

BFS Betonfertigteilesysteme GmbH, 89143 Blaubeuren, Germany

# PT Dantosan Precon Perkasa opts for large installations

The Indonesian company PT Dantosan Precon Perkasa, headquartered in Jakarta and with a production facility in Karawang, was founded in 1993 and today employs 650 people. The company mainly manufactures large concrete pipes, box culverts and U-ditches for wastewater systems, as well as precast concrete elements such as double walls and prestressed hollow-core slabs. Since this year Precon has also been operating with two large machines - the Mammut 8668 and Jumbo R 3025 Duo from BFS GmbH of Blaubeuren. The names say it all.

The town of Karawang is located two hours by car to the east of Jakarta. Here, on a twenty-hectare site, is where Precon manufactures products including concrete pipes, U-ditches and box culverts, which are used for wastewater systems. "In order to further improve the quality of our products, we have opted for two plants from BFS. BFS has long enjoyed a reputation as a specialist for the manufacture of powerful and extremely robust plants", explains Precon's CEO So Liep Khing. His decision was swung by BFS's practical and efficient solution of manufacturing two U-ditches in a single mould. "This way it's possible to get around the problem of the centre of gravity shifting when demoulding a U-ditch", explains Klaus Müller, CEO of BFS.

The exact size, design and equipment of the machines were jointly elaborated by Precon and BFS, although the dimensions of the vibrating table gradually increased over the course of the project planning phase. The product range also expanded during this phase, so that Precon decided to produce in addition with a Jumbo R 3025 Duo. "Of course we take into account the parameters of the products that are to be manufactured with the machines when developing the machinery. "For the vibrating table, for example, we precisely calculate the number of hydraulic clamps for the clamping of the mould as well as the number and rating of the vibrators", explains Müller.

The result was the Mammut 8668 vibrating table, which BFS delivered to Indonesia earlier this year. The custom-made machine measures 8600 x 6800 mm and is tailored to Precon's every requirement for the production of large box culverts. In this case, products with dimensions of up to DN 6850 x 5200 mm, an overall height of 1200 mm and a weight of up to 35 tonnes can be manufactured with the Mammut. General speaking, greater heights are also possible. "The enormous power and size of this type of machine are really impressive. The name Mammut (English: mammoth) suits it perfectly. This is the largest vibrating table that we have ever designed and built", stresses Rainer Straub, Regional Sales Manager at BFS.



The new hall can accommodate both the Jumbo and the Mammut



Jumbo R 3025 Duo



Mammoth 8668 - the largest vibrating table that BFS has ever built



Box culvert moulds for the Jumbo for different product sizes



A box culvert produced on the Jumbo plant pictured during demoulding



A box culvert manufactured on the Mammut vibrating table pictured during demoulding

### Mature technology

BFS has constructed a particularly stable and torsionally rigid vibrating table for Precon, featuring an air suspension system that always keeps the machine precisely balanced and horizontal - regardless of the load. "Thanks to this table bearing system the vibration forces are used entirely to compact the concrete; the machine's environment and foundations are almost completely isolated from the table vibrations", says Müller, explaining the advantages of pneumatic suspension.

The vibration of the vibrating table is generated by 14 particularly powerful vibrators. These are attached to the underside of the table in two lines of seven vibrators and are coupled to each other. They are powered by two robust electric drives. The two drive trains operate synchronously, guaranteeing a uniform high compaction force at every point on the table and thus a fast and very good compaction of the product. Frequency-controlled electronic drives reduce the volume level and preserve the material during production. Similarly, the vibration force can be better and more easily adjusted, which has a positive effect on the quality of the product. Beyond that, the electric drive effectively counteracts thermal problems and oil leaks. BFS has deliberately opted for an electric drive rather than a hydraulic solution in order to counteract the thermal problem. "This system has proven itself in particular in very hot countries", says Straub.

### Short retooling times, lower costs

The outer mould is clamped by hydraulic clamping devices that can be controlled simply by the push of a button. "It's very easy to use and saves time, because the demoulding can be done quickly", says a satisfied So Liep Khing. BFS has integrated auxiliary hydraulic demoulding cylinders into the clamping devices to minimise the

load on the crane and thus save costs. Another advantage is that the demoulding aid can be simply adjusted with the hydraulic clamping devices. "That makes for even shorter retooling times", Straub explains. A hydraulic press device for the spigot end former is attached to the inner mould. Ideal forming of the spigot end is thus guaranteed.

