PROGRESS-GROUP
PRODUCTION
BEDS
ANCILLARY
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SAWING
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WHY HOLLOW CORE?
Echo Precast Engineering based in Houthalen, Belgium, develops and constructs machines and equipment for the production of pre-stressed concrete products. Over the years, we have gained an international reputation for our technical know-how and engineering services. We combine long-term expertise with experience to provide our customers with tailor-made solutions and give them the competitive edge they need. Today, in our modern world, it is all about energy and cost saving, sustainable construction practices. Pre-stressed concrete elements, such as hollow core slabs, meet all of these criteria and are thus an important step towards future-oriented building solutions.
HOLLOW CORE BENEFITS

Efficient
Optimum material use and reduced self-weight
Hollow core slabs have an advantage over other types of floors thanks to their rational use of materials. Precast structures require the use of high concrete and steel grades; therefore, less material is used to achieve the same load-bearing capacity as in cast-in-situ structures. The presence of longitudinal voids in the cross-section allows to save up to 45% of concrete compared to plain cast-in-situ reinforced slab.

At the same time the amount of steel is cut by 30%.
For an average size apartment this means savings of up to 14.4 tons of concrete and 275 kg of steel, which is certainly a large step towards sustainability.

Structural efficiency
Precast prestressed hollow core floors offer maximum efficiency to the user. Thanks to their slenderness and their long span capacities, they create maximum exploitation capacity of the available building space.
Hollow core floors allow long spans without intermediate supports. For industrial and commercials halls very long roof spans can be made.

Sustainable
Environmentally friendly
Precast hollow core slabs have a number of environmental advantages:
- Less total waste (waste material is processed and reused)
- Easier and faster demolition (possibility to demolish and renovate existing buildings rather than demolish them)
- Less primary energy consumption

Thermally activated floors
Concrete plays an essential role in the decrease of energy consumption for heating and cooling, mainly through its ability to absorb and later release large amounts of heat.
Thermally activated floors allow to store thermal energy. Water pipes are embedded in the hollow core floor units during casting.

Fast
High construction speed
In the past, long construction delays were accepted as a consequence of slow, traditional in-situ construction methods. Today, the demand for a speedy return on investment is becoming more and more important. Precast hollow core slabs allow to significantly accelerate construction and to meet completion deadlines.

Safe
Excellent fire resistance
Since the 1970s more than a hundred fire tests have been performed on prestressed hollow core floor units in several laboratories in Europe, America and Japan. The results speak for themselves: Floors with normal connections to the supporting structure have a fire resistance of 2 to 3 hours both for bending and for shear loading.

Additional safety in seismic zones
The slipformer technology allows to provide hollow core slabs with seismic incisions to gain a perfect slab element interconnection for seismic resistance.

Easy
Safe and comfortable working environment
Precast building factories provide a safe and healthy working environment with comfortable temperature. The production is based on well-controlled industrial processes; thus, possible sources of noise, dust and pollution can easily be identified and rectified.
Besides, precast prestressed hollow core slabs allow a considerable reduction of site personnel.

Versatile
Wide range of applications
Hollow core slabs are suitable for a wide range of applications. They provide perfect solutions for the residential, healthcare, education, industrial and commercial markets.

Hollow Core concrete construction uses up to 45% LESS CONCRETE & 30% LESS STEEL than traditional cast-in-situ construction methods.
### HOLLOW CORE

**PLANT FEATURES**

Echo Precast Engineering is not only a machine supplier, but also a provider of customized solutions for production plants. Beside the supply of all machines and equipment which are specific for a pre-stressed concrete production facility, we provide you with the necessary technological and process details.

<table>
<thead>
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<th>BATCHING PLANT</th>
<th>CONCRETE ASPIRATOR</th>
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<td>SLIPFORMER</td>
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<td>CONCRETE SUPPLY SYSTEM</td>
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### EXAMPLE PROJECTS

Hollow core slabs and walls in use

![Hollow core slabs and walls in use](image1)

![Hollow core slabs and walls in use](image2)

![Hollow core slabs and walls in use](image3)

![Hollow core slabs and walls in use](image4)
WHY HOLLOW CORE?
Customised slipforming machines to manufacture prestressed concrete products. Our standard range includes 3 different types – related to the thickness of the elements to be produced:

- **T 30** for the thinner elements from 6 - 30 cm
- **T 40** for concrete elements from 15 – 40 cm
- **T 50** for concrete elements from 20 – 50 cm

Just like the Universal Slipformer, these machines are very versatile; beside hollow core slabs, all kind of other products can be produced: solid slabs, beams, lintels, foundation piles, gutters, stadium plates as well as slabs with insulation or incorporated heating/cooling systems.

