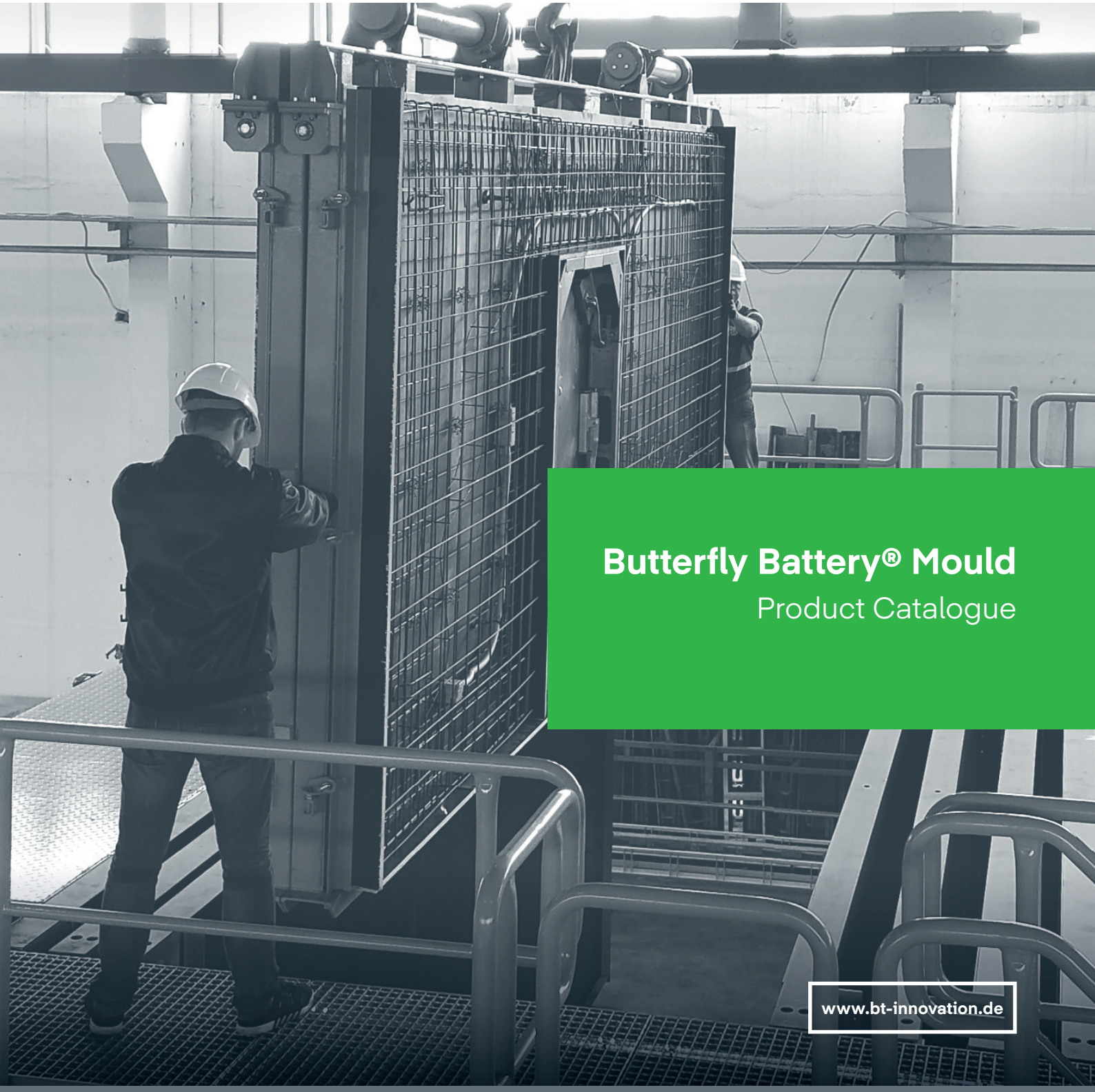
for faster construction

BT innovation