When it came to the concrete feeding system, Precon opted for a dual-axis linear feeder. The extra-large silo holds five thousand litres. Thanks to the intermediate silo, which is attached to the ceiling of the hall, it is possible to continuously fill the silo with fresh concrete from the mixing plant. As an alternative, BFS offers feeding with a rotating discharge belt and CNC path control. This makes it possible to produce box culverts and large size pipes on one vibrating table.

### Trend towards large box culverts

For some years now BFS has observed the global trend that companies are increasingly using large box culverts and U-ditches. BFS reacted to this trend early on with the development of the Mammut machine type. "Our customers are able to efficiently produce large and heavy products with this robust plant", says Müller. The box culverts are used not only for wastewater systems, but also as a replacement for smaller motorway bridges, as in the USA, for example. In addition, they serve as rain water collection tanks in many countries where rainfall is scarce and they are used as utility ducts in which sewage pipes, gas pipes, electrical cables and telecommunication cables are laid. That enables maintenance and repair to be carried out underground.

### One machine, two production stations: Jumbo R 3025 Duo

In addition to the Mammut vibrating table, BFS supplied the Jumbo R 3025 Duo con-

crete pipe making system to Precon. Whether concrete or steel reinforced concrete pipes, manhole rings or pipes, non-round or square special manholes: "This pipe-making machine makes almost everything", says Straub in summary, "because we adapt it exactly to the wishes and needs of our customers." With its Jumbo R 3025 Duo, Precon can manufacture products in both work stations up to a maximum diameter of DN 3000 mm and box culverts up to DN 2500 x 2500 mm with a maximum overall height of up to DN 2500 mm.

Continuous production is possible with the Jumbo, because machine standstills are virtually avoided due to the two pits: it is possible to produce in one pit while a product is being demoulded in the other. This means that pipes with different diameters or pipes and box culverts can be manufactured at the same time in the same shift.



The name says it all: large box culverts can be manufactured on the Mammut plant



A variety of products can be produced with the Mammut and Jumbo

"The machine is therefore even more effective", says Müller. The concrete is distributed evenly in the mould by the swivelling concrete feeder with rotary discharge belt. The speed of the conveyor belt is frequency controlled to ensure a constant filling height. A laser measuring system controls the precise concrete supply. Even irregular cross-sections, oval pipes and box culverts are not a problem for the Jumbo R 3025 Duo: the contour control ensures the exact filling of moulds, because the concrete is automatically filled in every corner of the mould.

The heart of the Jumbo R 3025 Duo is the powerful V506 central vibrator. The sophisticated vibration system offers numerous advantages: thanks to the hydraulic quick clamping in each vibrator, the retooling times are short. "As with all our machines we attached particular importance to short retooling times during the development and design of the Jumbo", Müller stresses. The modular system of the vibrator heads allows different overall lengths, making optimal adaptation to the products possible. The central vibrator is equipped with a frequency-controlled drive, which has a

positive effect on the quality of the concrete. In addition, noise level and wear are reduced. A further advantage is that the central vibrator is automatically lubricated at preset intervals. "That not only saves time for the machine operator; it also benefits the durability of the vibrator", Straub stresses. "The machine leaves nothing to be desired", says a satisfied So Liep Khing.

#### Quality all along the line

Precon's emphasis on very high quality is also shown by the fact that the company bought land to build a new hall. The hall was designed such that optimum use can be made of the machinery and an efficient material flow is guaranteed. The company also invested in a high-quality mixing plant.

As with any new project, there were hurdles that had to be overcome - that goes without saying. BFS and employees from the Indonesian BFS representative Rieckermann helped out and they will also be quickly on site in future. Thanks to the local service personnel response times are short and repairs can be done quickly. Both Precon and the team from BFS are very sat-

isfied with the product quality. The employees' verdict is also positive: "The machines are easy to operate and maintain, they're reliable and they make little noise." ■

#### FURTHER INFORMATION



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A U-ditch being loaded.



U-ditches produced in pairs on the Mammut.