

BFS Betonfertigteilesysteme GmbH, 89143 Blaubeuren, Germany

Further development of machine line for production of rectangular pipes and large size pipes

BFS has expanded its successful Mammut product line for the manufacture of large rectangular pipes, U-profiles, large size pipes and other large-size special profiles by numerous further developments. For some years now a clear trend has been visible in that more and larger rectangular pipes, so-called box culverts and U-profiles are in demand worldwide. Apart from the wastewater sector, the areas of application for such products are various: In the USA, amongst other things, many smaller motorway bridges from the 1950s are being replaced by 'large boxes'. This relieves traffic, since the roads only have to be blocked for very short periods. In some countries where rain water is rather scarce, rectangular pipes are used as collecting tanks for the rain water.

Box culverts are used in many urban environments as utility ducts in which sewage pipes, gas pipes, electrical cables and telecommunication cables are laid. Maintenance and repair is thus possible underground without interrupting the flow of traffic.

BFS has many decades of experience in the manufacture of concrete rectangular pipes, using both wetcast and instant demoulding, with fixed and modular moulds. BFS has also long enjoyed a reputation as a specialist for the manufacture of powerful and extremely robust vibrating tables.

With the purpose of manufacturing special large-size and very heavy products more efficiently, a new type of machine was thus developed many years ago. Due to its impressive size and enormous power, the BFS engineers gave this machine line the name Mammut.

BFS has ploughed all of the experience gained into this machine for the optimum manufacture of rectangular pipes, U-channels, manhole elements and pipes.

The size, execution and configuration of the respective plant are adapted to the customer's needs by the BFS team in close cooperation with the respective customer.

Various execution versions are available from the BFS component construction kit. For example, there is a choice between two different concrete feeding systems. One is a two-axis linear feeding system, while the other is a feeder with a rotating discharge belt and CNC profile control.

A height adjustment unit is available for the vibrating table for the manufacture of products with different overall heights. A hydraulically synchronized demoulding aid



Mammut production with two-axis linear feeding.



Mammut production with rotating discharge belt and CNC path control.

has been developed to relieve the demoulding crane.

BFS knows what matters: reliability, performance, high and fast compaction, dimensional accuracy, ease of operation and maintenance, low noise level, ideal vibration isolation towards the foundations, etc. Taking these key data into account, an extremely stable and torsion stiff table was developed, that is kept in a precisely horizontal position by pneumatic suspension. Through this mature and well-conceived table bearing system the vibration forces are used fully to compact the concrete; the machine's environment and foundations are almost completely isolated from the table vibrations. BFS vibrating tables are optimised with regard to rigidity and torsion, with the aid of FEM calculations and simulations.

The parameters of the products to be manufactured are taken into account in the design of a vibrating table. The number of hydraulic clamps required for mould fixation, the precise dimensions of the table and the number and performance of the vibrators are calculated with the utmost accuracy. The electrically driven vibrators

are dimensioned such that they have a great deal of power in reserve.

The electrically driven vibrators are infinitely adjustable by electronic means and require almost no maintenance. BFS consciously uses electrically driven vibrators in order to rule out possible thermal problems such as are familiar from hydraulic vibrators.

The machine parameters are matched to the products to be manufactured and are stored in the program administration in the machine controller.

Based on the customer's requirements, either fixed or modular moulds are offered



Example of a stable vibrating table



Modular rectangular pipe moulds offer absolute flexibility.



Finitec spigot-end mould for precise, clean joints



Assembly of precisely shaped modular mould parts.



Box culverts after demoulding, with the Finitec spigot-end mould still in place.

Product examples: the variety is considerable

for rectangular pipes. Modular moulds enable a wide variety of sizes and wall thicknesses to be manufactured and the joints can also be adapted to the local requirements by means of base pallets and spigot-end moulds.

Hydraulic pressing devices are built into the respective inner moulds of the moulds; these form the desired profile of the rectangular pipe with the aid of a spigot-end shaper.

The dimensional accuracy of the joints of the respective products is extremely important. Alongside the well-known set rings, BFS offers the reinforced Finitec system for this.

In this system the steel spigot-end mould remains on the pipe until hardening is completed, thus guaranteeing both a precise joint and an extremely smooth surface. The combination of a speed-controlled conveyor belt with a laser filling-level controller ensures the homogeneous filling of the moulds and a precise overall height. Together with the optimum compaction of the concrete by means of the frequency-controlled vibrators, this produces an ideal end result. Precisely moulded, excellently compacted and with a perfect joint – each product stands neat as a pin

The largest vibrating table built by BFS to date measures approx. 9000 x 7000 mm and has great reserves of power for the

manufacturing of every product. Whether rectangular pipes, U-profiles, pipes or manhole elements, each production cycle produces an optimum product. ■

FURTHER INFORMATION



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