

JOURNAL

Economic plants for autoclaved aerated concrete blocks and panels, fibre cement sheets, quicklime and dry mortar

TOPICS



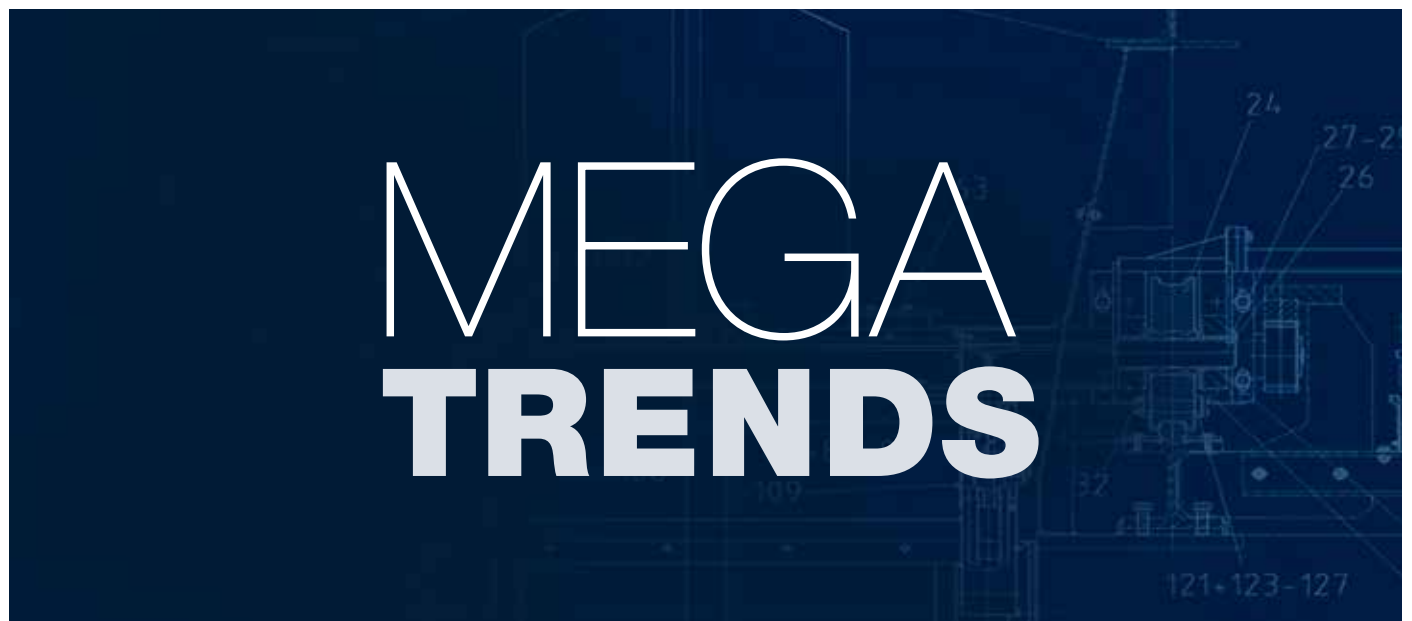
Is your plant "smart" yet?
 The new AAC plant generation is "smart"



Available on spot
 Wehrhahn Remote Technical Service



New waterjet cutting systems
 Flexibility and precision for a wide range of sheet dimensions



02

superSMART CUTTING LINE – ONE FITS ALL

Megatrends driving the AAC world

AAC is a well-known, widely used and outstanding wall building material.

Its advantages, such as light weight, low thermal conductivity, high strength at low densities and fire resistance properties have convinced people all over the world.

For many years, AAC has primarily been produced as blocks, supplemented by a few reinforced products, e.g. lintels or wall and roof panels. Global requirements are changing rapidly. Mega-Trends, like urbanisation, new housing concepts, digitalisation, etc. influence the building industry.

Other factors are climate changes, demographic developments and a resulting new public awareness of life. They have a deep impact on wall building materials. Building methods are changing significantly.

