masa
Milestone to your success.

AAC Production

PLANTS
MACHINES
CONCEPTS

The output figures listed in this brochure are guiding values. In practice, the production output depends on different factors.
These are: respective plant layout, machine settings, mixing recipes, raw materials and additives used, ambient and other conditions.

CONTENTS

MASA – YOUR NUMBER ONE PARTNER FOR SUCCESSFUL BUILDING MATERIALS PRODUCTION

Individual, sustainable plant solutions

Since the day we were founded, we significantly influence developments in the building materials industry. Our concepts, machines and plants, which have demonstrated their worth for many years, can be quickly updated or expanded if necessary. Our basic philosophy is: to provide flexible and intelligent solutions that enable us, as partners, to help our customers succeed.

WE DO THIS BY MEANS OF:

- Fully automatic machines for the manufacture of concrete products, AAC products as well as sand-lime bricks
- Sophisticated and well-engineered technology
- Several decades of experience gathered by competent professionals
- Service centres all over the world
- Active and effective advice, from design to implementation
- Reliable spare parts supply and customer support

An approach, which combined with hard work, has borne fruit: Today, we can claim to be a global market leader in the design and manufacture of plants and machines for the building materials industry. At present, this success is made possible by some 500 staff.

FROM RAW MATERIAL TO FINISHED PRODUCT

The manufacture of concrete products, AAC products, and sand-lime bricks places high, individual demands on the production plant in question. Only when all components are compatible and the processes are optimised will the plant run economically.

DESIGN COMPETENCE

We define machine configurations as well as logistically and process-optimised plant layouts together with you, based on your requirements for the products to be manufactured, the desired production output and the local conditions at your site.

The close-knit interaction between design, engineering, production and service leads to complete solutions which can encompass all relevant elements of a production plant:

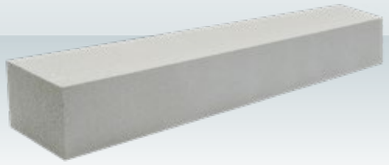
- Preparing, dosing and mixing of the raw materials
- Manufacturing the products
- Hardening
- Handling
- Packing
- Surface treatment
- Plant control
- Further equipment

EXPERT ADVICE,
EXCELLENT QUALITY AND
CUSTOMER-ORIENTED SERVICE

THE WALL BUILDING PRODUCT
AUTOCLAVED AERATED CONCRETE (AAC)

Efficient and sustainable

Lintel



Block

U-Block

Block

Block with tongue and groove and grip pocket

ECONOMICAL
AND RESOURCE-SAVING
AAC LEAVES A SMALL
CO_2 FOOTPRINT AND SAVES COSTS.

FUTURE-PROOF WITH AAC
BUILDING WITH THE MASSIVE SOLID BLOCKS
MEANS TO MEET TOMORROW'S
REQUIREMENTS ALREADY TODAY.

WHAT MAKES AAC SO POPULAR IN THE BUILDING INDUSTRY?

Perfect heat insulation
Single-leaf AAC walls already enourmously contribute to the thermal cosiness of interior space – both in summer and in winter. The excellent heat insulation power of this building material is based upon its low raw density and high air void content.

Optimum fire protection
Elements made of AAC offer an excellent structural fire protection. The mineral building material does not contain any combustible components and belongs to the highest building material class ("non-combustible"). This does not just mean safety, but a financial incentive as well: Many insurance companies reward preventive fire protection measures with lower insurance rates.

Noise protection conforming to standards
Structural noise protection is particularly important in residential buildings. Monolithic exterior walls and double-leaf separating walls of AAC masonry comply with the noise protection standards without any further measures. Compared to other building materials, AAC reaches even better results with the same material density.

