Concrete Block Production

Reliable, First Class and Solid.

Masa – your partner for the successful production of building materials. With intelligent and flexible solutions, Masa leads its customers to success. Experience, reliability and passion are the basis for a long lasting partnership.

www.masa-group.com
The secret of our success is the future profitability of our customers.
Masa is the world’s leading manufacturer and supplier of plants, machinery and components for the building materials industry. Our experience, the quality of our products and the constant dialogue with our partners have contributed to the success of our customers worldwide.

The planning and design of our plants encompass all the basic principles which are fundamental to “Engineered in Germany”.

Quality: Proven technology, customised solutions and durable equipment  
Profitability: Economical – without compromising efficiency  
Safety: Comprehensive safety solutions in consultation with the customer

Contents

03 Turn-key Plants: All from one supplier.  
04 Tailor-made solutions for the building materials industry.  
06 Dosing and mixing plant: Quality right from the start.  
08 Concrete Block Making Machines Large Version: L 6.1 – L 9.1  
10 Concrete Block Making Machines Extra Large Version: XL 9.1 – XL 9.2  
12 Precise handling: Everything at its destination.  
14 Remodelling and surface processing: Individual solutions.  
15 Technical Overview.

Note
In general Masa plants are equipped with all the necessary safety guarding to local standards. For reasons of clarity, some photos are shown without safety guards.
Turn-key Plants: All from one supplier.

Masa has all the necessary experience for the fully automatic production of high quality light or heavy weight concrete blocks in high capacities. A distinct advantage for our customers is that large turn-key plants or single standard components are all from one supplier.

It is a long way from mixing the raw materials to the finished block. Many components of the plant are involved in this process. A plant will run efficiently when each part of the plant has been matched to the other parts containing optimized processes within those parts. Forward looking planning, often referred to as “begin with the end in mind” is a fundamental requirement for a complete efficient production facility. Capacities and machine designs are defined, processes and flows are arranged for the space. This requires to focus on the customer’s requirements and the available space.

The concrete block making plants made by Masa are generally structured as follows:

The different required materials go from the aggregate silos via transport systems to the dosing and mixing plant. It produces high-quality concrete which is designed to meet the individual customer demands and is adapted to the available raw materials. Depending on the plant design, the concrete is then conveyed to the block making machine. This then compacts the concrete in a mould using a combination of pressure and vibration. The fresh concrete products go then to product pallets via a conveying system, then pass through an optional quality assurance system, onto the curing chamber. After the curing process, the products are combined to form a pack of blocks using a Cuboter and are prepared for unloading (e.g. by forklift). The used production pallets are returned to the block making machine.

Secondary processing systems for products with different surfaces are available from Masa.

Masa control and safety systems ensure safe fast production with minimum downtime.
Tailor-made solutions for the building materials industry.

Careful planning is decisive for the economic success of a concrete block making plant. The planning should consider the production requirements and site specific possibilities, as well as the longer-term growth impact. To meet these broad scope parameters, our team of planners define capacities, machine designs, and arrange processes and flows to fit the available site.

Our designers specify the capacities and layout of equipment as well as organizing the production process. Turn-key plants are assembled with standard components, which can be combined to achieve individual solutions. Utilizing standardized components wherever practical results in short delivery times.
Note: The concrete block making plant shown is only diagrammatic and does not replace a real layout plan. Special solutions are partially pictured. For better clarity, the safeguards are not displayed.

01 Dosing and mixing plant
02 Concrete transport (bucket conveyor)
03 Concrete block making machine
04 Framework with Powertainer and Hydraulic station
05 Wet side transport
06 Elevator
07 Finger car
08 Curing
09 Buffer finger car
10 Lowerator
11 Return transport
12 Centering device
13 Cross transport/Production pallet buffer
14 Cubing/Cuboter
15 Cube conveyor
Dosing and mixing plant: Quality right from the start.

**Dosing systems for aggregates**
Masa dosing systems for all aggregates (e.g. sand, cement, water, additives) guarantee optimum and efficient feeding. Among others, the following components are used:

- Movable charging scales for exact dosing of the individual types of sand or gravel
- Water dosing systems to control the additional volume of water needed and measurement of the current sand humidity
- Dosing of pigments and additives
- Weigh scales for exact amounts of cement and fly ash into the mixer

**Concrete mixer**
Masa concrete mixers deliver all types of highest quality concrete and have proven themselves in practice. Short mixing times and optimum utilization of energy, water and cement are only some of the many strengths.

The Masa Horizontal Compulsory Mixers of the „PH“ series are available up to a capacity of 3000/4500 litres.

The “S 350/500” model produces excellent, highly homogenized, face-mix coloured concrete.
Concrete transport
Depending on the plant layout, the Masa mixers are directly positioned above the concrete making machine or located outside. If located away from the machine, most frequently the mix is transported to the machine hoppers via a bucket conveyor system. This allows flexible dosing of the concrete as well as reduces the pollution of the concrete block making machine and facilitates cleaning of the concrete mixer.

However, other transport methods can be implemented.