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Prefabricated building solutions are getting more and more popular, especially in areas with high-rise or at least multi-storey buildings. Here, the trend is moving from brick solutions towards prefabricated elements. These are simply installed rather than laid with mortar and plaster. However, there is still – and is expected to remain – a large growing market for brick products. To serve this market, modern AAC production plants

need to allow utmost flexible production conditions for both blocks and panels.

What are the most appropriate plant and technology solutions for block and panel production? Should AAC cakes be cut in upright or in flat position? Should a cake be separated in the "green stage" or after autoclaving? Should a cake preferably be autoclaved in flat or in upright position?

The answer is, as in many other aspects of life, there is not just black and white. Investors can rely on expert advice from Wehrhahn with proven technical solutions to meet their individual requirements. Wehrhahn offers by far the widest range of individual plant concepts – for every investor the perfect fit!



FLAT CAKE CUTTING as an add-on

Wehrhahn plants feature tilt-cutting technology, the leading technology for blocks and thicker panels with tongue and groove. Our latest innovation is the development of a new thickness cutter as an add-on for the

latest AAC plant generation. This cutter was primarily designed to produce thin panels (35-100 mm thickness) with super smooth surfaces. A double cutting wire system, oscillating at ultra-high speed, facilitates the thickness cut. The first wire cuts the thickness, followed by a second wire to smoothen the cutting surface. The result is a super smooth surface of the cut panel.

The Wehrhahn tilting machine brings the cake back into a flat position, onto a high-performance conveyor system. The conveyor transports the horizontally placed cake through the thickness cutter.

The two main advantages of this unique concept are:

- less maintenance: no grids with lamellas are needed
- reduced production costs: no grab handling of the cake needed, which requires cakes with higher binders content and consequently higher costs

This new machine is an add-on to the high-precision cutting line of a typical Wehrhahn SMART or superSMART plant:

Wehrhahn technology is setting Megatrends in AAC production!



ON OUR OWN ACCOUNT

We invest into the future!

We are proud to announce that the construction work for our new office building is in full progress! As of 2022, the demolition of the old building and the development of the new building have begun.

To ensure that our staff can continue working in the office, the entire construction will be divided into three phases: First, a large part of the new building will be constructed on the vacant area in front of the current main building. The first staff members will move in after the completion of this phase. Then, the old main building will be demolished and another part of the new building will be erected in its place, so that more staff can move in. In the final phase, the remaining old buildings and halls on the property



will be demolished, the new building finally completed and the outdoor facilities laid out. The construction is scheduled to be finished in 2024!

Exciting new features of the new building!
· 3.000 m² of innovative office building
· fully equipped training centre for customers

- new and extended R&D and technology centre
- geothermal heating and solar power for customers

INTELLIGENCE INCLUDED – INTEGRATED AS STANDARD – AVAILABLE IMMEDIATELY

Is your plant “smart” yet?

Investors who rely on high quality products rightly have high expectations towards plant technology.

Therefore, an intelligent production process is essential for successful and competitive operation. The key to run a smooth (“smart”) production process lies in advanced automation. Integrated as standard, the new Wehrhahn AAC plant generation uses “smart” technology. Wehrhahn MCS (Master Control Server) is a single system, optimising both the production plant and the process. It collects,

evaluates and uses comprehensive data, in order to enhance the PLC-controlled machine operation. A simple plant operation is leading to the maximum of comfort and safety. In addition, the MCS executes self-optimisation of machines to ensure an entirely reliable and “smart” production process.

How does Wehrhahn MCS work?

Three smart modules run simultaneously and continuously exchange data with each other: Firstly, all available sensor data, such as energy data or raw material parameters, is collected and stored in a central database. Secondly, the data is prepared and evaluated, to allow multiple analyses and

processings to be run. The entire process information is provided to the plant control. Here, various KPIs, up to the OEE (Overall Equipment Effectiveness) are generated and visualised by MCS-Dashboards. The benefit? The management can easily and comfortably decide on possible measures to increase effectiveness, quality or capacity. Finally, the third module optimises machines and their processes by using “smart” algorithms.