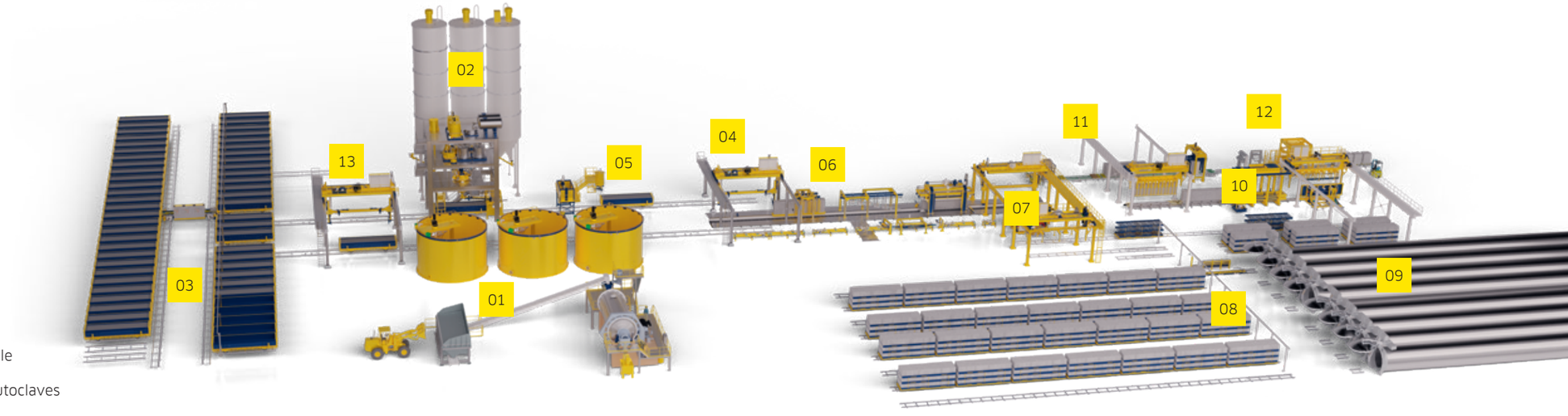
WE ARE THE ALL-ROUND CAREFREE PACKAGE
EXPERTISE IN AUTOCLAVED AERATED CONCRETE

Service based on experience

MASA – YOUR LONGTIME PARTNER FOR THE BUILDING MATERIALS INDUSTRY:
FROM FORWARD-LOOKING PLANNING
TO COMMISSIONING
– AND BEYOND.

THE AAC PRODUCTION PLANT FOR YOUR NEEDS AND REQUIREMENTS

Extendable Masa solutions



01 Sand preparation and storage
02 Dosing, mixing, casting
03 Fermentation area
04 Transport to cutting line and mould removal
05 Completion and oiling of the casting mould
06 Cutting line
07 Transport plant, tilting table, green separating table
08 Transport platform and waiting area in front of autoclaves
09 Autoclave/steam boiler
10 Re-tilting table, hardening grid transport and hardening car return
11 Block transfer device
12 Packaging plant
13 Reinforcement area

Please note: The shown production plant for AAC just serves as an illustration and does not substitute a real layout plan. The displayed solutions are special solutions partly. For reasons of clearness, safety grating is missing.

RAW MATERIAL PREPARATION
MIXING
FERMENTATION
PROCESS


01


02

03


04

01 Sand preparation and storage
02 Dosing, mixing, casting
03 Fermentation area
04 Transport to cutting line and mould removal

CUTTING
HARDENING
PACKAGING
PROCESS


05


06


07

08


09


10


11


12

05 Cutting line
06 Tilting and removal of bottom cut
07 Separating
08 Autoclave loading and unloading
09 Steam pressure hardening
10 Block transfer device
11 Packaging
12 Finished products packaged ready for transport

