



For almost 120 years WEHRHAHN has been a reliable and innovative partner for the building materials industry. Our success derives from keeping ears and eyes open and listening carefully to the needs of our customers around the globe.

Questioning machines and technologies on a permanent basis in view of customers' satisfaction is the driving force behind all WEHRHAHN activities.

In this report we aim to convey latest information concerning WEHRHAHN activities in the worldwide market.

All over plant efficiency has become a major issue in recent years. Innovations in machines and technologies in combination with latest developments in plant energy management systems provide WEHRHAHN customers with a competitive advantage. This has clearly been demonstrated in the WEHRHAHN presentation held at the 5th International Conference on AAC "Securing a sustainable future", Bydgoszcz, Poland, September 14 – 17, 2011. Detailed documents can be downloaded from our website www.wehrhahn.de.

In the GUS market we maintained our position as the market leader and again new references have been established.

China is the biggest AAC market in the world. Here WEHRHAHN managed to be the only European supplier of high quality AAC production plants. One of the leading AAC producers already purchased the third WEHRHAHN AAC plant in 2011.

For decades WEHRHAHN has been focussing on markets in South East Asia. Many AAC and fibre cement sheet plants were built. New references in Indonesia and Malaysia show the growing demand for high quality building materials in this region.

Please rest assured that our mission remains unchanged to provide intelligent solutions which make our customers successful.

Klaus Bohnemann
Torsten Dietz

Dr. Klaus Bohnemann
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AAC plant efficiency

Improving the efficiency of production is a continuous task in WEHRHAHN's engineering department and this contributes a lot to the success of WEHRHAHN plants and technology for manufacturing of AAC.

At WEHRHAHN we are always committed to further development of the production process in order to improve

- **The product quality in**
 - dimensional accuracy
 - compressive strength
 - lower density
 - better insulation (lambda-value)
- **Reduce production cost by**
 - reducing / avoiding hard waste
 - saving electric energy
 - saving fuel
 - better raw material utilization
- **Green aspects**
 - saving of resources
 - avoiding emissions

Fuel saving management

In WEHRHAHN plants this does not only mean transfer of steam from one autoclave to the next (saving of steam/fuel) but also using the heat content of released steam and condensate in order to

- Pre-heat boiler feed water
 - direct fuel saving
- Heat up the precuring area
 - saving of binders (lime)
- Heat up the waiting area in front of autoclaves
 - saving of steam/fuel
 - reducing the autoclave cycle time
- Heating of the building and offices if required in winter, in cold climates

Electric energy saving management

Intelligent engineering in plant operation and automatic sequences avoids unnecessary stand-by of electric equipment, for example, an intermediate mode of traditionally continuously op-

erating equipment like slurry agitators, pumps, hydraulic units, etc.

WEHRHAHN plants are equipped with energy saving motors for reducing the electricity bill.

Process

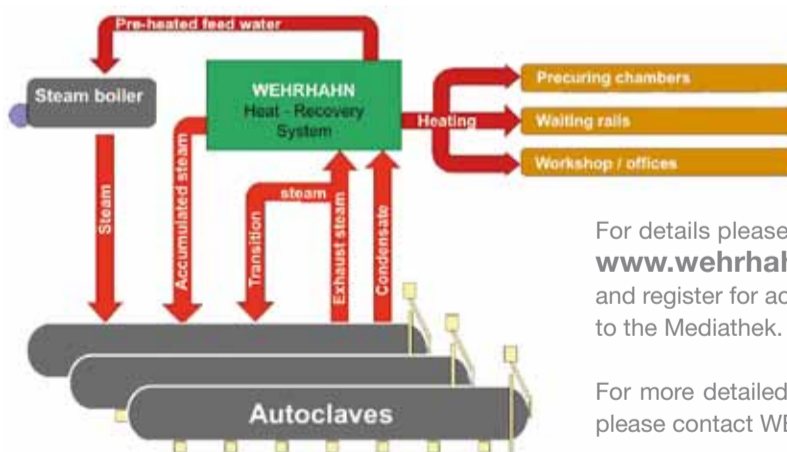
WEHRHAHN has further developed the tilt cake cutting system to