Thanks to its specific design – compaction realized through vibration and movements of the tube and mould set, use of dry concrete (“zero-slump concrete”) the Slipforming machine is not only easy to operate and maintain, but also very cost-effective:

- It is possible to produce different thicknesses within the same product typology by simply changing the tube and mould set. For the production of a completely different product, additional change-over parts and some height adjustments are required. The changeover, however, only takes approx. +/- 90 mins.
- The machine is supplied with cable drum, electrical cable, water tank and all other required equipment; it can thus be put into operation immediately after delivery.

Each machine type is available for 1.2 m wide beds (4 ft) – 1.5 m wide beds or for 2.4 m (8 ft) wide beds.
Our slipformer technology allows to produce also wall panels, with or without exposed aggregates. While a normal Slipformer can be used to produce ‘grey’ wall panels (all slipformers mentioned before have this feature), a special wall panel Slipformer has been designed to produce wall panels with exposed aggregates – in one production run.

Besides the normal wall panels, the slipforming technology allows to produce also insulated wall panels – with or without exposed aggregates. While a normal wall panel (with or without exposed aggregates) can be produced in one production run with one machine, insulated panels require a second production run and an additional machine. For this purpose, a customised topping machine has been designed.

The production process is as follows:
1. A standard slipformer (or a wall panel slipformer) lays the “bottom” structure in a first production run (= a prestressed hollow core slab of grey concrete with a certain thickness – usually 10, 12 or 15 cm – depending on the application).
2. Insulation is applied manually – either PS (Poly-Styrene), PUR (Poly-Urethane) or PIR (Poly-Isocyanurate) – thickness is typically 40, 60 or 80 mm (depending on the required insulation grade).
3. On top of the insulation, a finishing layer is applied, consisting of grey (massive) concrete with a final topping of colourised concrete (which can be washed out to obtain exposed aggregates). The last production step is performed by the Topping Machine.

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3. On top of the insulation, a finishing layer is applied, consisting of grey (massive) concrete with a final topping of colourised concrete (which can be washed out to obtain exposed aggregates).
### CASTING MACHINES

#### OVERVIEW

**Types** | Range / Availability of machines | Elect. Power in KW / Hp | Width 1,2 m. (4 ft.) | Width 2,4 m. (8 ft.) | Width 3,5 m. | Width 4,8 m. (16 ft.) | Width 6,0 m. | Width 7,2 m. | Width 9,0 m. | Width 12 m. | Width 18 m. (60 ft.) | Width 24 m. (80 ft.)
--- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | ---
Universal Slipformer | 6 - 60 cm. (2.5 to 24 inch) | 23 KW / 31 Hp | 21 KW / 28 Hp | 24 KW / 32 Hp | 29 KW / 39 Hp | • | • | • | • | • | •
T 30 | 6 - 30 cm. (2.5 to 12 inch) | 26 KW / 35 Hp | 27 KW / 36 Hp | 32 KW / 43 Hp | • | • | • | • | • | •
T 40 | 15 - 40 cm. (6 to 16 inch) | 26 KW / 35 Hp | 27 KW / 36 Hp | 32 KW / 43 Hp | • | • | • | • | • | x
T 50 | 20 - 50 cm. (8 to 20 inch) | 28 KW / 37 Hp | 27 KW / 36 Hp | 32 KW / 43 Hp | • | • | • | • | • | x
Wall Panel Slipformer | 10 - 30 cm. (2.5 to 12 inch) | 25 KW / 34 Hp | 26 KW / 35 Hp | 31 KW / 42 Hp | • | • | • | • | • | x
Topping Machine | 8 - 40 cm. (2.5 to 16 inch) | 24 KW / 32 Hp | 24 KW / 32 Hp | 28 KW / 36 Hp | • | • | • | • | • | x
MULTIANGLE SAWING MACHINE
Available types: 1.2 – 1.5 – 2.4 m wide

The Multiangle Sawing machine enables the producer to cut the cured slabs to the desired length at 90 degree angle, lengthwise sawing at 0 or 180 degrees, and diagonally at all angles between 90 and 0 degrees as well as 90 and 180 degrees. Sawing speed is adjusted automatically via the sawing motor power control. A laser beam makes it very easy to position the saw.

SAWING MACHINES

RIGHT ANGLE SAWING MACHINE
Available types: 1.2 – 1.5 – 2.4 m wide

The Right Angle Sawing machine enables the producer to cut the cured slabs to the desired length at 90 degree angles on the production bed. The sawing machine utilizes diamond blades of 900, 1100 and 1300 mm to cut up to 30 cm, 40 cm and 50 cm thick slabs.

SAWING MACHINES
### BASIC CROSS CUT SAW
**BCCS 30, BCCS 40, BCCS 50**

The Basic Cross Cut Saw enables to cut the cured slabs to the desired length at 90 degree angles on the production bed. The machine is mainly designed for cost-conscious starters in the field of prestressed products.

