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The battery mould becomes a circulation plant

Since its market introduction, the butterfly formwork has combined the advantages of horizontal preparation with upright production. The battery formwork is faster, more economical and more flexible as a result. The patented folding formwork can now also be integrated into a pallet circulation plant. The battery mould thus becomes a circulation plant.

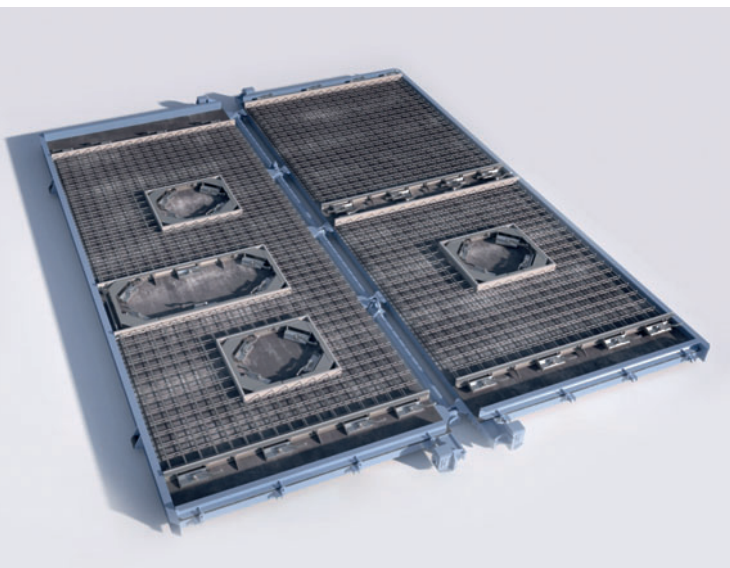
Circulation technology has been increasing the effectiveness of precast concrete element production for many years, for example for solid walls, sandwich elements, balcony slabs and special parts, and reducing production times through optimised machine technology and specialised work processes. With the integration of the patented folding formwork into a circulation plant, the battery mould becomes compatible with circulation plants. A high degree of automation and a highly efficient overall process is thus possible for the battery mould. New approaches for cost optimisation thus arise for sandwich walls or brick precast elements with a formwork-smooth interior face. The integration of the battery mould into a circulation concept links the process advantages of the circulation technology with 5-sided fair-faced requirements and the high capacities of the battery mould.

The Magdeburg-based company BT innovation introduced the butterfly formwork about two years ago. At that time the

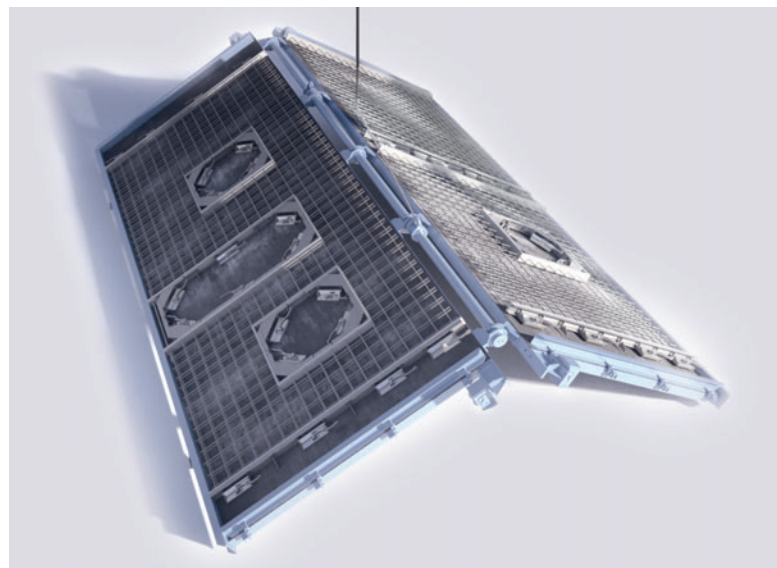
globally patented development solved the two main problems from which even high-performance battery moulds suffered. One is the dependence of the frequency of use of the battery on the lifting strength of the precast elements. The other is the comparatively high degree of manual effort required for formwork construction and reinforcement work on the vertical formwork surfaces in a pocket battery.

