LEADING TECHNOLOGY FOR PRECAST CONCRETE PLANTS
BUILDING WITH PRECAST CONCRETE PARTS.
Fast, cost-efficient, future state-of-the-art.

FULL SERVICE FROM A TO Z.
Holistic, individual, collaborative.

FUTURE-ORIENTED TECHNOLOGY.
Long-standing tradition has been consistently further developed

MACHINERY AND EQUIPMENT.
Technical sophistication, compatible, efficient.

COMPONENTS OF A CIRCULATION SYSTEM

TRANSPORTATION TECHNOLOGY | CLEANING AND CARE

MOULDS.
Form, function, flexibility.

FORMWORK PROFILE SYSTEMS AND MAGNETS.
Corrosion-resistant, robust, durable.

CONTROL SOLUTION FOR AUTOMATED PRODUCTION.
Universal, structured, modular.
Weckenmann is a leading international manufacturer and developer of plant systems for the production of flat and structural precast concrete parts for residential and industrial buildings. Whether customer or country-specific, with its modern, cost-effective solutions, the company has been setting manufacturing standards in the industry for decades. And it prepares the technological ground for the precast concrete production of the future – with efficient production processes, optimised procedures and innovative machines, components and complete systems.

The product line ranges from rugged stationary production units over fully automated high-performance plants with robot technology through to individual moulds, shuttering profiles and magnets. Weckenmann uses its modular WAvision® control system to connect its precast concrete production to Industry 4.0 and the challenges it poses to the master computer and control technology. The latest innovative development by the visionary plant manufacturer is the Mobile Battery Mould (MBM). It allows the manufacturing of precast concrete products in close proximity to the construction site.
Building with precast concrete parts has many advantages. Compared to other building methods, it often offers the significantly faster and cheaper solution. And last but not least, due to their high dimensional accuracy and quality, finished precast concrete parts are now an integral part of residential and industrial construction methods. Given the ever-increasing world population and the need for almost instantly available low-cost housing, the importance of the prefabricated construction will continue to grow in the future.
As different buildings and the demands to their uses are, as varied are precast concrete parts in size, shape and properties. Weckenmann is intimately familiar with their design and range of application possibilities based on more than 50 years of experience and therefore can fully support precast concrete manufacturers new to the market in the development of an appropriate construction system. From advice on the selection of elements to detailed production.

**Floor slabs** are semi-finished reinforced concrete parts from which monolithic reinforced concrete slabs are produced in combination with the structurally required top reinforcements and in-situ concrete additions. They have a low weight and are mainly used in combination with double walls. These too have a low weight, which facilitates transportation and installation.

However, smooth formwork surfaces on both sides, high load-bearing capacity and short shell construction time are characteristic for **solid walls. Sandwich walls** fall in the same category. These core-insulated solid wall constructions consist of two reinforced concrete shells and an inner insulation layer. **Facade elements** are also included under solid walls. Their surfaces can be architecturally designed through various processing methods and the use of decorative concrete.
"The tasks and problems that our customers face due to the conditions in specific countries, the individual circumstances in the plants or the commercial or functional demands on the products, time and again challenge us to come up with new developments."

Which building system is the most appropriate for which building type and how must it be designed? How can a product range that has proven itself be optimised further? Is it possible to make production processes and material flows more effective? How should the matching control architecture look? The Weckenmann specialists advise their customers on all these issues. As the general contractor, Weckenmann takes care of every aspect of precast concrete production from the conceptualisation, plant design, product and process development, project management, financing and execution to the turnkey delivery of the plant. This holistic approach does not end when the keys are handed over. It also includes further service and the long-term support – worldwide, fast and purpose-driven.
TYPICAL PROJECT WORKFLOW

- **START OF THE PROJECT**
  - Customer inquiry

- **BUILDING & BUSINESS PLAN**
  - Analysis of the architectural plans supplied by the client, Feasibility study

- **BUILDING SYSTEM**
  - Conversion of the architectural plans into a building system concept