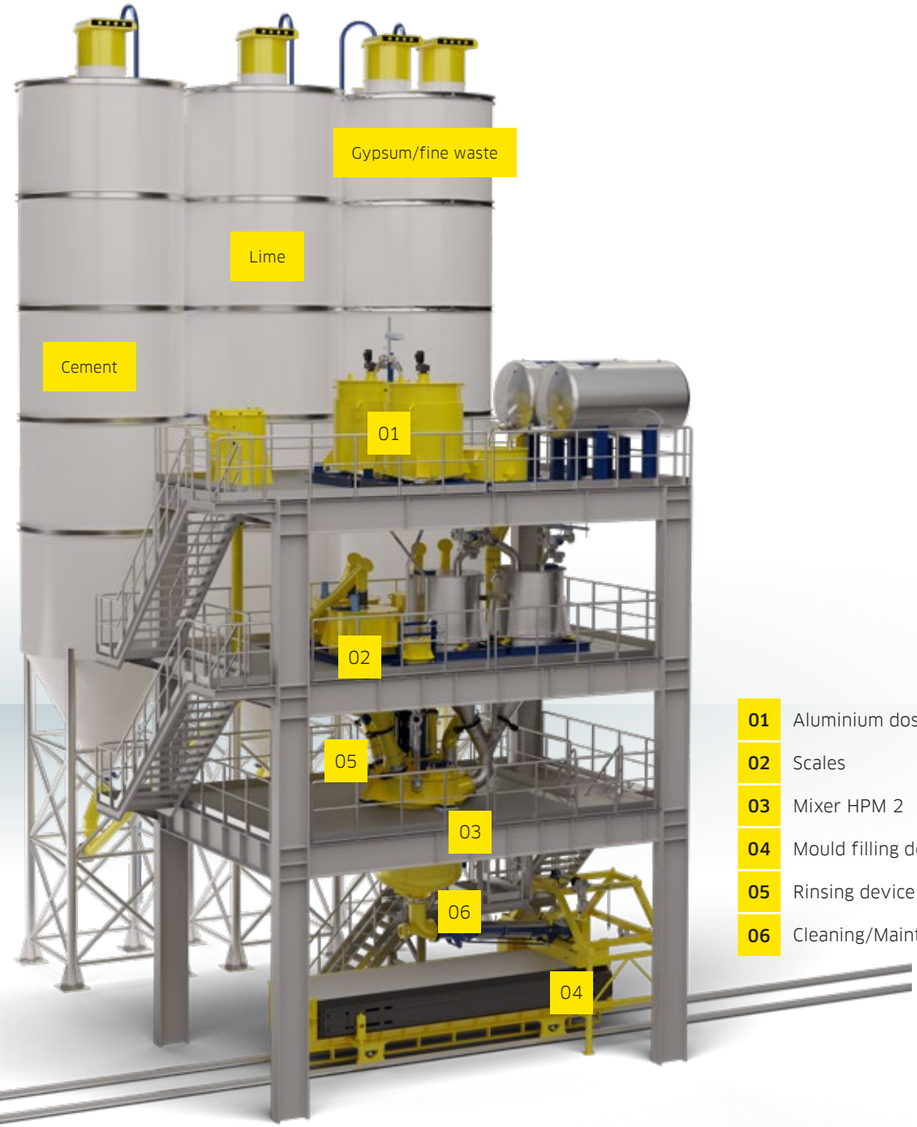
DOSING, MIXING AND CASTING

The optimum AAC compound

It's all in the mixture. Or, in other words: The quality of your products always directly depends on the quality of the mixture. We focused on exactly this when we designed the mixing plant. All machine and control components are designed for the optimum production of AAC and are in use worldwide.

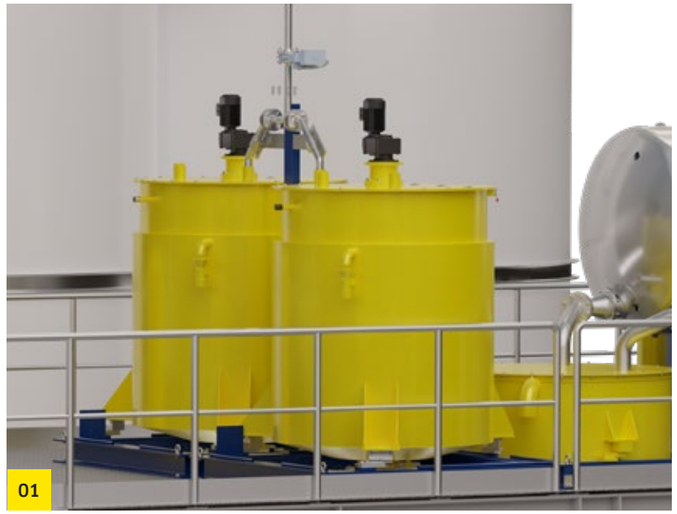
PROCESS CONTROL
The fully automatic Masa mixing plant control system supervises, controls and records all process-relevant parameters for an efficient manufacture of AAC products.