Butterfly Battery® Mould

Product Catalogue

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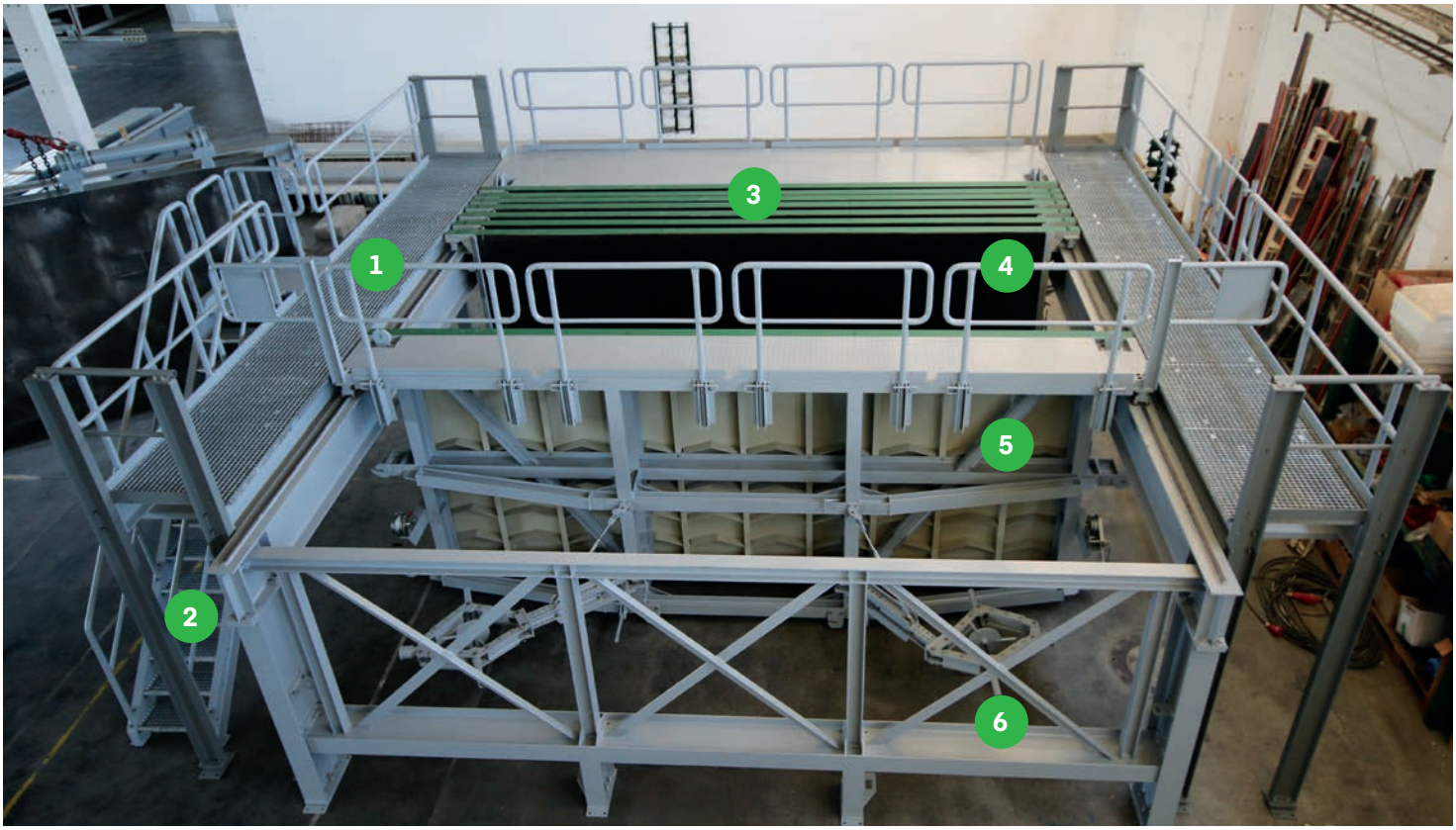
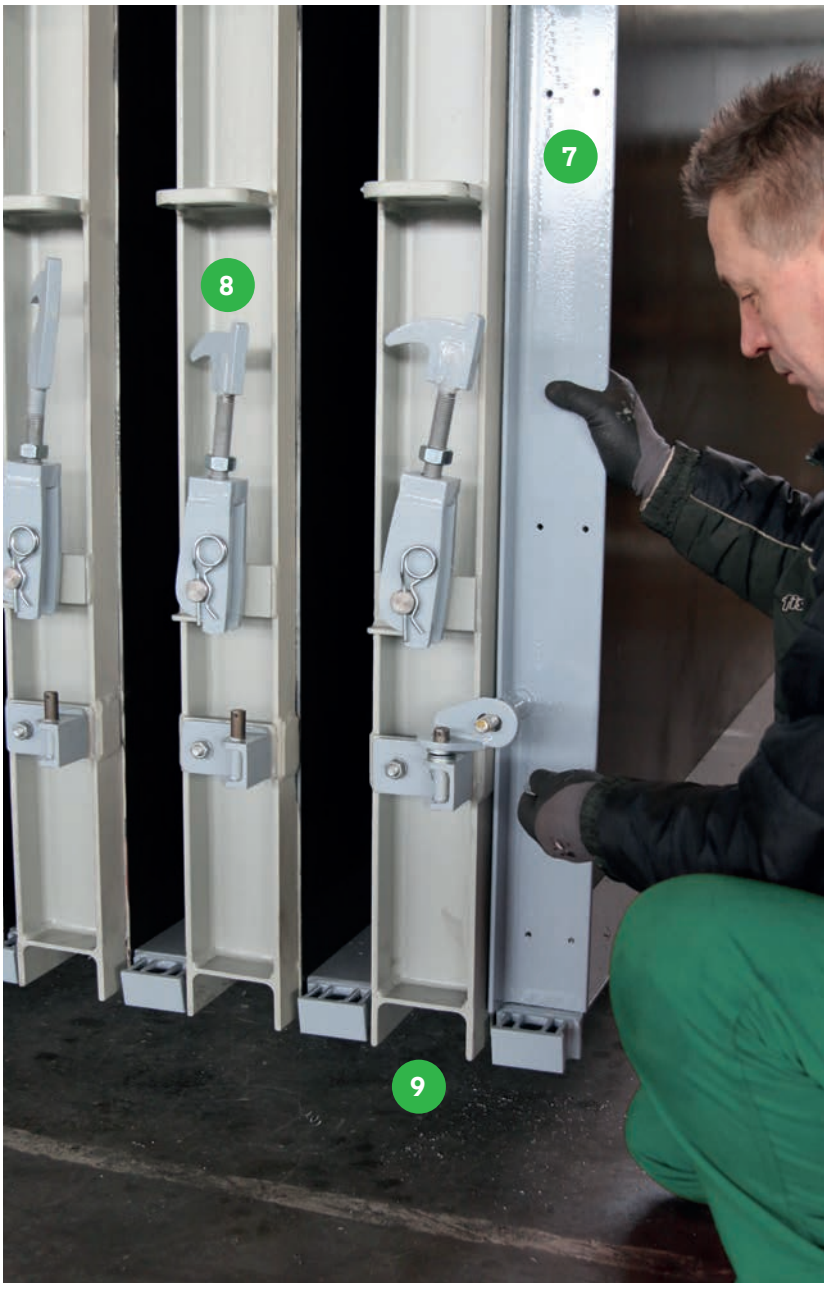