In contrast to conventional pre-programmed function step chains, Wehrhahn automation systems work incident-based. Thus, the function sequence is more flexible and responds intelligently to product specific

requirements and incidents. User friendliness is given by comprehensively arranged dashboards. Parameters can individually be adapted to the needs of each user. Plant status, process efficiency, service orders, etc. can be seen instantly.

In today's plants it has become merely a simple click to improve product quality and to produce more efficiently than ever before!

SEE MORE:



FOR OPTIMAL, ECONOMIC PRODUCTION OF HIGH QUALITY BUILDING MATERIALS:

- Simple operation**
→ the maximum of safety and comfort
- Self-optimisation**
→ an entirely reliable production process
- Smooth process**
→ for the highest plant efficiency



WEHRHAHN REMOTE TECHNICAL SERVICE

Available on spot



Remote service in general is not a new feature. It has been part of the Wehrhahn Service for many years. However, pushed by the pandemic situation and the resulting travel restrictions, the concept has been fine-tuned during the past year.

Wehrhahn Remote Technical Service (RTS) can ideally complement and nearly replace traditional "on-site" Technical Service. The concept is simple: As an overall virtual service concept for various application fields, it combines the advantages of Technical Service, Remote Service and Support. Near Tashkent in Uzbekistan, Wehrhahn and customer East Mining Invest started the plant installation in the be-



ginning of 2020. When the pandemic made it impossible for Wehrhahn Specialists to travel abroad, RTS took over. East Mining Invest was able to produce their first cake in September 2020. Ever since, they have been producing AAC blocks under the brand name 'Arton'. Flexible working hours to adapt to the local time in Uzbekistan and skilled translators have been the basis for successful communication. As it is important to have a common understanding in order to carry out the service quickly and smoothly, work steps have been well-structured and carried out accordingly. Wehrhahn has developed a unique RTS guideline: the Wehrhahn Project Management Tool (WPM) for status monitoring and scheduled meetings on a daily to weekly basis.

Wehrhahn Specialists have direct remote access to the customer's plant. This ensures a close and specific Technical Service. Consequentially, the production process is constantly monitored and optimised. The specific



"Versatile possibilities of remote service, remote installation and remote training complement the smart production. This is essential in times, when quick action is necessary and also under exceptional conditions."

– Frank Pottin, Wehrhahn Director of Electronics and Automation

needs of every plant are met at all times. The increasing demand of RTS led to a reduction of travel related costs and delays. Wehrhahn specialists are much more flexible and available on spot for any required assistance. In addition, the customer's personnel will be trained and thus their knowledge of the plant and process is improved.

REFURBISHMENT AND UPGRADING

Stay competitive!

An efficient plant, solid construction, state-of-the-art technology, reliable production, consistent quality, a predictable sales market, satisfied customers.

Who does not dream of this? In reality, all these factors are dynamic. Building material users have changing demands over time, requirements for products and quality standards evolve, technologies become obsolete, the market is volatile, and machines can wear out at some point, competitiveness is at risk. Then the time has come to ask: What's next?

An increase in plant capacity is one of several options in order to produce in line with the market when demand is likely to be high – "grow with the market". Another option is to diversify by producing additional products. Block production plants are often expanded to include panel production. Fibre cement plants may produce sheets of other dimensions or other sheet thicknesses and densities to enlarge the product portfolio. Retrofitting with intelligent control and automation modules makes plants fit for the future. This measure reduces production costs and meets the increasing demands for ecological standards.



Before: Good quality AAC, however the machines were no longer state-of-the-art.



After: An impressive example of a full factory upgrade

Some plant operators even decide to make a "sharp cut", dismantling the old plant and building a completely new one. There are more and more producers who invest in a second plant. **The decisive factor is an individual approach.** This is where Wehrhahn's strength as a plant manufacturer comes into play. Due to the high precision in individual machine construction, the continuous optimisation of the technology, the production processes as well as the comprehensive expertise and service quality,

Wehrhahn is the ideal partner to continuously accompany this process of change. The first-class product quality maintained over the years, consistently serves the market even after a long-term plant life and is a guarantee for future-proof building materials production. Markets continue to develop. With a solid basic plant technology, modernisation measures from time to time are manageable and worthwhile investments, to considerably enhance a plant and secure its future.