- **CREATING A LAYOUT**
  - Plant design and factory layout

- **PROJECT PLANNING**
  - Detailing of plant and factory planning, preparation of quotations, General contractor

- **CONTRACT PLACEMENT**
  - Financing consulting

- **PRECAST CONCRETE PLANT**
  - Supporting the customer, site preparation

- **TRANSPORT & INSTALLATION**
  - Assembling, commissioning and plant start-up

- **PRODUCTION OF PRECAST CONCRETE ELEMENTS**
  - Production assistance and training

- **CONSTRUCTION SITE MANAGEMENT**
  - Final assembly of the precast concrete elements

- **AFTER-SALES-SERVICE**
  - Spare parts service, hotline, maintenance, upgrade to new technologies, customer support beyond the project
Based on decades of experience and technological expertise that has always been kept up to date, Weckenmann has developed three basic plant concepts. These can be adapted to perfectly match the individual circumstances and requirements of customers. Regardless of whether we are dealing with manual or automated precast concrete part production for newcomers to the industry or established producers. The matching basic concept is used as the starting point for any customised precast concrete plant.

**FUTURE-ORIENTED TECHNOLOGY.**
**LONG-STANDING TRADITION HAS BEEN CONSISTENTLY FURTHER DEVELOPED**

CIRCULATION SYSTEMS allow production with optimal material flow. They are equipped with the latest machine and control technology and ensure predictable, efficient and cost-efficient processes as well as high productivity. This concept is based on the principle of specialised workstations, in which the formwork pallets are moved from one processing station to the next. This approach provides a predictable and controlled workflow. The circulation system offers all possibilities: from purely manual operation to a high degree of automation with fully automated robot technology.
STATIONARY PRODUCTION

is suitable for entry into the production of precast concrete. It consists of production lanes, stationary moulds or tilting tables and offer proven technical variants for the production of various precast concrete parts. Although stationary production has a lower hourly output than circulation systems, it allows flexible production programmes.

MOBILE PRODUCTION

uses transportable precast concrete plants making it the ideal solution for production close to the construction site. This provides you with innovative and energy-efficient just-in-time production. And it is sustainable as transportation costs are drastically reduced. Mobile production consists of mobile battery moulds or transportable production tables and allows both horizontal and vertical manufacturing of slabs and walls.
A SECURE PROCESS CHAIN GUARANTEES THE HIGHEST QUALITY AND DIMENSIONAL ACCURACY.

Highest quality and dimensional accuracy: This principle to a large extent also applies to precast concrete parts. This means that the safe transfer of the geometry data – in other words, the layout – from the planning department directly to the machine in operation is crucial. After the data transfer, shuttering and reinforcement follow the concreting and curing.

PLOTTERS transfer the CAD data at a 1:1 scale to the formwork table in the shortest possible time and without any errors. All production data is visible to position the shuttering profiles. This allows measurement errors and so production errors to be avoided. Alternatively, shuttering robots can be used for automated shuttering.

FORMWORK ROBOTS provide the automated handling of shuttering profiles. In addition to shuttering, high-performance robots such as the TWIN-Z robots also handle the storing and demoulding of shuttering profiles, thereby guaranteeing a precise and error-free formwork process.

MACHINERY AND EQUIPMENT. TECHNICAL SOPHISTICATION, COMPATIBLE, EFFICIENT.

A product is only as good as the sum of its properties — and the technology with which it is produced. Weckenmann develops and builds modern machines and equipment for the production of precast concrete. All the equipment along the entire process chain are manufactured using the latest technology and are compatible with each other, so that the individual operations mesh perfectly. The result of this sophisticated technology: efficient production of top-quality products from A to Z.
CONCRETE SPREADERS
are performance-enhancing equipment for the quick and precise dosing of various concrete qualities. They come with slide feed rollers or spiked rollers, screw conveyors or discharge belts – and Gravimatic®. The globally unique automation solution for concrete spreaders.

SURFACE TREATMENT
with power trowels, screeds and wash-out machines (for exposed aggregate concrete surfaces) allow the fast, safe and consistent production of top-quality fair faced concrete surfaces.