Components

01 Gangway
02 Stairs
03 Fixed tension wall
04 Bulkheads
05 Movable tension wall
06 Steel frame
07 Side shuttering
08 Clamp
09 Bottom shuttering

STATIONARY PRODUCTION OF PRECAST CONCRETE ELEMENTS WITH 5-SIDED FORMWORK SMOOTH SURFACE

Battery Mould

Battery moulds have been popular in the late 60s and early 70s. In recent years, the rheological possibilities of F5 and F6 concretes and self-compacting concrete (SCC) have significantly increased the use of battery moulds worldwide.

The battery mould is used for the vertical, simultaneous production of panel-shaped precast concrete elements with 5-sided formwork smooth surfaces. Battery moulds contain several casting compartments mounted in a frame.

The casting compartments consist of a formwork table and a bulkhead which is dividing the adjacent casting compartments. To absorb the hydrostatic pressure during concreting, the formwork compartments along with the bulkheads are braced between a fixed tension wall (end panel) and a movable tension wall.

In general, all kinds of battery moulds consist of a number of similar, parallel positioned bulkheads, between which the casting compartments for the final precast concrete element are located. The casting compartments are closed with a bottom shuttering and on both sides with side shutterings. The concreting is executed from above.

The battery mould enables the cost-efficient production of complex and extremely high-grade concrete elements with high visual requirements and minimum geometric tolerances.

The design configuration with a fixed tension wall on one side, in combination with several movable formworks and a movable end panel is called mono design. In the duplex design (double battery), the fixed central tension wall is located between the movable formwork elements and the two movable end panels.

Opening and closing (locking) the casting compartments take place mechanically or electrically. Each compartment is additionally tensioned with a robust and low-maintenance clamping system. Due to especial design of our battery moulds, the access to all opened casting compartments is easily provided.

BT innovation develops customised battery moulds including assembly and commissioning. The number and size of the casting compartments are individually adjusted. The formwork surfaces are manufactred in one piece without seams or hems. The steel panels are specially rolled for smooth steel formwork surfaces, fine-straightened, blasted and ground to the agreed roughness measures.

BT battery moulds are available as a standing/bottom-driven version or as a hanging version with rails on top.

COMBINE THE ADVANTAGES OF HORIZONTAL PREPARATION AND VERTICAL PRODUCTION

Butterfly Formwork®

For accelerated production processes, BT innovation has patented the butterfly formwork a casting compartment that can be removed from the battery mould. After only about 4 hours (at a strength of 3-8 N/mm^2), the precast elements can be removed from the battery together with the formwork and stored outside the battery for hardening. The battery is immediately ready for the next production cycle.

Butterfly formworks are special bulkheads for battery moulds. They consist of two formwork panels which are connected to each other by a robust hinge.

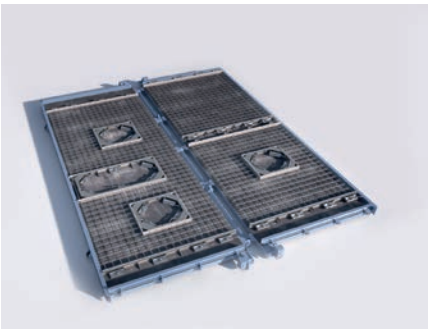
To prepare the precast concrete elements, the butterfly formwork is removed from the battery mould and opened. In this way, preparation steps for the precast elements are carried out horizontally more conveniently, with higher speed and accuracy.

They can then be transported horizontally to various workstations like circulating pallets. After completion of all preparation activities, the butterfly formworks are folded up again and transported into the battery mould.

The butterfly formwork is suitable for a combination of horizontal and vertical concreting, e. g. for facade panels. The ashlar or brick-faced facade can be concreted horizontally; the load-bearing layer is then produced vertically in the battery mould for a formwork-smooth inner wall surface.

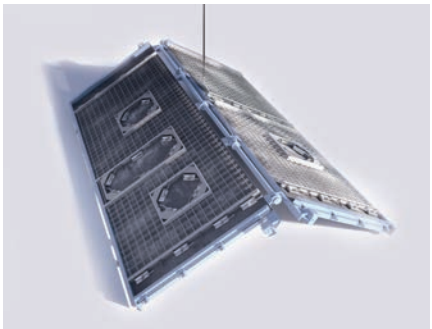
The butterfly formwork can also be used without the battery as a replacement for a tilting table.