NEW WATERJET CUTTING SYSTEMS

Flexibility and precision for a wide range of sheet dimensions

Green sheet cutting systems in fibre cement production plants need to be highly efficient in view of tool costs and equipment availability.

Here waterjet cutting systems have proven to be advantageous due to the absence of knives that need to be exchanged and re-sharpened frequently. However, waterjet cutters need water collectors, implemented in the sheet conveyor system. These water collectors usually make the cutting system inflexible for the adaption to various sheet dimensions. This can be a disadvantage, especially if several different sheet lengths are part of the product range to be produced.

Wehrhahn's lately built waterjet cutting systems are designed differently to solve this problem: Several movable cutting heads are arranged on a track orthogonal to the sheet transport direction. These heads are processing the sheet cross cut when moving crosswise over the positioned fibre cement sheet. Furthermore, the same cutting nozzles can accurately be positioned on the track while the fibre cement sheet is fed by means of the sheet conveyors to process the longitudinal cut. This arrangement allows changing sheet dimensions just

by different settings in the control system. Even diagonal corner cut-offs can be made when cutting heads and sheet transport work simultaneously and synchronised. This is advantageous, especially for the production of air-cured corrugated sheets with two corner cut-offs per sheet or also for a small quantity of product only one cut-off for the verge sheets.

Depending on the number of installed cutting heads, these new waterjet cutting systems also allow for plank cutting in different widths and lengths, adjustable just by changing the settings in the control system. If many cross cuts per green sheet have to be made for thin fibre cement sheets, then cycle time and plant capacity need to be carefully investigated. Wehrhahn has developed its own discrete event simulation to predict cycle time limitations depending on the sheet dimensions to be processed. This allows quick mathematical modelling of the entire machine setup from forming roller to stacker robot including the trolley exchange sequence. Already during the projecting phase Wehrhahn can calculate, if sheet recycling during trolley exchange can be avoided by e.g. the installation of an additional buffer conveyor.

For high capacity production of thin and small size fibre cement sheets of standard dimension, the new flexible waterjet cutting system can even be combined with a clas-

The flexible waterjet cutting machine can be equipped with a number of advantageous features such as:

- automatic height adjustment of the multi-head cutting track to optimize the distance between cutting nozzles and fibre cement product for different sheet thicknesses
- automatic out-of-the-way movement of the cutting heads to maximize the passing for damaged or flipped sheets
- 2-piece water collector for easy maintenance and tool free extraction from the cutting machine
- automatic wall flushing at the inside of the water collector



Precise 3,800 bar waterjet cutting

sical multi-head cross cutter. Extended by the new flexible waterjet cutting machine, Wehrhahn offers a wide range of cutting solutions for efficient and flexible green sheet processing of air-cured and autoclaved flat or corrugated fibre cement products. Adapted

to the individual needs of every client, the waterjet cutting system in combination with our predictive event simulation, calculate the perfect cutting set-up. Therefore, minimum process waste during cutting and an optimal use of resources are the result.



Advanced system for combined and longitudinal cutting – for flexible choice of sheet dimensions!

NEWS FROM THE WEHRHAHN FIBRE CEMENT WORLD

Fibre cement projects around the globe



Great progress: Despite difficult weather conditions in Sri Lanka, the installation team cannot be held back!

Sri Lanka: El Toro Roofing Products

For some years El Toro has successfully been operating the Wehrhahn fibre cement production line for autoclaved flat sheets. The brand name has already gained international appreciation and sheets are exported to many countries, even to the high quality market in Europe. The positive experience with the Wehrhahn plant has encouraged El Toro to invest into their second plant for air-cured corrugated roofing sheets. This line is under installation and commissioning and is scheduled to be carried out soon.

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“Quality of raw materials is essential to get a first-class final product. In our laboratories, we test specific raw materials that we receive from our clients for their suitability for production.”

– Uwe Schley,
Wehrhahn Laboratory and R&D

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“A project manager is during the whole project time the permanent contact partner for our clients. Sometimes even years thereafter.”