COMPACTION
of concrete in the mould can be done using different yet also combinable technologies as needed. This high-frequency technology – permanently installed or magnetically fixed with MagVib – provides the energy required at an optimal level and at reduced noise levels. Low-frequency compaction uses vibration technology. This process produces high compaction energy in virtual silence.
CURING CHAMBERS are used for the insulated, controlled and space-saving curing of concrete elements. This process can be accelerated by integrated air-conditioning if required.

STORAGE AND RETRIEVAL SYSTEMS automatically store the formwork pallets in the curing chamber or retrieve them from it again after curing. They control the storage space management and the curing time of the formwork pallets.

TILTING STATIONS tilt formwork pallets with finished wall or facade elements into a vertical position for transportation.

COMPONENTS OF A CIRCULATION SYSTEM

When the formwork pallets are filled to the desired form and thickness, the concrete elements have to go through various stations of a circulation system until they are completed. This exactly predictable and holistically controlled production system consists of the following components as determined by the requirements to capacity and products:
TURNING DEVICES

for the manufacture of double walls. They are equipped with vacuum-handling technology or pallet interlocking and are characterised by high precision and a high level of efficiency.

PALLET TRANSPORTATION

To transport the pallets within the circulation system, the transportation technology at Weckenmann comprises the complete range of individual handling technologies. Depending on the design of the material flow concept, individual workstations are networked through friction wheels, transverse transport trolleys, central sliding stages or by a combination of these components.
TRANSPORTATION TECHNOLOGY

The fast and efficient material flow of finished products in a precast concrete plant requires numerous detailed solutions to optimally organise the entire transport chain.

LIFTING DEVICES

allow floor slabs to be lifted quickly and without damage and to be demoulded carefully, and to safely turn the first shells of the double wall on a vacuum turning device or turning table.

RUN-OFF TRUCKS

with transport frames take care of the transportation of precast concrete parts to the storage or loading area. The optional inclusion of RFID identification of the transport frame is available.
CLEANING AND CARE

Care of the formwork profiles and tables that maintains their quality takes place at the end of the production chain. To keep them ready and functioning over a long period of time, Weckenmann has developed machines for cleaning:

CLEANERS AND OILERS provide clean formwork surfaces. An important condition for the maintenance of product quality during the entire operation time of the plant, because dirt and soiling result in defective products. They maintain the high quality of the formwork surfaces and ensure consistent product quality for many years.
MOULDS.
FORM, FUNCTION, FLEXIBILITY.

Moulds play an essential role in the production of flat and structural concrete elements. They provide the form, define the product quality and make production programs flexible. Their adaptability is a key factor for the efficiency and profitability of production. For this reason, the Weckenmann range includes a large number of sophisticated formwork components that guarantee quality and cost-efficiency.

FORMWORK PALLET

are used in conjunction with circulation systems as movable moulds. The premium-quality formwork surfaces guarantee high-quality final products. Weckenmann supplies formwork pallets including individually adjustable side forms.
BATTERY MOULDS

simplify the production process of vertically fabricated wall and slab elements with smooth formwork surfaces on both sides. This compact equipment is available for both stationary and mobile use.

TILTING TABLES

have a supporting function in the horizontal manufacturing of walls, facades and special elements. The production tables have premium-quality formwork surfaces and high-frequency vibrators that compact the concrete perfectly. Again, the side forms can be individually customised. The result is products of great quality, which can be lifted using integrated tilt hydraulics or with an overhead crane for transportation.

PRODUCTION LINES

have proven themselves in the production of both loose reinforced and prestressed flat precast elements such as floor slabs, facades or linear elements. The individually adjustable side forms and the premium-quality formwork surfaces of this equipment also guarantee top-quality end products.
VOLUME MOULDS
are recommended for the manufacture of three-dimensional precast concrete parts such as lift shafts, ventilation shafts or other modular products.