OUR FOCUS:
OPTIMUM MIXING RESULTS,
ENERGY EFFICIENCY, SUSTAINABILITY
AND EASY MAINTENANCE
FOR PERFECT PRODUCTS



01 Aluminium dosing plant
02 Scales
03 Mixer HPM 2
04 Mould filling device
05 Rinsing device
06 Cleaning/Maintenance

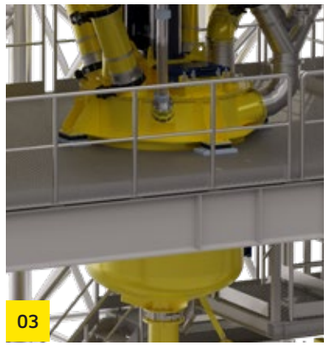
THE COMPONENTS IN DETAIL


01

Aluminium dosing plant
The Masa mixing plant concept is based on up to two preparation tanks, contents 2000 l each, so that, depending on the required block density resp. compressive strength, two types of aluminium can be used to be dosed into the aluminium scale positioned below the tank(s).


02

Scales
Bonding agents such as lime, cement and gypsum are weighed and fed into the Masa mixer together with sand slurry and water.


03

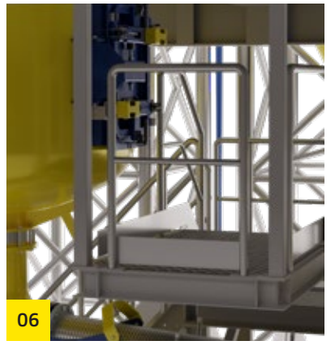
Mixer HPM 2
The mixer type HPM 2 is the quality-determining heart of the complete plant. Drive, geometry and stirring tool are designed in that way that the raw materials are mixed thoroughly to achieve the defined density at minimum power consumption.


04

Mould filling device
The AAC compound is smoothly fed into the casting mould from the end by means of the liftable and lowerable mould filling device. The mould oil is not washed away thus, and unwanted air pockets are avoided.


05

Rinsing device
The mixer and/or the casting device are automatically rinsed with water in adjustable intervals, so that a new mixture is not affected by remains of the previous mixes. The dirty water is 100 % reused in the process.


06

Cleaning/maintenance
The HPM 2 is equipped with a large maintenance door at the side.
A separate maintenance level enables an easy and safe access and change of the mixing tool.

HIGH-PERFORMANCE MIXER
THE NEXT GENERATION OF HPM 2

Designed to meet your individual requirements

In our high-performance mixer HPM 2, all the raw materials required for the production of high-quality aerated concrete come into contact with each other for the first time. The mixer is therefore the quality-determining centrepiece of the entire plant.

For the development of the high-performance mixer HPM 2, we analysed and evaluated the experience of our service department and the customer feedback. This resulted in several detail solutions that, in total, mean a considerable improvement, compared to the previous mixer types:

WAY AND ENERGY OPTIMISATION
- optimised raw material supply through pipes
- energy-efficient tangential supply of the slurries
- frequency-controlled speed of the stirring device

PRODUCT-RELATED OPTIMISATION
- special mixer geometry designed for products with low raw density

OPERATING COSTS OPTIMISATION
- long service life of the mixing tool due to the use of a frequency converter
- broad maintenance access for a quick change of the mixing tools and a short cleaning process

PERFORMANCE OPTIMISATION
- Due to the use of vibration absorbers to minimize the vibrations in the mixing tower, a cycle time optimising parallel mixing and weighing is possible.

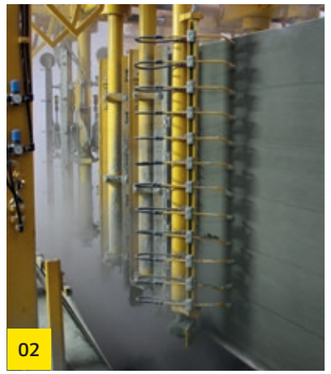
Schematic diagram: Different flow directions at vertical (l.) or tangential (r.) feeding of the liquid components.

CUTTING PLANT

01

De-moulding and transfer

The fresh aerated concrete cakes are demoulded with the help of the mould turning crane and transferred to the cutting line then.



02

Calibrating the block length

Cutting wires and specially designed smooth cutting knives cut the fresh cake to the required block length. The lengths can be varied with a central adjustment unit.