– Peter Trumme,
Wehrhahn Project Manager



China: Zhongjing Building Material

Zhongjing ordered two high capacity flat sheet production lines for calcium silicate boards, just a few months after Corona pandemic started. Currently, the lines are under installation in Tianjin. Despite the travel restrictions, the Wehrhahn team was able to support Zhongjing both on-site and by Remote Technical Service from Germany.

After commissioning these two new lines, Zhongjing will then operate four high-performance Wehrhahn fibre cement plants. They are already considered as the leading producer for high quality fibre cement and calcium silicate boards!



NEWS FROM THE WEHRHAHN AAC WORLD

AAC projects around the globe

China: JingNeng Power

Beautiful first cake! Just in time for the Chinese National Day celebrations (70 years of the People's Republic of China), the first cake for the AAC panel production was produced!



Romania: Elpreco

Based on our recipe the Elpreco team started producing the first cake accompanied by Wehrhahn supervision. Further automation is still in progress.



Romania: Soceram

We are proudly presenting the first AAC cake! Wehrhahn customer Soceram successfully autoclaved their very first cake. Congratulations from Germany! We are sure, further projects are coming soon...



USA: AAC East

Good things come to those who wait. AAC East in North Carolina, USA is in the starting position to produce AAC panels on their Wehrhahn SMART plant. In the meantime, AAC panels are imported and sold under the brand name "Hebel". Main market: thin wall elements to be fixed to wooden or metal construction.



Well done! The investor Charles Paterno thanks the Wehrhahn team and especially our Senior Service Engineer Uwe Kroh for the hard work that everyone put into the start-up of this plant. We congratulate AAC East to their first cake!



We did it! To the great delight of our customer East Mining Invest, the first cake was produced.

Uzbekistan: East Mining Invest

Beginning and finance

East Mining installed the first AAC plant in Uzbekistan and called it 'Arton'. They chose Wehrhahn as their trusted partner for the project. Today, Arton is synonymous with AAC blocks of the highest quality.

Operating a pioneering AAC plant is always very ambitious. The involvement of specialists and partners with a high level of competence is required.

From first vision to perfection – Wehrhahn SMART plant grows with the market

AAC products had hardly been used in Uzbekistan before, but East Mining Invest was convinced of the many benefits of AAC. They decided to start small with the fully automatic Wehrhahn SMART plant for an initial daily capacity of 500 m³ per day only. Currently, they expand to 1.500 m³ for blocks and panels.

Factory n° 2

Together with Wehrhahn, East Mining is currently planning a second plant for AAC combined with a plant for fibre cement sheets in Navoi/Central Uzbekistan on a large industrial site.



Leading manufacture of high quality AAC in Uzbekistan

The various ways of AAC block separation

AAC plants which use tilt-cutting require a technology for separating regardless whether the cake is autoclaved in horizontal or in vertical position.

Since customers have different requirements and preferences, Wehrhahn offers two technologies, both of which offer advantages and disadvantages.

A very elegant way is the green cake separation. After cutting, the cake is tilted back into horizontal position. The green cake rests on a set of lamellas which support and separate the AAC blocks or panels. The machine can leave a small gap between the thickness joints after separating, facilitating easier steam penetration in the autoclaves. Wehrhahn developed and launched the first green cake separating machine 15 years ago. Green cake separating is good for thicker products (100mm above) but less flexible for thinner products especially with tongue and groove. The green cake separating requires a certain cake hardness in order to avoid marks, caused by the lamellas on which the cake rests during separating. This reduces the flexibility in the cutting line for cutting harder or softer cakes. Wehrhahn developed a new "intermediate curing station" to allow cutting of softer cakes but separating at the ideal cake hardness.

Another method is white cake separating. The thickness joints of the cake are separated after autoclaving. This requires higher separating forces and in case of insufficient process control, the white cake separating machine could even create some damages in very sticky parts of the cake. White cake separating is an option for thinner < 75 mm products because the layers do not tend to stick together as much as in vertically autoclaved cakes. Thin products would be more likely to tumble down during green cake separating. This danger is eliminated in white cake separators.