Operation



01

Fully prepared butterfly



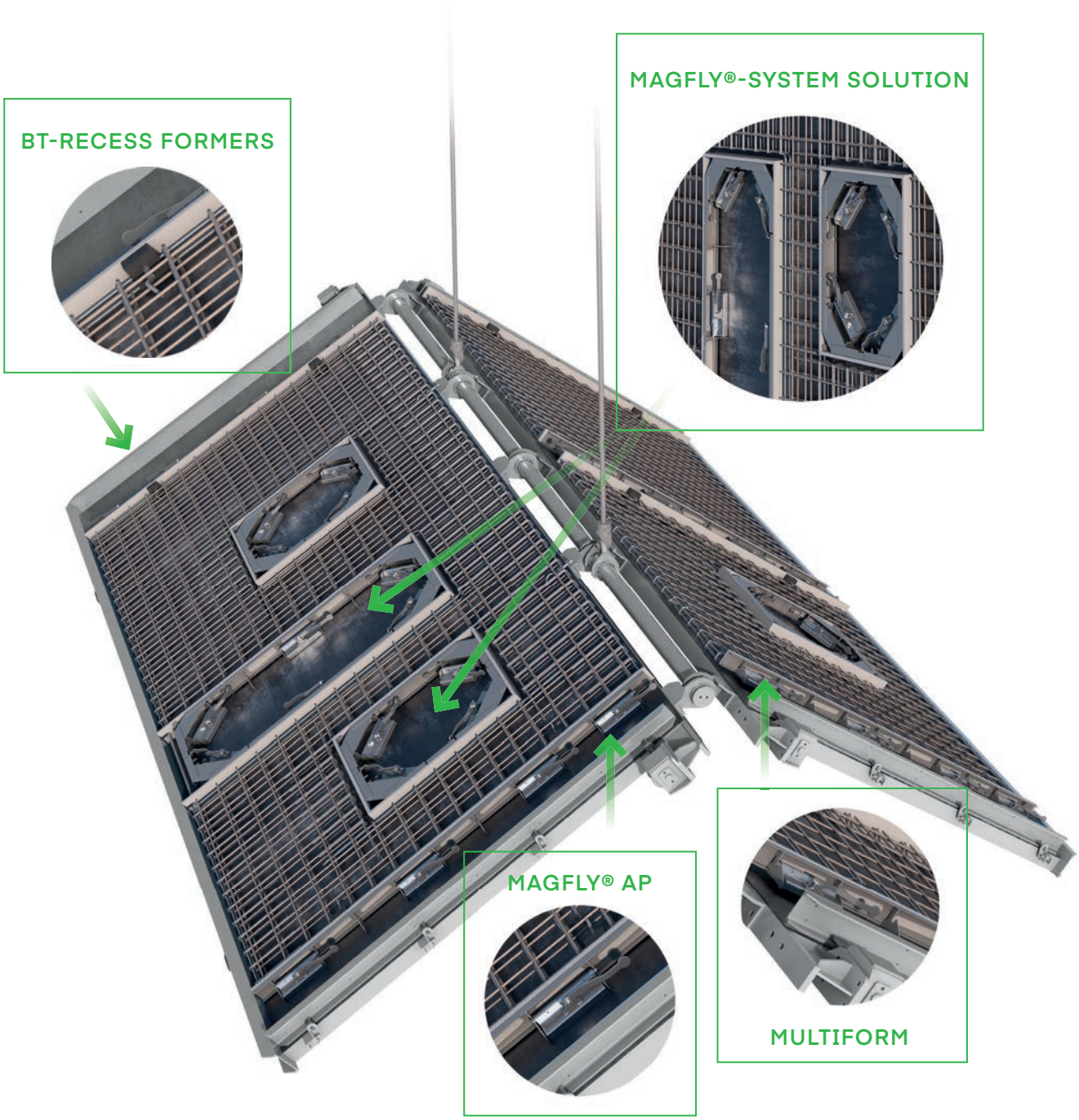
02

Lifting the butterfly

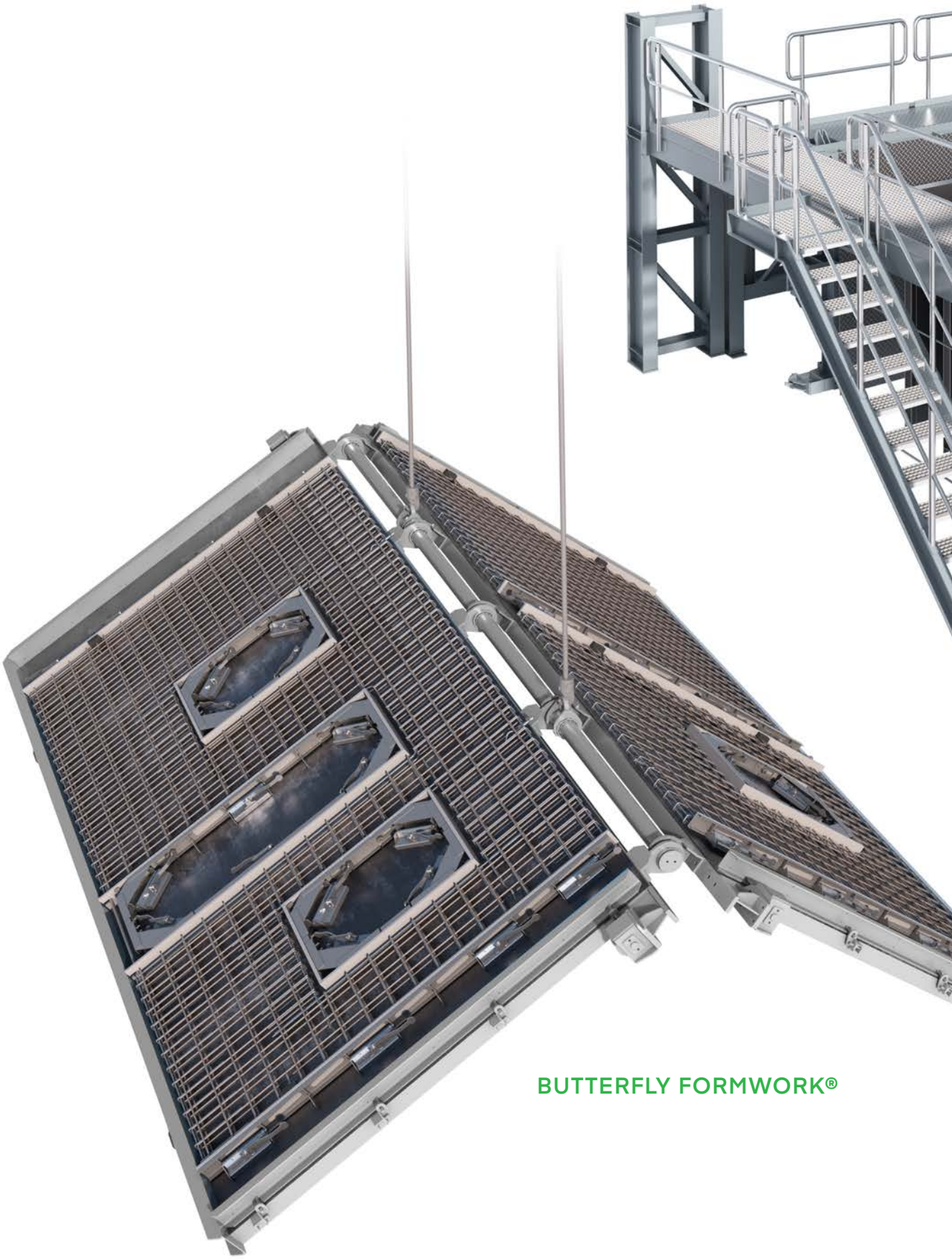
03

Folding up the butterfly

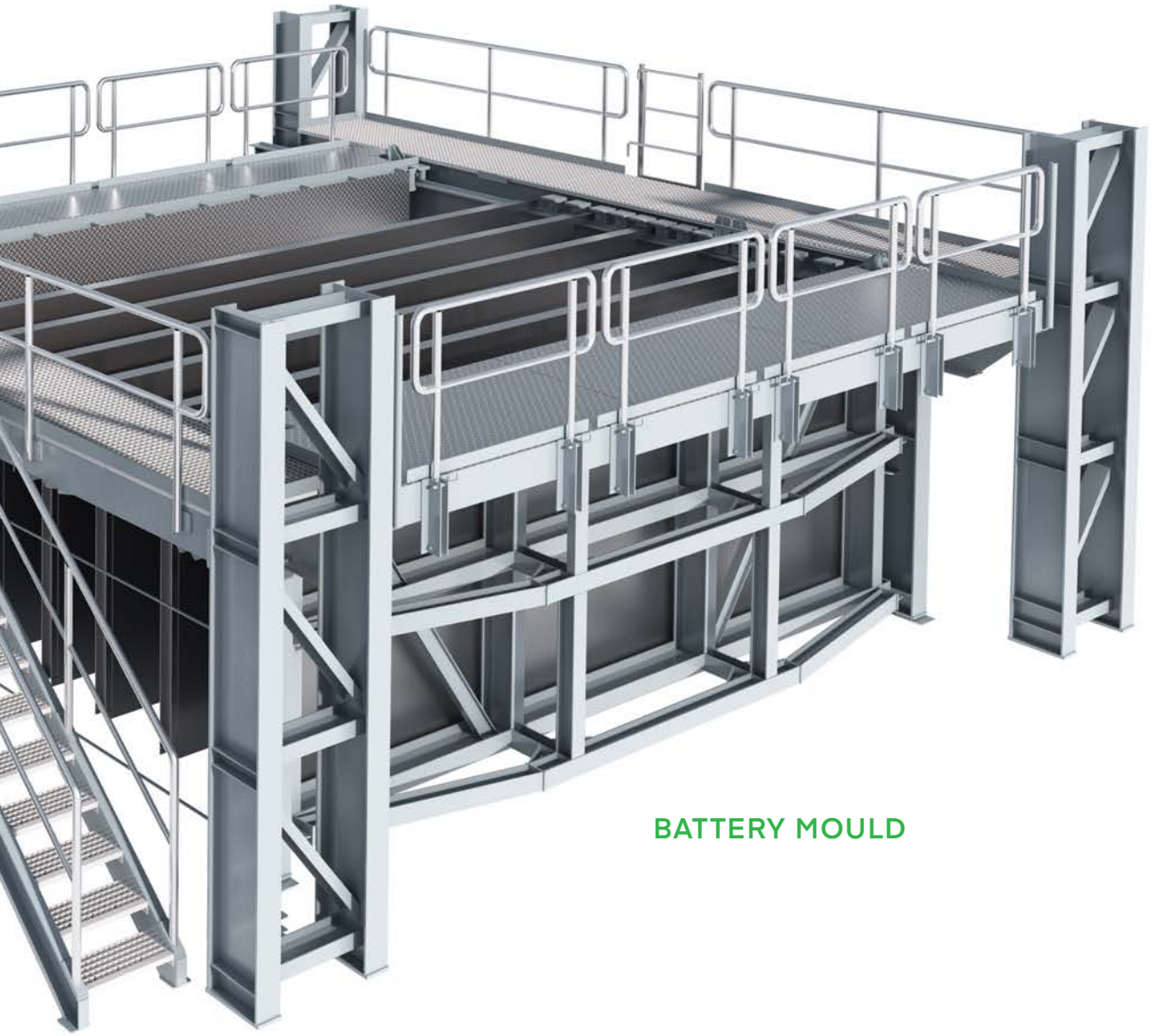
The system solutions by BT innovation make the butterfly formwork unique:
The MagFly® AP magnet with the proven MagFly® technology in combination with the MultiForm shuttering enables the positioning and alignment of shutterings, window and door openings within minutes. With an adhesive force of 22,000 N and a weight of only 5.40 kg, it has the best adhesive force-to-weight ratio in its class worldwide. Recesses for built-in parts or electrical installations are precisely created with the BT magnetic recess formers.



Butterfly Battery® Mould



BUTTERFLY FORMWORK®



BATTERY MOULD

INNOVATIVE SYSTEM SOLUTION FOR CONCRETING UP TO 4 TIMES PER DAY

Butterfly Battery® Mould

