

Avermann Betonfertigteiletechnik GmbH & Co. KG, 49078 Osnabrück, Germany

# New tilting table production line for wall and façade panels in Indonesia

■ Thomas Strach, Avermann Betonfertigteiletechnik GmbH & Co. KG, Germany

**Manufacturing capabilities for simple precast concrete components, such as foundations, poles, pipes and solid wall slabs, are very commonly found, and widely dispersed through the South-East Asian region. Here, too, enhancements in accuracy and quality have been observed over the course of time. Increasing importance is being placed in this region on producing high-class precast, particularly wall and façade panels.**

The Ganda Group, the biggest palm oil producer in the world, founded PT Cemindo Gemilang in 2011. With its Semen Merah Putih product brand, PT Cemindo Gemilang has become the premium cement manufacturer in Indonesia and even owns the majority of a cement production facility in Vietnam. In Indonesia, both cement and ready-mix concrete are marketed under the Semen Merah Putih brand name.

The vision was conceived of attaining global leadership with these classic structures in construction materials and corresponding innovative solutions and perfect service. A new precast production facility was erected to implement one portion of these innovations on a site of 5 ha in size at Bojonegara, Banten, about 106 km north west or an approximately

2.5 hours drive from Jakarta, the capital of Indonesia. A ready-mix facility had already been located there. A simple precast line, mainly for wastewater pipes, poles and precast for infrastructure, was also already in operation at this site.

Now, with the founding of its Motive Mulia subsidiary, a pure precast concrete element production facility has come into being, in which primarily large-format wall panels and high-class façade panels will be manufactured.

## Easy to operate, manageable technology

The system technology was designed in such a way that industrial manufacturing can be carried on to a great extent with manual operations. Yet, possibilities exist for expanding the system and capacity in the future.

The design was conceived by Avermann Betonfertigteiletechnik GmbH & Co. KG, a leading German system manufacturer, together with the customer. It comprised two basic requirements:

Firstly, it was to ensure that most varieties of wall elements, special elements and architectural façade panels could be



*View from the administrative building's balcony of the 38 ha PT Motive Mulia company site, on which the production facility currently occupies 5 ha; on the left, the outer wall of the production hall with its tilting table system from Avermann can be seen.*



*16 tilting tables are set up on two lines running parallel to each other in the production hall.*

## PRECAST CONCRETE ELEMENTS

produced flexibly and in high quality. Secondly, the system technology was to be manageable and easy to operate to comply with staffing conditions in Indonesia.

These considerations led to the choice of a stationary tilting table production system. To keep investment costs down to a manageable level, a special type of tilting table system was implemented - the KVT System (a tilting-compacting-transporting unit) made by Avermann Betonfertigteiletechnik.

### Capacity of up to 450 m<sup>2</sup> wall panels

A price advantage was able to be worked out together with Motive Mulia during project discussions and contract negotiations by shifting the production of the tables to Indonesia, thus saving the expensive cost of transport from Germany. An agreement was concluded to construct the tables in the domestic market in cooperation with an Indonesian steel construction company, and the assistance of German expertise, to make the transport substantially less expensive and more rapid.

The system is comprised of a row of purely mechanical tilting tables with neither their own hydraulic equipment nor vibration technology. 16 tilting tables measuring 12.0 x 4.0 m were planned for the specified capacity of approximately 400 to



*The tilting-compacting machine's hydraulic device tilts the table on its pivot points up to an angle of 80° so that the hall crane can hoist finished wall panels undamaged from the formwork table.*



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*The tilting table system includes this power trowel, which gives the necessary high quality to the rear sides of these flat precast concrete elements*

450 m<sup>2</sup> wall panels. The layout is composed of two production lines due to the hall's dimensions. The tilting tables are set up on support tracks provided on site using pivoted joints and vibration dampers.

The system's key element is its combined tilting-compacting machine, which, as a self-propelled transporter, can service all tables in both longitudinal and transverse directions. Its power supply is assured by collectors and a conductor line in a longitudinal direction and by a cable line in a transverse direction.

The machine travels under the appropriate table and takes up its position for concreting. The table is clamped to the machine frame.

**Concreting with a truck mixer**

Concreting will be carried out with a simple crane bucket with this first round of investment. The concrete is supplied directly from a truck mixer, in turn supplied locally by the company's own ready-mix concrete system at the same premises.

Once concreting has been completed, the clamped table is compacted with integrated high-frequency vibrators and then post-processed. The machine's clamping is then released and its centring opened before it travels to the next position for concreting. When all tables in one production line have been concreted, the tilting-compacting machine can change track with its own transverse travelling gear and process the next tilting table line.