AAC products	Thickness	Wehrhahn recommendation
blocks and panels	100 mm and above	green cake separation
blocks and panels	75 mm and below	white cake separation
vertical wall panels	35 - 150 mm	installation of new Wehrhahn flat cake thickness cutter (no separation of panels required)
blocks and panels (percentage variable)		superSMART line with new Wehrhahn flat cake thickness cutter (no separation of panels required) and white cake separation for blocks.

When producing products < 75 mm thickness on a Wehrhahn PLUS plant, white cake separating is compulsory and green cake separating is no option. The cake is cut and autoclaved in vertical position. For Wehrhahn SMART plants, both separating systems can be recommended. The cake is cut in vertical, but autoclaved in horizontal position. The choice depends on the AAC product portfolio.

FLEXIBLE PRODUCTION

Variable AAC panel length in the mould

When producing AAC panels, sometimes the full length of the mould cannot be utilised. This is the case when one or multiple panel lengths do not match the typical length of 6m moulds. Some producers try to overcome these difficulties by the combined production of blocks and panels in one cake.

This, however, is not always possible, as the required densities of blocks and panels are different. The most appropriate

solution is to adjust the usable mould length by using movable damming walls. The unique Wehrhahn mould with four hinged walls facilitates the use of damming walls in an easy and safe way. After cleaning and oiling, the damming wall is automatically positioned in the mould by high precision stacking devices. The position is precisely chosen to utilise the mould length in the most feasible way. Once positioned, the mould walls are automatically closed and the damming wall is properly fixed inside the mould. A sophisticated sealing system prohibits any leakage after the slurry has been poured into the mould.

The smart system even allows the flexible positioning of the damming wall according to the individual needs of every Wehrhahn client and market requirements.





CORPORATE SOCIAL RESPONSIBILITY

A matter close to our heart

There are many ways, in which a company can engage itself socially and environmentally. Wehrhahn takes responsibility!

For years, we have been supporting a variety of social projects. We are committed to projects to protect children and the promotion of environmental projects is a matter of cause for us.

But, we also include the concept of corporate social responsibility into our own business operations. Through our Remote Technical Service, it has become possible to assist our customers remotely, as not every service is required to be rendered on-site. We check every business trip for necessity. Not only the environment benefits from fewer flights. Our customers can save time and money as well.

The incorporation of environmental responsibility into plant concepts is the second step. Starting in the designing and planning phase of a plant, Wehrhahn specialists always work to improve efficiency and reduce factory space. Wehrhahn's R&D department calculates the best use of resources, ensuring that every customer receives a unique recipe.

The new Wehrhahn plant generation is designed to work in a resource-saving way. Avoiding process related system waste. Hard scrap from a cake, for example is re-entered into the production process. In addition, Wehrhahn plants can recycle condensation water from the autoclaves. It is also entered back into the production cycle. Especially in arid countries, this is even more important and has become a top priority in Wehrhahn plant design.

We are proud to be supporting these projects and convinced that our engagement improves our environment and is an important step for the future.



MORE ABOUT WEHRHAHN

What's new?

Wehrhahn news can be found on our LinkedIn profile. On the Wehrhahn YouTube channel, you can learn more about our company, our history, as well as the production and application of AAC and fibre cement.



Company Channel AAC Worldwide!

The "AAC Worldwide" is an internationally sophisticated AAC journal, published quarterly in English. In January 2021, the very first Chinese edition of the paper has been released. Wehrhahn articles can be found in many editions of the English AAC Worldwide and we now also provide high-quality AAC content for the Chinese versions. Find out more on our Company Channel on the AAC Worldwide website and feel free to read our articles, e.g. "How to cut AAC production costs".

www.aac-worldwide.com/channels/wehrhahn



BAUMA 2022 IN MUNICH

Meetings face-to-face

Wehrhahn is a regular participant in international AAC and fibre cement exhibitions, trade fairs and conferences. For example: bauma Munich, IIBCC or EAACA conferences.

International Wehrhahn representatives facilitate local contacts and are quickly available for our clients worldwide.

We are looking forward to meeting you soon!



JOURNAL



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