SUSTAINABILITY INCLUDED

To save raw material resources, all waste material accrued throughout the complete cutting process is collected, processed and returned to the production process. The rinsing water from the mixing plant is mainly used for this.

03

Profiling of tongues and grooves

Optionally, tongues and grooves can be produced in one step by means of profiling knives. This helps to generate particularly smooth and precise tongues and grooves. The pattern can quickly be changed with a simple changing system.

04

Generating the block width

Short, pneumatically tensioned cutting wires precisely cut the cake into up to 15 layers that correspond to the later wall thickness. The product dimensions can vary between 50 mm and 500 mm in 5 mm steps. Different dimensions within one cake are possible.

05

Generating the block height

With oscillating movements, short, pneumatically tensioned wires precisely cut the fresh cake to the required block height. The integrated vacuum unit lifts off the upper layer and returns it to the material recycling system.

06

Milling of grip pockets

To facilitate handling of the blocks on the building site, the optional grip pocket mill produces the grip pockets before the hardening process already.

07

Removing the bottom cut

The hydraulically operated tilting table swivels the cake back into its horizontal position. Thus, the bottom cut can be removed and returned to the material recycling system before hardening.

AROUND THE WIRE

The automatic wire breakage detection system monitors all cutting wires and minimizes the generation of waste thus. The quick tensioning system enables a quick change of wires and reduces downtimes thus.

SEPARATION

Careful treatment in green or white state

Depending on the raw material composition, AAC blocks tend to stick to each other. To reduce waste, it is necessary to separate the blocks carefully.

SEPARATING MACHINE
The separating machine for “green” products (green separating table) is integrated directly after the tilting table and helps to reduce the sticking of block rows in the autoclaving process.

The separating beams are made of solid steel plates. This high stability against bending protects high-density and reinforced products from edge fractures and cracks.

After each step, a rotating brush cleans the separating beams from material remains to guarantee a plain surface for the following products.

Green products are separated.

Green separating table with product-related adjustment of the separating beams

Made in Germany: The green separating table shortly before shipment from the Porta Westfalica works

White products after separation

Alternatively, we can offer a second method of separation: The separating machine for “white” (already autoclaved) products. We can advise you regarding the variant suitable for you!

AUTOCLAVE CONTROL SYSTEM
MASA KNOW-HOW FOR THE HARDENING PROCESS

Process control. Energy efficiency. Recording.

SAFE PROCESS CONTROL THROUGHOUT THE COMPLETE HARDENING CYCLE

The Masa autoclave control system regulates and supervises the process-relevant parameters pressure, time, and temperature so as to achieve the best possible final strength of the AAC at the lowest possible power consumption.

MAXIMUM FOCUS ON PRESERVATION OF RESOURCES

The hardening process in particular consumes a great quantity of energy. Therefore, we focus on an optimum utilisation of water, steam, and energy. Our systems are designed in that way that the plant can be optimised modularly.

POSSIBLE CO_2 SAVINGS:

- Process water heating
- Direct steam transport
- Steam retention
- Heat recovery
- Re-use of condensate

The modular design of the Masa autoclave control system aims at a reduction of the CO_2 emission to a minimum.

- Boiler pressure
- Inside pressure
- Set pressure
- Fresh steam pressure
- Peak temperature
- Inside temperature
- Bottom temperature
- Steam outlet valve
- Fresh steam valve

REINFORCED AAC PRODUCTS

Reinforced products have stood the test

Beside AAC blocks, the construction technique with large-size aerated concrete elements has become more and more popular. For example, wall, roof, ceiling and partition wall elements are particularly used for an efficient design with prefabricated elements for industrial and residential buildings.

To manufacture large-size products, additional steel reinforcements have to be put in. The same applies to lintels that are placed above windows and doors.

Reinforced AAC elements in use

REINFORCED PRODUCTS
PRODUCTION SEQUENCE

STEEL REINFORCEMENT CAGES AND FRAMES
In the preparation area, the individually required reinforcement cages are prepared. Depending on the required daily capacity of reinforced products, we can offer manual or fully automatic plant concepts. With the help of a frame system, the reinforcement elements are exactly prepared for each mould.