- Zero system waste, in WEHRHAHN plants no cutting bed becomes hard waste during autoclaving. The cake is tilted back after cutting and the cutting bed is recycled to return slurry before autoclaving
- Less demand for cement content due to reduced required cake strength during handling
- More efficient mixing, less agglomerates, better utilization of binders
- More automation meaning less man power

Cost saving

A recent comparison of different plant types (older flat cake cutting system versus new WEHRHAHN tilt cake cutting system) has shown a remarkable reduction of production cost by approx. 8 – 10 EUR/m³.

These facts were the basis of an attention attracting WEHRHAHN presentation held on the 5th International AAC Conference "Securing a sustainable future", Bydgoszcz, Poland, September 15 – 16, 2011.

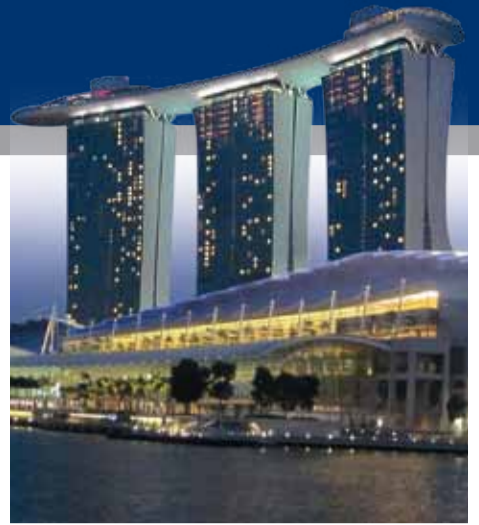


For details please see www.wehrhahn.de and register for access to the Mediathek.

For more detailed information please contact WEHRHAHN.



WEHRHAHN Heat-Recovery System



The world famous Marina Sands Hotel in Singapore is built using WEHRHAHN AAC blocks

News

AAC in Russia

Stroykompleks, Angarsk Extension

Use of ash to save environment

Stroykompleks mostly uses available cost-effective ash, stored long time ago in ash ponds. Stroykompleks' plant is universally equipped and can use all raw materials such as storage ash, pulverized ash and sand.

Eko-Zoloprodukt, Ryazan

Another ash using production plant with WEHRHAHN technology

ELGAD ZSI, Kolomna

Elgad builds a new PLUS plant on an empty field near Kolomna. The plant will start production early 2012 with a capacity of 1400 m³ of blocks per day.

Glavstroy, Ust-Labinsk, starts production

The latest WEHRHAHN plant in Russia of Glavstroy Ust-Labinsk has recently gone into production.

AAC in China

Tianjin House, Tianjin / China

A superSMART plant is scheduled to start operation in November 2011. Together with the PLUS plant which has been producing AAC blocks and panels for some years, Tianjin House is able to produce 1.0 Mio. m³ of high quality AAC per year.

3rd plant for Chinese customer

China is the most competitive AAC market in the world. A leading land and house developer purchased a WEHRHAHN PLUS plant some years ago.

Driven by success and the satisfaction with WEHRHAHN equipment and services, Tianjin House purchased a superSMART plant in 2010. Now, only one year later, the third plant – again superSMART – was purchased. With a totally installed capacity of 1.6 Mio. m³ annually, our customer has become the leading AAC producer in China.

Largest AAC market in the world

Did you know that the overall annual AAC production capacity in 2010 in China was about 70 million m³, which is about 3 - 4% of the market share of all wall materials? Clay brick is still the most popular wall material and has a total output of about 700 million m³ AAC will have a huge potential market in future since lightweight and well insulating wall building materials are gaining more and more market shares.

WEHRHAHN fibre cement sheet production plants are recognized as economic state-of-the-art production facilities.

Market leaders such as Dansk Eternit, James Hardie or Siam Fibre Cement purchased WEHRHAHN equipment to produce high quality fibre cement sheets at maximum possible capacities.

