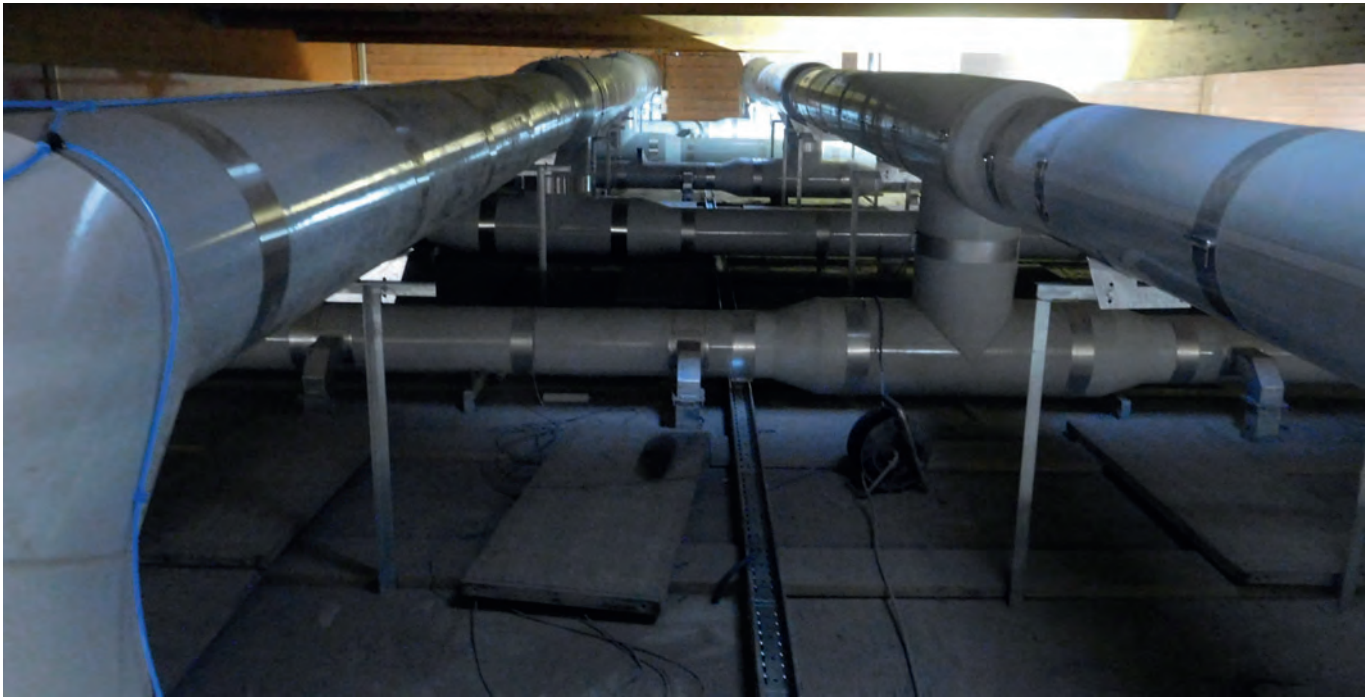
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Special secondary processes: Splitting, ageing of paving stone blocks, calibration of blocks...





The insulated air ducts above the chamber with high-performance humidifying nozzles.

- Heated hoods for the production openings on the wet and dry side to prevent condensate that drops on the fresh products.
- Fans for the sliding table aisle ensure zones free of fog and condensate.

Assembly of the Quadrix Systems was carried out during production and took 15

days. In consultation with the plant manager, a portion of the assembly took place when production was at a standstill. Certain passages in the chamber had to remain free in order to install the internal duct drops. The internal distribution ducts with adjustable air outlets at every level ensure precise distribution and control over the air velocity. To keep the energy loss as low as

possible, insulated primary and distribution lines were used that run above the curing chamber.

Problem-free commissioning

The commissioning took five days in total and encompassed the commissioning of the system, the system settings and a slow heat-



Air distribution lines inside the chamber to regulate air distribution and limit air velocity to less than 1.00 m/s.



Due to the air distribution in the transfer table aisle, this area and the finger car remain dry. No condensate or mist forms that could result in a possible failure of the finger car distance measurement, which is carried out by lasers.



One of two heated hoods installed between the lowerator and chamber wall prevent the escape of warm and moist air, preventing any condensed drops of water reaching the fresh blocks.

ing up of the curing chamber to the necessary post-treatment temperature and relative humidity - normally between 35 °C and 40 °C and between 85 % and 95 % relative humidity.

At the conclusion of commissioning, 20 temperature and humidity sensors were distributed throughout the chamber to verify the guaranteed values of ± 1 °C and 3 % rh. The air distribution system inside the chamber was adjusted on the basis of these measurement results. The final display of the temperature and humidity serves the customer as proof of the homogeneity of the curing environment. Following the completion of the commissioning the operators were trained.

Goal was achieved

The Quadrix System has been a necessary step for Heinrich & Bock to ensure flexible production and high product quality. The paving stones can now receive post-treatment as soon as the next day, i.e. after a maximum of 24 hours, in the finishing plant built by Heinrich & Bock.

The same constant early strength and quality is guaranteed by the consistent, uniform temperature and humidity. Due to the excellent results, a further Quadrix facility is planned for an additional plant. Only three months after commissioning, Mr Patrick Heinrich said: "If I were to build a new plant, I could save space, production boards, rack passages, and thus a lot of money with a Kraft Quadrix system."

FURTHER INFORMATION



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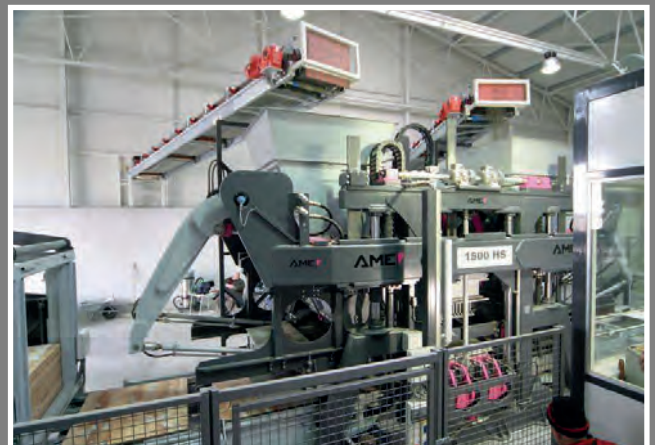
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Mobile plants for (insulated) hollow blocks, wood concrete blocks etc.



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