Horizontal preparation and vertical production - the Butterfly Battery® Mould combines the specific advantages of horizontal preparation with the vertical concreting of panel-shaped precast concrete elements. The symbiosis of the patented butterfly formwork with the proven battery mould significantly accelerates the production process.

With the Butterfly Battery® Mould, all preparatory work can be carried out comfortably and effectively in horizontal position: from measuring with a laser (or marking with a plotter), through formwork construction and positioning of the built-in parts to the insertion of the reinforcement.

Parallel work sequences on horizontal formwork tables outside the battery significantly reduce the set-up time, and the battery mould can be completely re-equipped within a very short time.

The precast elements can be demoulded together with the butterfly formwork just a few hours after concreting and stored outside the battery for hardening. Since the precast elements do not have to carry their own weight during lifting, the necessary waiting period is reduced. Already at a strength of 3-8 N/mm² the prefabricated parts can be removed from the battery together with the butterflies. Concreting up to 4 times per day becomes possible.

The butterflies can be moved between the individual workplaces with the aid of roller conveyors/ friction wheel drive like the pallets of a circulation system. With the integration of the patented hinged formwork, the battery mould becomes circulation system-capable. This enables a high degree of automation and a highly efficient overall process for the battery mould. This also results in new approaches to cost optimisation for sandwich walls or prefabricated brick-faced elements with a formwork smooth internal surface. The integration of a battery mould into a circulation concept combines the process advantages of the circulation technology with 5-sided visual request and the high quality requirements and capacities of a battery mould.