Preparation of reinforcement

LOADING AND UNLOADING UNIT
The loading and unloading unit places the prepared reinforcement frame onto the casting mould. This takes place immediately after the mould has been filled. During the fermentation process, the frame remains on the mould to make sure that the reinforcement cages remain in their defined position.

After the fermentation process, the same loading and unloading unit removes the frame from the mould. The steel elements remain in the AAC cake that is ready for cutting and is transported to the cutting plant then.

Placement of reinforcement elements

PLANT EXTENSION IN A FEW STEPS
In the basic planning of an AAC plant, we can consider various extension stages. This allows the implementation of the concept for the production of reinforced products even in already existing plants without any problems. We can carry out the necessary extension while production continues. That's what we call VARIO!

Storage of finished products

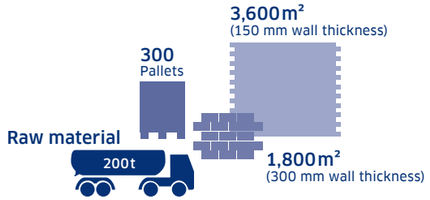
COMPARISON OF PRODUCTION VOLUMES
PER DAY

The calculation is based on the following initial data:

Density of the product: 400 kg/m³; raw materials (sand, lime, cement, anhydrite): approx. 370 kg/m³ AAC
Exemplary wall thicknesses of 150 mm or 300 mm standard blocks. Assumed pallet volume 1.8 m³

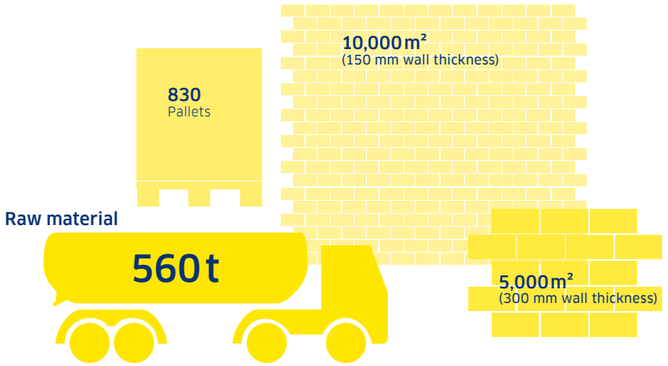
VB 540 ECO

540
m³



VB 1500

1,500
m³



VARIO BLOCK SYSTEM

BLOCKS WITH DIFFERENT WIDTHS			
PRODUCT DIMENSIONS	**LENGTH**	**HEIGHT**	**WALL THICKNESS**
Blocks	600 / 625 mm	200 / 250 mm	50 / 500 mm

VARIO PANEL SYSTEM

ELEMENTS FOR WALLS, ROOFS, CEILINGS			
PRODUCT DIMENSIONS	**LENGTH**	**HEIGHT**	**WALL THICKNESS**
Elements	up to 6,000 mm	600 / 625 mm	75 – 400 mm
Partition wall elements	2,000 – 3,000 mm	600 / 625 mm	75 – 400 mm

Production capacity: The plant systems VARIO BLOCK and VARIO PANEL are designed in that way that they can be extended step by step. This offers our customers a profitable access to the field of aerated concrete production and high flexibility with regard to their markets.

PLANT TYPE	MAX. PRODUCTION CAPACITY*	MAX. ANNUAL CAPACITY * (300 DAYS)	CYCLE TIME	NUMBER OF AUTOCLAVES
VB 360 ECO	360 m³ / day	108,000 m³ / year	20.00 min.	2 pcs.
VB 540 ECO	540 m³ / day	162,000 m³ / year	13.50 min.	3 pcs.
VB 660	660 m³ / day	198,000 m³ / year	11.00 min.	3 pcs.
VB 880	880 m³ / day	264,000 m³ / year	8.30 min.	4 pcs.
VB 1100	1,100 m³ / day	330,000 m³ / year	6.60 min.	5 pcs.
VB 1500	1,500 m³ / day	450,000 m³ / year	4.80 min.	7 pcs.
VB 2000	2,000 m³ / day	600,000 m³ / year	3.50 min.	9 pcs.

* Theoretically achievable capacity provided that suitable raw materials are available

AAC
MASA TECHNOLOGY CENTRE

Raw material analysis. Process optimisation.
Transfer of knowledge.