The first challenge was overcome through the butterfly technology, as the precast elements could be lifted out together with the butterfly formwork just a few hours after concreting and stored outside the battery for hardening. The necessary waiting times are shortened if the precast elements do not have to bear their own weight when lifted. The precast elements can already be removed from the battery together with the butterflies from a strength of 5 - 8 N/mm². Thus up to four concreting procedures are possible per day.

The second disadvantage of the pocket battery - the high effort required for the formwork construction and the reinforcement work on the vertical formwork surfaces inside a cramped battery formwork - was considerably reduced by the newly developed formwork chambers. They are removable and can be horizontally positioned outside the battery. All work steps prior to concreting can thus be performed in a horizontal position just as effectively as on tilting tables or circulation plants,



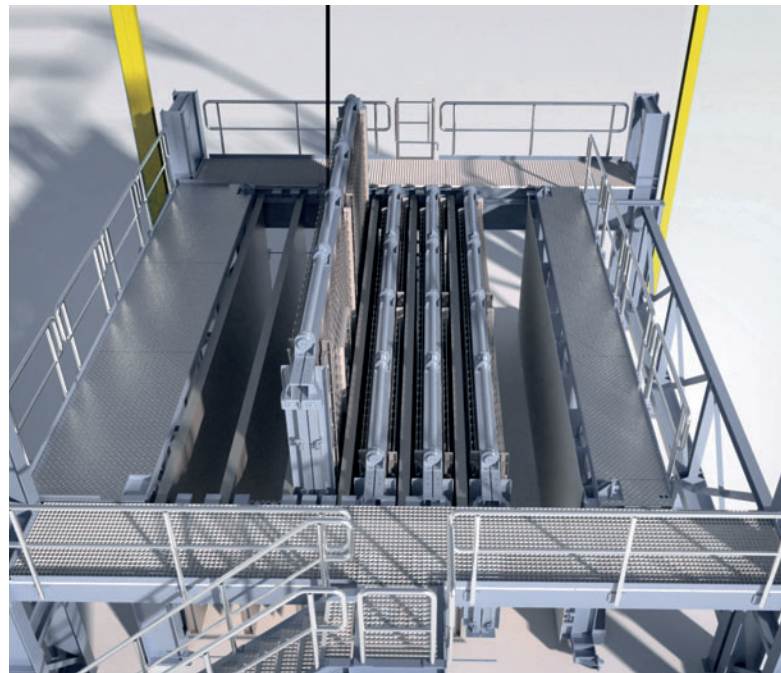
Preparation of the butterfly formwork in the horizontal position



The fully shuttered and reinforced butterfly is lifted up



The butterfly folds together



The butterfly formwork is placed in the battery

including laser projections for the exact positioning of shutters, cutouts, reinforcement, built-in components, conduits and magnets. Especially the laser display of the production data for the precast concrete elements at the push of a button leads to error avoidance, reduced setup times and more effective production.

The butterfly principle in particular was new at the time of the market introduction. The formwork surface is twice as large as the chamber in the battery. On completion of the preparation, the butterfly is suspended in the battery mould with the crane. It folds together in the middle on being lifted. The two formwork surfaces thus move from the horizontal preparation position to the vertical position for concreting.

Several market leaders now use the butterfly technology; three systems are located in Germany, one in Austria and one butterfly battery was sold to South America. Since the end of 2017 the patent rights have been held by the Umdasch Group in Austria, which focuses on the construction and operation of mobile field factories. The Magdeburg-based company BT innovation received the licences for the stationary precast plants.

Decisive further developments took place in 2018; these are to be installed in a further precast plant in the first quarter of 2019. Structural elements larger than 8.0 x 4.0 metres can now also be produced in precast plants using this technology. In future it will also be possible to move the formwork areas, which are removable from the battery, between the individual work stations outside the battery, like the pallets in a circulation plant.

At present the company has completed the production planning of the first development stage for an element-optimised butterfly circulation plant for the manufacture of individual solid wall and sandwich elements with 5-sided fair-faced requirements. Precast concrete elements containing a large number of built-in components and installations, high quality sandwich walls and facades with architectural requirements are to be produced. In the second development stage it will be possible to remove the machining centres from the pure transport sequence and, after entirely different machining times, to reinsert them into the production sequence.

Both companies will present the butterfly technology at the important trade fairs in 2019. BT innovation can be found at the forthcoming bauma in Hall B1 / Booth 325. ■

FURTHER INFORMATION



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