Dosing systems for coloured concrete
The individual colour design of pavers or other concrete blocks is an important part of the production process. It is possible to use simple or complex colour mixing systems for both main and face concrete:

- Simple colour mix slide systems
- Premium colour mix systems with up to 6 dosing conveyors and intermediate buffers (individually programmable, reproducible colours possible at all times)
Concrete block making machine
Large version: L 6.1 and L 9.1

The L version is a powerful, stationary concrete block making machine with medium sized production pallets of 1,400 x 600-900 mm (L 6.1) or 1,400 x 950-1,150 mm (L 9.1). Despite of its compact dimensions, it is designed in an especially robust way and convinces technically with its high-grade mechanical, hydraulic, pneumatic and electronic components.

Among others, standard equipment includes:
• Filling unit (face mix)
• Welded machine construction in a strong and compact design
• Reinforced base frame for carrying the vibration table
• Integral vibration table

Further options:
• Siemens S7 PLC-control
• Plant operation data, fault diagnosis with visualization of all functions via a PC and 24"-TFT monitor
• Statistics and print function
• Robust and operator-optimized safety devices
• Proportional regulation for pump pressure and main drives
• Mould changing conveyor
• Styrofoam inserting device
• Compaction head locking
• Servo vibration (only L 9.1)
Continuous product quality, high quantities and a wide range of products: Concrete blocks made of light and heavy concrete, for instance wall building material, paving blocks, kerbstones, plates and special products for horticulture and landscaping.
Concrete block making machine
XL-version: XL 9.1 – XL 9.2

Due to its sophisticated and well engineered technology, the XL version is the top model of the block making machines in the market. Decades of experience and continuous further developments have some influence on the technology of this model range. In cooperation with our customers, we especially set great value upon a market adequate definition and implementation of new requirements. For instance, the XL version stands for an especially height accurate production of concrete blocks of all types, short cycle times or highest daily production quantities at optimum production quality.

The standard scope of delivery includes, among others:
• Continuous level measurement in silos for main and face mix
• Oil temperature control with oil pre-heating and oil cooler (air)

- optional heat exchanger and cooling tower
• Frequency controlled vibration - optional amplitude control
• Visualisation of the functions via PC control and 24” TFT monitor
• Online support
• Proportional pressure control for the hydraulic system
- optional hydraulic unit installed in a noise insulated container (Hydrautainer)

The standard scope of delivery can be upgraded by the following special package:

S-package (fast): higher pumping capacity, additional hydraulic accumulator, V-belt conveyor with integrated lowering device, laser level measurement in the face mix filling box and other items.
Plant control
Modern production plants feature a high degree of automation and therefore, a corresponding high availability. In addition to the robust design of the components, a customer-oriented operating interface is an important factor of success.

The software of the Masa plant control (Masa FAST Factory Automation Service Tools) is a modular software for the unified operation and visualisation of the components. Among others, it is characterised by:

- A clear visual design of the complete plant
- Use of 3D plant illustrations
- Connection of a precise fault finding facility
- Integrated language selection (max. 3 languages)
- Customer-specific user and parameter management

- There are further optional packages available in addition to the basic package: Package I „Advanced“ (extended formulation management, formulation comparator, input history, mould management), Package II „Professional“ (user management, order management, extended formulation comparator and others), Package III „Ultimate“ (operating data acquisition, recording via Ethernet interface).

Masa “Powertainer”
The Masa “Powertainer” which includes all the power panels is already proven in practice. It provides a clean and safe environment whilst at the same time saving valuable installation time.
Precise handling: Everything at its destination.

Transport systems
Masa pallet transport systems ensure that both fresh and cured products are moved without any damage. Visual quality control takes place without jeopardizing safety.

Wet side paver washing device
The Masa paver washing devices are very well suitable for surface finishing. Fine particles of the aggregate materials as well as the cement residue are removed by a combined spray and splash process. With this, the high-quality visual effect of the face material is emphasised particularly. The product receives its characteristic appearance.

Curing and ventilation
For curing, Masa provides an innovative one-room concept. The complete curing rack as well as elevator, finger car and lowerator are installed in the same room. The curing process is optimised by means of a ventilation system. The Masa control regulates temperature and humidity in the curing chamber.
Production pallets - buffering system
Masa offers several pallet buffering systems. These systems cater to individual customer requests as well as considering the specific desired type of production pallet. Depending on the system, a flow-optimised functioning of both the fresh and the dry side will be ensured. Furthermore, the plant efficiency and availability will be increased because the fresh and the dry side can work independently from each other.

Cubing
At the end of the production process of each concrete block, there is the Masa cubing unit: With the „Cuboter“, Masa provides the technology and the know-how to prepare the final product for shipment. Block layers are set on a conveying system, which then form the block cubes (with or without the use of transport pallets). In case of the Cuboter, Masa completely goes without a hydraulic system. Further advantages are provided by the cubing clamp which is equipped with servomotors, the high cubing speed and the formulation-related flow optimisation.

Centering devices or doublers can supplement the process. The individual integration of packaging systems, e.g. strapping units or film stretch wrappers, is possible.
Remodelling and surface processing: Individual solutions.