Laboratory equipment to evaluate raw materials and to simulate the manufacturing process

Our Technology Centre is a guarantee for an efficient production process. The Masa Technology Centre is continuously developed further to satisfy the growing requirements of the AAC production and the quality standards of our customers. We provide the technology for comprehensive raw material and product analyses.

RAW MATERIAL ANALYSIS
The selection of appropriate raw materials is the first step for the development and manufacture of aerated concrete products. We can carry out all chemical, physical and mineralogical analyses for you.

PROCESS OPTIMISATION
Based on the analysed, available raw materials, we design optimum recipes for your various products. Our target: Resource-saving and efficient manufacture of top-quality AAC.

TRANSFER OF KNOWLEDGE
Close to actual practise and competent: One key to increase productivity and quality is the continuous training of the operating staff. Supported by comprehensive Masa training materials, we qualify you in workshops here at our works and training courses at your works.

Talk to us!

BETTER SAFE THAN SORRY
SAFETY

Durable and comprehensive concepts

Two aspects are particularly important to us when designing and implementing plant concepts: maximum work safety and ease of operation. Both serve to protect employees, prevent accidents in production and minimise production downtimes. Masa plants meet the highest safety standards worldwide!

WHAT ARE OUR SAFETY CONCEPTS BASED ON?

- Applicable machinery directives and functional safety
- Country-specific functional safety concepts
- Customer-specific requirements
- Integration of cross-industry solutions
- Risk analyses and performance level calculations

SAFETY ALWAYS COMPRISES THREE ASPECTS:

- The safety of your employees
- The safety of your production process
- The safety of your plant and its components

MASA NEVER COMPROMISES
ON PLANT SAFETY!

SAFE TO THE POWER OF 3

Masa | AAC production

Since machines must never endanger personnel, neither during normal operation nor in the event of a malfunction, Masa has committed itself to one of the highest safety levels worldwide!

SUSTAINABLE MEANS FUTURE-PROOF **ENERGY EFFICIENCY**

In line with quality and quantity

Environmental protection, resource conservation and sustainability? These are not the first things one commonly associates with construction materials. But these considerations play a key role in our industry as well – and all the more so in the future! Resources are already scarce and will become scarcer and thus more expensive all over the world. This has urged us to constantly work on technologies to make our machines and plants ready for the future, also with regard to the ecological balance.

WHAT MAKES PLANTS ENERGY EFFICIENT?

- Intelligent drive concepts
- Reduction of reactive energy
- Higher efficiency
- Use of energy-efficient components
- Cross-component overall concepts

SYSTEMATIC SUSTAINABILITY

We reconcile our customers' economic goals with ecological and social goals for a future-oriented coexistence.

ECOLOGICAL RESPONSIBILITY

As a manufacturing company, we acknowledge our ecological responsibility.

ENERGY EFFICIENCY ALWAYS ALSO MEANS

CO_2 REDUCTION

ALWAYS IN PLAIN SIGHT

INSPECTIONS, SPARE PARTS, FIRST AID, TRAINING OR
PROCESS ENGINEERING: WE ARE JUST A PHONE CALL AWAY.