Stripping the formwork from the wall panels takes place in a similar way on the next day. The machine travels under the production line and is placed in position. The hydraulic device



*PT Motive Mulia also produces low-cost houses, which the company offers in differing versions.*



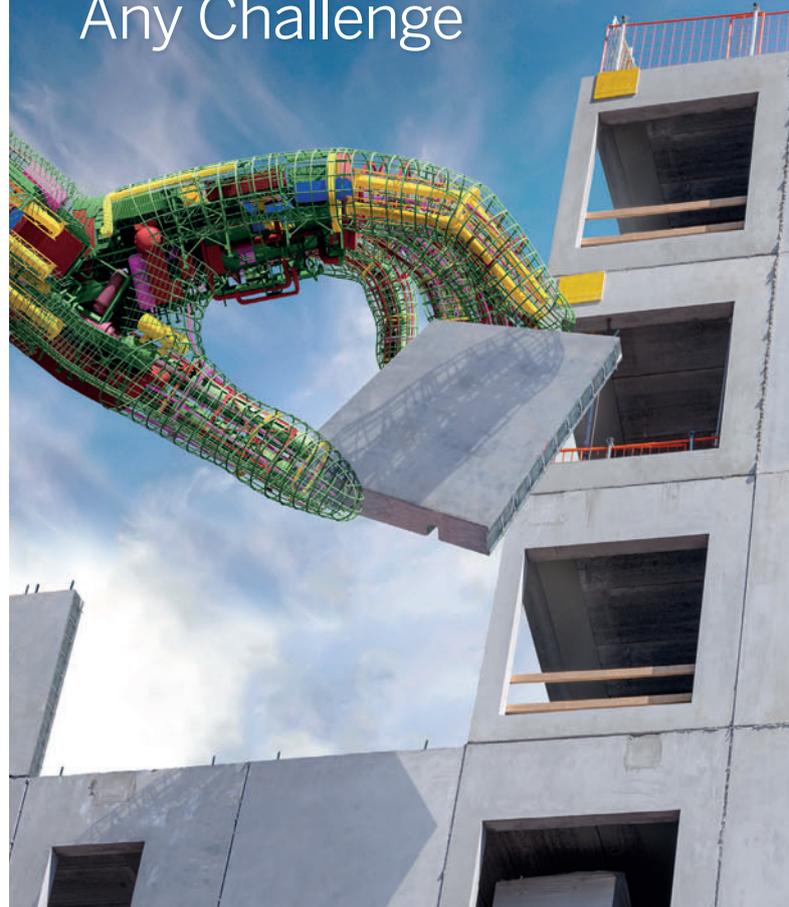
*Residual concrete is utilised by PT Motive Mulia for a by-product - kerbstones (at the rear) - that separate pavements from the road carriageway in the capital, Jakarta. The company makes its own steel moulds (in the foreground) for this purpose.*



At the current time, PT Motive Mulia is manufacturing façade elements, amongst other things, on the Avermann tilting tables for the "Scand Hotel" hotel project at Cilegon in the north of the Indonesian island of Java.

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Thumbs up! Company owner Hendrik Soewatdy (fifth from left) and the highly motivated management team at PT Motive Mulia

tilts the table on its pivot points almost vertically (approx. 80°) so that the hall crane can remove the finished wall panel in an upright position and undamaged from the tilting table. The empty table is then lowered to a horizontal position again where it is supported on rubber-metal vibration dampers. The operator moves the machine by radio remote control to the next position and centres it once again there. In this way, one table after another is cleared and then manually cleaned. The formwork and reinforcing are subsequently set in place in preparation for the next manufacturing cycle.

### Further options of expansion

A power trowel was also purchased at this first stage of investment for manufacturing high-class wall and façade panels. This gantry smoothing machine can travel over the tilting table lines once hardening has begun and optionally smooth the rear side of the elements. The power supply is assured by a cable drum; the changeover between the tilting table lines is carried out using an overhead crane.

Owner Hendrik J. Soewatdy and director Ramond Chan Keng Wee made a special point of mentioning the tilting table system's successful installation and excellent workload as well as the prospects of expanding the system.

The future has been assured by planning effectively both for enlarging the production area with additional tables as well as for machine technology, such as concrete spreader, laser projectors or plotters, run-off carriages and cleaning machines for the tables and formwork.

In the light of this, Avermann wishes to thank all those involved for their good cooperation and hopes to continue writing this success story in future as a partner with Motive Mulia.



Scan the QR code and watch a video of the production line at PT Motive Mulia.

### FURTHER INFORMATION



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