Remodelling
Due to the different arrangements within the production plant, it is partially required to change the arrangement of the block layers. Therefore, Masa is offering several remodelling systems to prepare the concrete blocks in compliance with the customer-specific requirements referring transport and laying.

Splitting machine and refinement
Splitting is a popular refinement method. Masa splitting machines allow the production of split concrete blocks that can hardly be distinguished from natural stones. Depending on the split format, it is possible to split different block sizes. The splitting machine can be integrated in a complete plant concept or it can also be operated as a separate unit.

Furthermore, aging, blasting or other surface finishing machines can be integrated in the process or used independently.
Technical Overview.

The output figures listed below are guiding values. In practice, the production output depends on different factors, such as: Specific machine settings, selected mix designs, raw material types, additives, ambient conditions as well as others. If desired, available special package options allow one to increase the production outputs. The block dimensions, quantity per cycle and production quantity are determining parameters for the planned production.

### Block making plants / capacity data

<table>
<thead>
<tr>
<th></th>
<th>Economy</th>
<th>Standard</th>
<th>Fast (4)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Max. cycles per minute Masa ring plant</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hollow blocks (2)</td>
<td>4</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Rectangular pavers w/o mix</td>
<td>4</td>
<td>5</td>
<td>6</td>
</tr>
<tr>
<td>Rectangular pavers with face mix</td>
<td>3.5</td>
<td>4</td>
<td>5</td>
</tr>
<tr>
<td>Machine type</td>
<td>L 6.1</td>
<td>L 9.1</td>
<td>XL 9.1</td>
</tr>
<tr>
<td>Standard pallet size (3)</td>
<td>in mm</td>
<td>1400 x 900</td>
<td>1400 x 1100</td>
</tr>
<tr>
<td>Useful area - blocks max.</td>
<td>in mm</td>
<td>1300 x 850</td>
<td>1300 x 1050</td>
</tr>
<tr>
<td>Useful area - pavers max.</td>
<td>in mm</td>
<td>1300 x 850</td>
<td>1300 x 1050</td>
</tr>
<tr>
<td>Stone height max.</td>
<td>in mm</td>
<td>350</td>
<td>500</td>
</tr>
</tbody>
</table>

### Mixers

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Dry filling quantity</td>
<td>in liter</td>
<td>500</td>
<td>750</td>
<td>2250</td>
<td>1375</td>
</tr>
<tr>
<td>Output</td>
<td>in liter</td>
<td>350</td>
<td>500</td>
<td>1500</td>
<td>2250</td>
</tr>
<tr>
<td>Max. filling level</td>
<td>in kg</td>
<td>800</td>
<td>1150</td>
<td>3450</td>
<td>4600</td>
</tr>
</tbody>
</table>

### Pieces per cycle

<table>
<thead>
<tr>
<th></th>
<th>Hollow blocks</th>
<th>Rectangular pavers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>400 x 200 x 200 mm (8”)</td>
<td>200 x 100 x 80 mm</td>
</tr>
<tr>
<td>Pieces per cycle</td>
<td>12</td>
<td>54</td>
</tr>
</tbody>
</table>

### Production capacity (5) per 8 hour shift, at 85% efficiency

<table>
<thead>
<tr>
<th></th>
<th>Hollow blocks</th>
<th>Rectangular pavers</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>pieces</td>
<td>m³</td>
</tr>
<tr>
<td></td>
<td>19584</td>
<td>313</td>
</tr>
<tr>
<td></td>
<td>24480</td>
<td>29376</td>
</tr>
</tbody>
</table>

(1) Wall thickness > 30 mm  (2) Variations available upon request  (3) The capacity data are theoretical and are dependent on machine settings, mix design, aggregates used and other environmental conditions.  (4) High speed capacities only in combination with S package for machine and ring.
Experience is our strength. Flexibility takes us forward.

Masa is a German born medium sized enterprise with over a hundred years’ history. We are specialized in planning and construction of plants and machines for the building materials industry and today, we are a global leader.

We have an experienced service team responsible for both installation and commissioning of new plants and modification and maintenance of both Masa and other manufacturers units.

The “Masa” brand includes production facilities in Germany and sales offices around the world.

At our head office in Andernach between Koblenz and Cologne we develop and manufacture equipment to produce concrete blocks and pavers. A second location focused on the development and production of machinery and plants for concrete slabs, AAC blocks and sand lime bricks is in Porta Westfalica. Furthermore, there are subsidiaries worldwide, mainly involved in service: in the USA, China, Russia, India and Dubai, responsible for the Middle East.

Would you like more information regarding Masa delivery and performance programme?

Please find a detailed overview in our brochures you can download separately.

- Aerated concrete production
- Sand lime brick production
- Concrete slab production
- Kerbstone production
- Service

Use our download area at: www.masa-group.com

Location to contact for concrete block and paver production:
Masa GmbH
Masa-Straße 2
56626 Andernach
Germany
Phone +49 2632 9292-0

Location to contact for AAC, sand lime bricks and paving slabs production:
Masa GmbH
Osterkamp 2
32457 Porta Westfalica
Germany
Phone +49 5731 680 - 0

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