MORE THAN MECHANICAL ENGINEERING
CONSULTATIVE SERVICE

We accompany you throughout the lifetime of your machines

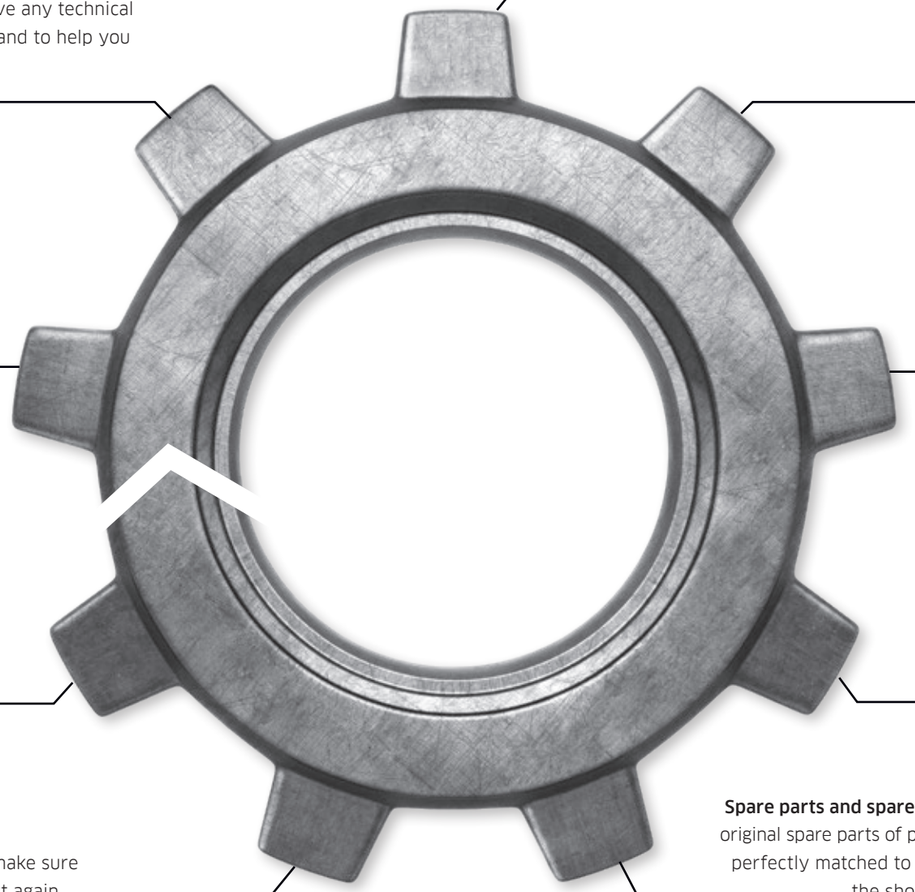
Why are we a good partner?
Our efforts do not stop once we have delivered a plant! The Masa Lifetime Service, which includes training and support, begins once the installation and commissioning have been completed. It is important to us that you never feel left on your own and know that you can rely on us.

OUR SERVICE
FOR YOU

Inspection and maintenance: Extend the service life of your machines in a targeted manner.

Masa Support: First aid and more! We are there for you if you have any technical problems or questions and to help you with updates.

Masa Health Check: The machine inspection “Masa Health Check” can be used for preventive maintenance and repair measures.



Assembly and commissioning: Masa plants and machines are installed and commissioned by our own experienced fitters.

Masa Smart BackUp: Our convenient and comfortable solution for efficient data backup of recipes and process data.

Customer training: Practical content taught by competent trainers to raise your employees’ qualifications to a higher level.

Process engineering support: We help you optimise your product quality and quantity.

Retrofit and conversion: We make sure your plants are state of the art again.

Spare parts and spare parts logistics: Get original spare parts of proven Masa quality, perfectly matched to your equipment, in the shortest time possible.

VALUES WE STAND FOR

SUCCESS AND PARTNERSHIP
Decisive for the joint success is always the close and cooperative exchange of opinions and experience with our customers.

EXPERIENCE
In our long company history, we have experienced and significantly influenced developments in the construction materials industry. The technical and operational experience we have thus gathered greatly benefits us and our customers today.

SAFETY
Two aspects are particularly important to us when planning and implementing plant concepts: maximum work safety and ease of operation. These two aspects serve our employees' health and continuously ensure the manufacturing processes.

CUSTOMER ORIENTATION AND SOLUTION COMPETENCE
Experience has shown that customised, individual solutions significantly strengthen and improve our customers' market positions.

QUALITY
As ever, for us, "Engineered in Germany" equals our commitment to quality, stability and sustainability. Our engineering principles are applied to all development and production phases.

EXPERTISE FROM PASSION

MASA
WORLDWIDE

masa

Milestone to your success.

COMPETENCE CENTRE
CONCRETE BLOCKS AND PAVERS

Masa GmbH
Masa-Str. 2
56626 Andernach | Germany
Phone +49 2632.9292-0

COMPETENCE CENTRE
AAC AND SAND-LIME BRICKS

Masa GmbH
Osterkamp 2
32457 Porta Westfalica | Germany
Phone +49 5731.680-0

info@masa-group.com | www.masa-group.com

ma-0000328 [EN]