STAIRCASE FORMWORK
for the production of stairs in architectural fair-faced concrete quality - regardless of whether produced in an upright stationary single mould or in a single or battery mould.
COLUMN/BEAM MOULDS

with hydraulic and manual adjustment. They were developed for the production of structural precast concrete parts such as columns, beams and trusses.

MOULDS FOR DRIVEN PILES

can be used in circulation systems or stationary production facilities for the production of top-quality loose reinforced or prestressed driven piles.
FORMWORK PROFILE SYSTEMS AND MAGNETS.
CORROSION-RESISTANT, ROBUST, DURABLE

The formwork technology of Weckenmann offers for every plant and every product the suitable formwork system. High-quality design with optional corrosion protection and versatile application.

DUAL SIDED USAGE
The shuttering system contains two shuttering sides, which allows for two different profilings in just one formwork.

ROBOT-SUITABLE
The formwork profile is suitable for the moulding and demoulding by a shuttering robot.

MAGNETBOX ATTACHMENT
The formwork system is based on the magnetic attachment with the MagnetBoxes M.

INTEGRATED SWITCHABLE MAGNETS
High performance magnetic strips are implemented, which are activated or deactivated mechanically.

EXPANSION WITH EXTENSION PROFILES
The formwork system is prepared for use with extension profiles, therefore enabling a height extension or the use of a different sets of profiling with one base.

WOOD ATTACHMENT
The client has the possibility to attach timber shuttering panels.
<table>
<thead>
<tr>
<th>Series</th>
<th>Description</th>
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<tbody>
<tr>
<td>A-SERIES</td>
<td>Formwork profiles for floor slabs and double walls.</td>
</tr>
<tr>
<td>X-SIDE-SERIES</td>
<td>System with exchangeable steel shuttering profiles for the manufacturing of door and window frames in variable dimensions.</td>
</tr>
<tr>
<td>M-SERIES</td>
<td>Formwork profiles for the manufacturing solid elements and sandwich panels, slabs and facades in standard thicknesses.</td>
</tr>
<tr>
<td>X-BASIS/X-TOP-SERIES</td>
<td>Formwork profiles for the manufacturing of solid elements and sandwich panels, slabs and facades in changing heights.</td>
</tr>
<tr>
<td>MAGNETBOXES</td>
<td>Supplementary components for quick and secure fixing of shuttering profiles and built-in sections.</td>
</tr>
<tr>
<td>ACCESSORIES</td>
<td>Wide range of accessories as variable solutions for specific requirements in the formwork sector.</td>
</tr>
</tbody>
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Industry 4.0 has made the automation of manufacturing processes of great importance. With WAvision®, Weckenmann has developed a modular control solution designed for precast concrete production that meets this requirement. This solution processes data in any format and so connects all divisions such as management, production planning, production, logistics and reporting in a unified system. As an overall solution WAvision® provides manufacturers of precast concrete parts with continuous process control, planning and analysis in their plants.
The WAvision control system consists of different modules that can be used as a complete package or in individual combinations as needed. The following modules are available:

**PRODUCTIONMANAGER**
Simple production planning through automatic or manual pallet loading.

**Storage Master**: Efficient storage space management using RFID or barcodes.

**3-D viewer**: Pallet loading available as a 3D model.

**PRODUCTIONCONTROL**
All information about circulation spaces, curing chamber loading, etc. at a glance.

**WebFlow**: Visualisation of the pallet circulation on all conventional mobile devices.

**Maintenance Assistant**: Monitoring and visualisation of maintenance tasks.

**Troubleshooting Assistant**: Fault diagnosis tool.

**REPORTS**
Evaluation tool to generate individual reports.

**WebFlow**: Visualisation of reports on all conventional mobile devices.

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**AT A GLANCE: 7 REASONS THAT SPEAK IN FAVOUR OF WAVISION**

1. Machinery and system control from a single source
2. Innovative operating concept
3. Web-enabled software
4. Modular, clearly structured design.
5. Open interfaces
6. Enhancement of plant efficiency
7. Generation of individual reports