Ebawe Anlagentechnik GmbH, 04838 Eilenburg, Germany

Massive modular construction on the advance in the USA

In addition to septic tanks, the American company Huffcutt Concrete Inc. primarily manufactures individually designed sanitary houses made of solid concrete parts especially for motorways and now supplies them throughout the country. The manufacturer was able to significantly increase its production capacity by investing in a circulation plant made by the renowned manufacturer Ebawe Anlagentechnik GmbH, a Progress Group company. Since then, it has been able break into new markets and begin manufacturing structural and architectural wall panels. The new equipment will assist in providing the shortest possible delivery time and also offers impeccable, extremely stable and durable buildings and panels with architectural designs.

American construction company relies on concrete

Huffcutt Concrete Inc. was founded in 1945 in Chippewa Falls, Wisconsin as a small company that mainly supplied septic tanks to nearby municipalities. In the meantime, Huffcutt has extended its product range to several important product sectors. The focus is on wall panel production while sustaining a strong line of modular buildings, sanitary blocks as well as park and leisure facilities that are sold throughout the entire country.
Today, Huffcutt is a leading precast concrete company in the USA, supplying quality products to parks, companies, government organisations and private customers throughout the USA. The company attaches particular importance to innovative processes and durable modular buildings made of precast concrete elements. Huffcutt pays special attention to individual customer requests, be it coloured concrete, architectural designs or sustainable energy options - Huffcutt supplies custom-made unique products that are 100% tailored to the customer requests.

Last year, Huffcutt invested around 26 million euros in the construction of a completely new production hall at the Chippewa Falls site. The solid walls produced on stationary tables were to be produced quickly, efficiently and with high quality on a circulation plant in the future. Huffcutt chose the German company Ebawe Anlagentechnik, one of seven subsidiaries of the Progress Group, as its supplier. Once all the technical and commercial details had been clarified, assembly began in Wisconsin in autumn 2018.

Huffcutt Concrete Inc. manufactures solid wall elements in the new plant and can offer them with an extremely short delivery time.

The levelling beam attached to the concrete spreader draws off the concrete and compacts it according to the depth of the concrete layer.

The combined compaction equipment moves the pallet vertically and horizontally, giving the customer maximum flexibility in the final product.

A power trowel is used for fine smoothing, resulting in a very finely smoothed, paintable concrete surface that does not require any subsequent post-processing.

New circulation plant revolutionises production process

The circulation plant consists of 20 production pallets measuring 4.5 x 12.5 m. Each pallet can carry a weight of 22 t and is equipped with fixed edge shuttering and shuttering attachments. The solid wall shuttering supplied directly by Ratec is placed precisely on the shuttering surface using the Form Master shuttering robot.

The scope of delivery also includes an M-System BlueMesh mesh welding machine from progress Maschinen & Automation, also a subsidiary of the Progress Group. However, this machine was installed at the related company Stein Bros. Steel in Saint Paul, Minneapolis. Stein Bros. Steel is a manufacturer of steel products for the construction industry and also supplies Huffcutt with reinforcement meshes. The reinforcing steel is unwound from the coil and cut and bent according to the data supplied by the ebos® software. This work step is performed by the MSR 16 machine. The mesh welding machine produces the reinforcement meshes just-in-time and precisely for each solid wall. It is the first of its kind in the USA and enables Huffcutt as well as Stein Bros. Steel to efficiently produce tailor-made meshes.

The concrete spreader with screw discharge system discharges the concrete evenly on the pallet surface according to the data provided by ebos®. The vibrating levelling beam attached to the concrete spreader draws off the freshly discharged concrete, brushes it to the desired height and then smoothes it. External vibrators additionally perform compaction according to the concrete layer depth. After a resting phase and curing of the concrete surface, fine smoothing is carried out using a power trowel. These work steps result in a very finely smoothed, paintable surface without subsequent post-processing.

After the curing of the solid walls in the stacking rack, consisting of two towers of eleven levels each, the pallets with the cured concrete elements are moved out via the pallet stacker. On fixed rollers and friction wheels, they are driven to the tilting device and brought into an almost vertical position. This facilitates the demoulding and lifting process considerably and enables the walls to be stored in the subsequent installation position.

After completion of the production cycle, the removed solid wall shuttering is cleaned by means of a set down-cleaning device. The pallet passes through a stationary cleaning unit and is given a clean pallet surface by means of spatula and brushes and is thus ready for the next production run.

The pallet stacker serves the two racks and stores and retrieves the pallets with the freshly concreted solid wall elements.

A shuttering robot greatly increases the degree of automation in production. The shuttering is removed manually with the aid of a handling traverse.

With the aid of the tilting device, the wall elements are tilted and can be conveniently removed in the later installation position.

The entire circulation plant is controlled via the ebos® control system, eliminating complicated interface problems. Huffcutt benefits from the master computer modules PalBel, WorkPrint and SubLink. PalBel takes over the automatic allocation of the production pallets with concrete parts and allows very simple manual changes afterwards. With the WorkPrint module, worksheets can easily be printed. SubLink is the connection to the shuttering robot, through which the data for the allocation of the pallet surface with shuttering is supplied directly by ebos®.

Concrete modules individually designed

Huffcutt uses the solid walls produced on the new German-made circulation plant primarily for the construction of sanitary houses especially for motorways. These are designed in an architecturally sophisticated way and individually according to the customer requests by the use of form liners. The producer works with different surface designs such as wood, concrete or tile optics, with colours and structures. The small buildings are assembled directly in the plant and completed with the sanitary facilities. The prefabricated modules can thus be transported directly from the plant to the building site and set up there. Thanks to the new production line, Huffcutt is able to offer its modules with the shortest delivery times in the industry. Production is now much faster than the previous manual method and requires less manpower. Huffcutt still has an older production hall in which settling tanks continue to be produced so that no personnel had to be laid off.
Thanks to the new production plant from the Progress Group, the American precast concrete company was able to make its product range more flexible and thus also land orders for the construction of schools and warehouses with solid and sandwich walls.

Huffcutt manufactures sanitary houses from solid concrete elements and assembles them directly in the plant, already completed with all sanitary facilities. The small buildings are designed in architectural designs with coloured concrete and form liners in tile, stone and wood optics.

American construction methods on the test bench

The Huffcutt plant is configured in such a way that it is also suitable for the manufacture of semi-precast elements through expansion with some components. This double-wall plant could revolutionise the construction method there, because the construction of properties differs significantly from European construction methods. While in Europe, construction is mainly carried out with concrete and stone, the USA relies largely on timber-frame construction with outer walls made of thicker chipboards. The roofs are mostly tacked with roofing felt and walls as well as doors and windows are hardly insulated. For this reason, the houses are mostly equipped with air conditioning systems, which run around the clock in summer. In addition, there are the increasingly frequent hurricanes that uncover entire roofs or completely collapse houses.

It is therefore only a matter of time before the European solid construction method is also applied in the USA. Huffcutt could be a pioneer in this respect and, with its solid concrete elements, could also convince other construction companies of the stable and sustainable concept of building with concrete.

FURTHER INFORMATION

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