3 types of machines are available – according to the thickness of the elements that need to be cut:
- **BCCS 30** for elements up to 30 cm
- **BCCS 40** for elements up to 40 cm
- **BCCS 50** for elements up to 50 cm.

The same diamond saw blades as for the other sawing machines are used – diameters 900, 1100 or 1300 mm.

The machine is operated manually (by means of simple levers) and has no features for cable drums, electrical cables or water hose. (On request, a special carrier wagon with cable drums can be supplied).

### FRESH CONCRETE SAW
Available types: 1.2 – 1.5 m wide

A simple saw for the purpose of cutting fresh slabs lengthwise to non-standard widths for slabs less than those produced in the slipformer mould. The saw blade is electrically driven. A used diamond saw blade (1100 or 1300) can be utilized for savings. All positioning and movement of the machine are manual. Machine has to be pushed forward on the bed rails. Power is supplied via a loose cable.
### SAWING MACHINES

#### OVERVIEW

<table>
<thead>
<tr>
<th>Types</th>
<th>Can be equipped with sawblades with diameter</th>
<th>For Product Thicknesses up to</th>
<th>Range / Availability of machines</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Electric Power in KW / Hp Width 2,4 m. or 8 ft. Width 3,2 m. or 10 ft. Width 1,5 m.</td>
</tr>
<tr>
<td>Multi Angle Sawing Machine MSM 900 – 1100</td>
<td>900 / 1000 mm 40 cm. (16”)</td>
<td>65 KW / 87 hp 65 KW / 87 hp 65 KW / 87 hp</td>
<td>〇 〇 〇</td>
</tr>
<tr>
<td>Multi Angle Sawing Machine MSM 1000 – 1500</td>
<td>1000 / 1000 mm 50 cm. (20”)</td>
<td>60 KW / 80 hp 60 KW / 80 hp 60 KW / 80 hp</td>
<td>〇 〇 〇</td>
</tr>
<tr>
<td>Right Angle Sawing Machine SM 900 – 1100</td>
<td>900 / 1000 mm 40 cm. (16”)</td>
<td>60 KW / 80 hp 60 KW / 80 hp 60 KW / 80 hp</td>
<td>〇 〇 〇</td>
</tr>
<tr>
<td>Right Angle Sawing Machine SM 1100 – 1500</td>
<td>1000 / 1000 mm 50 cm. (20”)</td>
<td>60 KW / 80 hp 60 KW / 80 hp 60 KW / 80 hp</td>
<td>〇 〇 〇</td>
</tr>
<tr>
<td>Basic Cross Cut Saw BCCS 30</td>
<td>900 mm 30 cm. (12”)</td>
<td>60 KW / 80 hp 60 KW / 80 hp 60 KW / 80 hp</td>
<td>〇 〇 〇</td>
</tr>
<tr>
<td>Basic Cross Cut Saw BCCS 40</td>
<td>1000 mm 40 cm. (16”)</td>
<td>60 KW / 80 hp 60 KW / 80 hp 60 KW / 80 hp</td>
<td>〇 〇 X</td>
</tr>
<tr>
<td>Basic Cross Cut Saw BCCS 50</td>
<td>1100 mm 50 cm. (20”)</td>
<td>60 KW / 80 hp 60 KW / 80 hp 60 KW / 80 hp</td>
<td>〇 〇 X</td>
</tr>
<tr>
<td>Fresh Concrete Saw FCS 1000</td>
<td>900 / 1000 / 1300 mm 50 cm. (20”)</td>
<td>3 KW / 4 Hp 3 KW / 4 Hp 3 KW / 4 Hp</td>
<td>〇 〇 〇</td>
</tr>
</tbody>
</table>

#### Types of SAWING MACHINES

- **Multi Angle Sawing Machine**
  - MSM 900 – 1100
  - MSM 1000 – 1500

- **Right Angle Sawing Machine**
  - SM 900 – 1100
  - SM 1100 – 1500

- **Basic Cross Cut Saw**
  - BCCS 30
  - BCCS 40
  - BCCS 50

- **Fresh Concrete Saw**
  - FCS 1000
The battery-driven Multifunctional Trolley is used for the preparation of a (new) bed and is designed to serve 3 functions:

- Cleaning of the production beds with rotating brushes
- Pulling the strand and wires along the production beds
- Oiling of the production beds

CONCRETE ASPIRATOR
Available types: 1.2 – 1.5 – 2.4 m wide

The Concrete Aspirator is designed for the removal of non-cured concrete. It is mainly used for making cut-outs and for cleaning the space alongside the rails as well as the space between the production beds.
This machine enables to draw any geometrical data contained in a dxf-file. Thus, important data such as cutting angles, cut-away areas, and project identification can be drawn and automatically printed on the slab. (Prints can be made on top of the elements as well as on both sides). The machine is provided with a touch panel and very user-friendly.