Today many markets require smaller plants which allow growing with the market. WEHRHAHN developed solutions to meet these requests. Keep the initial investment low, prepare the market and grow without purchasing a complete new line – this is the demand.

WEHRHAHN Successful in Asia

Chin Hin Group of Malaysia invests into a WEHRHAHN SMART plant for blocks, capacity 1200 m³/day. Chin Hin Group is among the major leaders of construction materials in Malaysia and is adding AAC blocks into their program. The plant is scheduled to start operation in 2012.

Broco of Indonesia starts large scale extension

Broco already operates a WEHRHAHN PLUS-1400 block plant. After years of market penetration the plant production is sold out and the management decided to sign an agreement with WEHRHAHN for a new WEHRHAHN superSMART plant with a capacity of 2000 m³ and more. The plant will be provided for blocks and panels. Though the market is just enough for the first PLUS plant,

Broco will start a massive marketing campaign and is optimistic to achieve full capacity within the next years.

Broco ships blocks all over the Indonesian Archipelago and neighbouring countries such as Singapore where the critical fire sensitive building sections of the world famous Marina Sands Hotel are built of Broco AAC blocks.

Broco also operates WEHRHAHN fibre cement plants in Surabaya and has planned an AAC SMART plant for East Java. Broco is currently installing their new dry mortar plant directly adjacent to the existing PLUS plant.

Latest AAC Technology for Turkey

The largest AAC plant in the world has

China:

Chinese AAC producers favour WEHRHAHN equipment

3rd plant for Tianjin House



Premium AAC blocks and panels produced in WEHRHAHN AAC plants

Tianjin Building Materials, Tianjin, is currently installing the third WEHRHAHN plant designed for up to 2000 m³/day block and panel production.

Our customer is the leading AAC producer in the Tianjin area. The first plant was installed some years ago.

Driven by success and the satisfaction with WEHRHAHN equipment and services, Tianjin House purchased a superSMART plant in 2010.

Now, only one year later, the third plant - again superSMART - was purchased. With a totally installed capacity of 1.6 Mio. m³ annually, our customer has become the leading AAC producer in China.

Azerbaijan:

First AAC and quicklime plant for Azerbaijan

AAC block and quicklime production

On an area of 12 ha, 40 km south of Baku at the shore of the Caspian Sea, a new building material plant has been put into operation.

AAC (Azerbaijan Aerated Concrete) operates a WEHRHAHN PLUS-1400 plant initially for blocks. Up to now Azerbaijan home builders use much heavier lime stone blocks hand cut from the typical Azerbaijan rock. Azerbaijan has a fast growing population and has an urgent need of today's state-of-the-art construction materials.

Azerbaijan is an oil and gas rich country. Industries mostly focus on natural gas and petrol production in the coastal region and directly from the Caspian Sea. Cement production is nearby in visible distance. Depending on local geology sand is not everywhere available and requires washing.

recently started production in Corlu near Istanbul. Proud owner of the new WEHRHAHN superSMART plant is the AKG Group, the leading AAC producer in Turkey, with their head office in Izmir.

HIL - Hyderabad Industries - started second WEHRHAHN plant in India

The new WEHRHAHN SMART plant in Gujarat produces ash based blocks. Ash from coal fired power plants is a favoured material in India and many other countries.



AAC and quicklime production plant successfully started in Azerbaijan

Quicklime has not been available in Azerbaijan and as a consequence WEHRHAHN installed a state-of-the-art shaft kiln with high tech heat controlled burning system especially designed for hard burnt lime of t₆₀ at 8 - 12 min. to be used for AAC or soft burnt lime for the Azerbaijan market as well as lime hydrate for construction purposes.



WEHRHAHN plants spread all over middle east

Success with wall high panels

Panel benefits

AAC panels offer a wide range of benefits in single and multi-family homes, apartment and office buildings as well as small and large scale industrial and commercial buildings.