The Butterfly Battery® Mould is used by leading precast manufacturers; several plants are located in Germany, Austria and South America.

The capacity of the Butterfly Battery® Mould is rather freely scalable. The butterfly technology enables concreting up to 4 times per day, is extremely space-saving and produces precast elements 5-sided formwork smooth. If the butterfly technology is used, a production hall of only 10,000 m² is required to produce the precast elements for 500 apartments of 70 m² each month. The investment costs are lower than for all comparable production facilities.

Advantages

- Horizontal preparation, vertical concreting
- 5-sided formwork-smooth (fair-faced) surfaces
- Measuring with laser projection possible
- Jointless formwork surfaces
- Concreting up to 4 times per day
- Low floor space requirement
- Lower investment costs than tilting table solutions
- Reduction of production costs[1] by up to 40%
- Efficient heating system
- Also available as circulation system
- Successfully used by market leaders

Application

- Production of solid walls
- Production of sandwich walls
- Production of facade elements
- Production of brick-faced elements
- Production of balcony slaps
- Production of (coffered) ribbed ceilings
- Usable also as tilting table

* BT innovation distributes the Butterfly Formwork® and Butterfly Battery® for stationary applications on the basis of an exclusive license from NEULADT GmbH.

[1] based on calculation data sheet 022019

High Performance Battery Mould in comparison to Butterfly Battery® Mould

	High performance battery mould	Butterfly Battery® Mould
5-sided formwork smooth precast elements (fair-faced)	✓	✓
Compatible with magnet technology	✓	✓
Lower investment requirements than with conventional production methods	✓	✓
Lower area requirements than with conventional production methods	✓	✓
Lower heating requirements than with conventional production methods	✓	✓
Prefabrication of solid walls	✓	✓
Prefabrication of balcony slabs	✓	✓
Prefabrication of ceiling slabs	✓	✓
Prefabrication of 1-layered facade elements	✓	✓
Prefabrication of 2-layered insulated elements	✓	✓
Prefabrication of 3-layered insulated sandwich walls (core insulated)		✓
Prefabrication of brick-faced precast elements (prefabricated elements with brick-faced facade)		✓
Prefabrication of brick-faced insulated precast elements (brick-faced facade + core insulation)		✓
Measuring with laser projection possible		✓
Marking of positions with plotter		✓
Horizontal formwork setting		✓
Horizontal positioning of pattern matrices		✓
Horizontal reinforcement mounting		✓
Parallel working outside of battery mould		✓
Concreting up to 4 times per day		✓
Shorter emptying cycles of battery mould		✓
Usable also as tilting table		✓
Adaptable into circulation systems		✓
Can be delivered as circulation system		✓

WHAT YOU ALWAYS WANTED TO KNOW...

FAQ

How often is concreting possible per day?

According to the current state of the art, the Butterfly Battery® Mould has a capacity of concreting up to 4 times per day in a three-shift operation. Even with unskilled personnel, 3.6 casting rounds per day have already been realised. In cold seasons, energy-efficient heating systems support the continuous utilisation of the capacity.

How is a high capacity achieved?

The precast elements can be demoulded together with the butterfly formwork just a few hours after concreting and stored outside the battery for hardening. Since the precast elements do not have to carry their own weight during lifting, the necessary waiting period is reduced. Already at a strength of 3-8 N/mm² the prefabricated parts can be removed from the battery together with the butterflies. In this way, concrete can be poured every 5-6 hours.

Is a special magnet system required for vertical use?

In general, there is no special magnet system required for the battery mould, but BT innovation offers a highly efficient solution: The MagFly® AP system magnet, with the proven MagFly® technology for easy positioning and alignment of formwork and magnets, enables the positioning of shuttering or window and door openings within minutes.

Is the butterfly technology compatible with circulation systems?

The Butterfly Battery® Mould can be designed as a circulation system. Our consultants will thoroughly support you with the implementation process of such a project.

FOR FURTHER QUESTIONS OUR COMPETENT TEAM IS AT YOUR DISPOSAL AT ANY TIME.

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