The data for the slabs can be entered at the plotter by means of any type of media or by means of a wireless network connection. A laser is used for positioning/measurement which can achieve an accuracy of +/-1 mm.

Echo Precast Engineering constructs and produces tailor-made lifting equipment according to the customers’ specific requirements. Our clamps are heavy-duty and have very high load ratings. A major advantage of the clamps is that they are provided with pivoting clamp faces to match the cross section. Both erection and lifting clamps feature quick engagement and release designed for smooth continuous work flow.

These mechanisms allow for efficient handling, transport and stacking of hollow core sections. Different versions of clamps for hollow core are available, depending on the product form, depth and length. For every product that can be made with the casting machines, a tailor-made lifting equipment can be supplied. Mostly the same equipment can be used for lifting in the factory, at the stock-yard and at the job-site.
PRODUCTION BEDS
Echo Precast Engineering constructs tailor-made casting beds for specific customers' demands. We offer two alternative solutions:

**Standard Production Beds**
The Echo Precast Engineering Standard Production Beds are unique on the market and based on years of experience. They are erected in our customers' manufacturing facilities with on-site assistance of our skilled technical team.

**Advantages:**
- The use of concrete underneath the steel plate ensures good thermal conductivity, which results in high-quality end products
- The use of concrete also facilitates the transfer of vibration and thus enables excellent compaction of the hollow core slab
- Considerable savings of transport and material costs
- Very long life-cycle

**Cassette Beds**
A prefabricated steel structure is mounted in the manufacturing plant.

**Advantages:**
- Cassette beds are available with and without heating system
- They can be removed and re-mounted in a different location
- Very short mounting time, low manpower requirement

**STRESSING EQUIPMENT & HEATING SYSTEM**

**Stressing Equipment**
According to the customers' specific needs, Echo Precast Engineering develops and engineers the whole pre-stressing system.

Abutments are located at each end of the casting bed. Reinforced concrete abutments are provided locally by the customer. Various types of pump sets and systems can be applied for stretching the strands or wires. Jacks are sized according to the size of the reinforcing wires/strands used.

**Heating System**
In order to increase the productivity and efficiency of the plant, a heating system for the beds is required (to obtain rapid and controlled curing).

Besides the engineering and supply of the technical specifications, we deliver the complete heating solution. The system mainly consists of a warm-water heating boiler, circulation pumps and a (temperature) control system.
PROGRESS GROUP
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WHY HOLLOW CORE?
The innovative solution for the manufacture of precast concrete panels

EBAWE undertakes the entire design, production and installation of complete carousel systems for the manufacture of various wall and floor elements. At our headquarters in Eilenburg, Germany we develop tailor-made plant concepts in close cooperation with the client perfectly adapted to the individual needs and the desired capacity taking into account the available budget. The entire plant is monitored by a central control system. With this system all processes in the production plant are efficiently coordinated and supervised by our Manufacturing Execution System. EBAWE is your partner of choice for projects of any kind and size due to our long-time experience as international machinery and plant manufacturer. Your success is our business!

We form your wire

progress designs and manufactures coil processing machinery. The company’s core competence lies in the conception and realisation of state of the art machinery and equipment tailor-made to customer’s individual requirements.

Stirrup benders
The newest generation of stirrup benders is equipped with many technical features that enable not only two dimensional bending but also the production of 3D stirrups.

Lattice girder welding machines
The high performance plants for lattice girder production are designed for the output of standard as well as made to measure lattice girder types.

Straightening, cutting and bending machines
The straightening, cutting and bending machines work off coil and thus optimize your production flow. Reduced storage costs and easy material handling systems facilitate cost-effective production.

Mesh welding plants
progress’ highly automated mesh plants are designed for industrial mesh production as well as for tailor-made mesh welding solutions.

Telephone +49 3423 665-0. Email: info@ebawe.de

Telephone +39 0472 979 100. Email: info@progress-m.com
Moulds and plants for the precast industry

tecnocom, based in Udine, Northern Italy, constructs plants and moulds for precast concrete elements. The company has established itself both in the private and the industrial building sector as well as in road constructing and is well-known on an international level.

Battery moulds
Battery moulds are designed for the vertical fabrication of single layer, large area reinforced precast products of varying dimensions and thickness. They consist of bulkheads between which several concrete products can be simultaneously formed. The major advantage of vertical production consists in the high number of precast concrete elements that are produced on a very limited area. This allows an extremely high productivity.

Tilting tables
Tilting tables are designed for the fabrication of large area reinforced concrete products. Integrated high-frequency vibrators facilitate optimal compaction of the freshly poured concrete. The surface of the steel plate is ultra-flat and guarantees a high-quality concrete surface. On request, the tilting tables can be equipped with various types of heating systems.