Panel construction brings all its benefits for contractors and developers to build a serial of adequate homes and buildings in an industrial scale.

External



Wall high panels are not only used for external walls but quite frequently for separation walls inside the building.

Panel homes for fast installation on ready concrete foundation slab:

Load bearing panels without tongue and groove are glued together with normal AAC glue mortar by a crew of three installers plus one crane operator. Walls for homes of 240 m² have been installed in 7 working days.

WEHRHAHN plants for panel production

All WEHRHAHN plants are suitable to produce blocks as well as steel reinforced lintels and panels.

Internal

The internal panels, mostly 75 or 100 mm thick, are wheeled with a special car on the floor and installed by one installer only.



Thin wall high panels are ideal in multi-family apartment buildings as they allow to be individually installed according to the owner's demand. For more information please ask WEHRHAHN!

Those panels favourably compete with gypsum walls due to

- faster installation
- better sound absorption
- higher fire protection

Reinforcement

(depending on panel use)

- non load bearing single mat or only wire (for transportation)
- load bearing with two mats (basket) (as load bearing reinforcement)

Typical panel lengths

- up to 3.000 mm = wall length (homes and apartments)
- up to 6.000 mm = horizontal for commercial and industrial buildings = flat for roof and floor slabs



WEHRHAHN fibre cement sheet production plants

Fibre cement – especially flat sheets – are used as dry walls similar to Knauff sheets but additionally for innovative architectural solutions in a large variety of different applications.

1. Façades
2. Interior construction = dry walls similar to Knauff sheets
3. Interior construction = architectural design
4. Roofing

Features

Fibre cement sheets are a world wide used environmentally friendly cementitious building material.

Fibre cement is water resistant, fire proof, flexible, long lasting and can be nailed or drilled.



For the surface treatment of fibre cement, many options and colours are applicable.

Capacities of WEHRHAHN fibre cement production plants

| Market | Capacities t/hour | Number of sheeting machine cylinders | Sheeting machine width |
|--------|-------------------|--------------------------------------|------------------------|
| Small | 2 - 3 | 2 | single width |
| Medium | 8 - 10 | 4 - 6 | single width |
| Large | up to 20 | 5 | double width |

Note: Other capacities upon request.

Quicklime for AAC Production

WEHRHAHN designs, supplies and installs complete AAC-suitable lime burning plants starting with the evaluation of limestone rock and burning tests through supply of the whole burning process up to fine grinding and even slaking (hydrated lime) and blowing into silos.

The WEHRHAHN lime production units use a special single shaft kiln technology with controlled burning process by adjustable burner lances and controlled fuel and air feed. Burning technology comes from Maerz – the worldwide leader in lime burning technology.

The kiln can burn the lime quality according to the demand of the end user as the burning process ensures that all limestone particles (middle and other radius of the kiln) get the same burning temperature and the same burning time.

Such lime production units can be installed into the AAC plant using the same infrastructure, management and laboratory or away from AAC production in the limestone quarry.

AAC – “Azerbaijan Aerated Concrete” has recently started its quicklime production attached to AAC production. The plant features latest technology starting with limestone crushing and screening, lime burning, quick lime milling and slaking.

The ideal lime for AAC production

The ideal lime for AAC production is “hard burnt” or “medium burnt”. This lime has a low reactivity (slaking time of 5 - 8 (up to 12)

minutes to reach a temperature of 60 °C). The low reactivity facilitates consistent and slow rising of the AAC mix in the mould.

Important features of the special single shaft kiln are

- Lowest possible kiln volume and consequently low investments for steel structures and refractory, small area for installation is needed
- Adjustable burning temperature allows customized burning to requirement
- Use of heated cooling air during burning (the ready burnt quicklime is cooled by air) = most effective energy use = lowest possible energy consumption (approx. 30 – 50 % less than rotary kiln)

Sizes

The special single shaft kiln is available from 50 to 300 t/d.



A single shaft kiln with controlled burning process is the most suitable technology for hard burnt AAC lime.

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