

Tecmold Industria e Comercio Ltda, 94045-420 Gravatai, RS, Brazil

Modern pipe machinery for emerging markets in Brazil

Since many years the construction industry in Brazil is booming. One of the reasons for this is the strong economic growth, and connected to this is the demand for more infrastructure, private and public buildings, and also the improvement of the sewage system. Most probably, less than 50% of the cities have an underground sewage system as they are usual in Europe, for example. Thus the demand for long lasting solutions is obvious, and precast concrete pipe will play an important role in the future. Tecmold Industria e Comercio Ltda, one of the leading companies in the South of Brazil in the field of block and pavers, recently added for this reason to their product portfolio modern pipe machinery, with a focus of productivity and quality.

Tecmold was established in 1995 by Leonel David Bortoncello in Gravatai, Porto Alegre, where the company still has its facilities, in the meantime with 60 people on a total area of 60,000m². In 1995, Tecmold purchased its first block machine from Schlosser. At that time, only two other Schlosser block making machines were operating in Brazil. Due to the satisfaction of the other producers, Bortoncello decided to buy the Schlosser machine from Germany - at that time not an easy task due to import and custom regulations that were even more restrictive than today. On this Schlosser machine, Tecmold is producing

until today blocks and pavers. In 1995, Luis Antonio Povoas started working for Tecmold as Managing Director, and he was at that time also one of the founders of Bloco Sul, the block and paver association for manufacturers in the South of Brazil, that later moved to Sao Paulo and developed to become Bloco Brazil - today with block and paver producers as members from all over Brazil.

Tecmold purchased later also a Besser block machine to increase their production capacity, and 8 years ago, they added a Columbia splitting machine for architectural masonry production. For their block and

paver production where the people are working 24hrs in three shifts, Tecmold was awarded with the "Selo de Qualidade" from ABCP, the Brazilian Portland Cement Association.

In 2010, it was decided that Tecmold should add also concrete pipes to their product portfolio. To be competitive in the emerging sewage market, it only made sense to purchase most modern equipment, and since Tecmold had historically a very good relationship with Schlosser, belonging as Schlosser-Pfeiffer today to the German Hess Group, it was never questioned that Schlosser-Pfeiffer should be the



On the Schlosser machine, Tecmold can produce on 1400x1200mm steel pallets blocks and pavers with an average production cycle of 15-20 seconds. The molds for these blocks and pavers are mainly supplied by the German companies Rampf and Kobra.



The Besser machine produces on smaller steel pallets, sized 470x945mm, masonry blocks with cycle times of 5-6 seconds. For this machine, Tecmold is using preferably Besser molds.



Tecmold prognoses the demand for architectural masonry products growing in Brazil. They are prepared to serve this market with their Columbia splitting machine.



Tecmold owns also a transport company, where 50 people operate in two shifts 25 own trucks for the delivery of the Tecmold products to the customers. For Tecmold, this is a very important key to success in the block and paver business since their special logistic system enables them to deal with private customers with a need of 1m² of paver as well as with huge industrial customers who order several 10.000m² of pavers.

The mixing and batching plant was supplied by TGM

supplier for the new pipe machinery, too. Advantageous for Tecmold was also the situation that the Hess Group recently joint with the Brazilian company TGM and formed Hess TGM, a joint venture of Hess Group and TGM, so the complete order could be placed inside Brazil which was financially more attractive for Tecmold than placing the order in Germany. Nevertheless, the machines were produced in Germany whilst TGM / Hess TGM produced moulds and accessories in their facilities. While the contracts for a new radial press and a Variant pipe machine were

signed in December 2010, the plant started operation already in October 2011. At the same time, Tecmold also joined ABTC, the Brazilian pipe association.

Mixing and batching plant

For the new pipe plant that is located in a new hall, sized 4.000m², Tecmold also ordered a new batching and mixing plant. The silos and also the mixer were manufactured by TGM. The 2m³ mixer compulsory mixer, similar to the Schlosser-Pfeiffer SM mixer, is particularly suitable for the produc-

tion of dry concrete with low water/cement-ratio. Typical for this mixer is the centre drive and the additional separate drives for the individual mixing stars. The flying bucket conveyor has a capacity of 2m³ that supplies both the radial press and the Variant with dry concrete for the pipe production. Tecmold is using aggregates fractions 0.125-1mm, 1-2mm and 4-8mm. The aggregates are stored in huge silos made of concrete that were constructed by Tecmold itself. The portland cement CPV ARI-RS from Votorantim with high early strength capacity (40N/mm² final strength)



Besides blocks and pavers, Tecmold also produces approx 12.000m² floor slabs per month, with integrated distribution channels for the electricity.



The 2m³ mixer compulsory mixer, similar to the Schlosser-Pfeiffer SM mixer, is particularly suitable for the production of dry concrete

is stored in 6 steel silos with 100tons capacity each that were supplied by TGM. Typically, Tecmold uses for its dry concrete a water/cement-ratio of 0,30-0,40, depending on the product and the temperature.

Versatile machine for large diameter pipe and box culverts

Especially for large diameter pipes and box sections up to 4.000x3.000mm, Tecmold purchased a new Variant 3600 D from Schlosser-Pfeiffer. The Variant is a versatile machine to produce circular and ovoid pipes, jacking pipes, box culverts and manhole rings up to 3.600mm diameter. The production takes place below floor level to keep noise emissions to a minimum and to absorb the vibrations occurring during production. The Variant provides one



The reinforcement cages for large diameter pipe and box culverts are currently produced manually very efficiently. With 8 workers, it takes less than 1 hour to produce the cage for a 4.000x2.000mm box culvert.

concrete hopper with feeder belt and two production areas each with its own spigot former, facilitating the production of a box section on the one side while preparing the mould set for a circular pipe on the other side at the same time.

Feeding the concrete into the mould is automatically controlled through the concrete level in the hopper. Compaction of the products takes place with a central vibrator lodged in the core of the molds. The vibration force is adjustable to the product shape, reinforcement and the mix design, thus facilitating efficient compaction for all types of products including large sized box culverts. The bearings on the vibrator are greased automatically.

After production, the mould with the pallet containing the pipe is drawn above the core with a 25tons capacity overhead crane, supplied by TGM. The overhead crane transports the pipe to the open floor stripping and curing area.



The Schlosser-Pfeiffer Variant is a versatile machine to produce large pipe and box culverts



The radial press RP 1225-4 is producing pipe from 300-1500mm diameter



The turn table hands over a mold with a finished pipe to the forklift while at the same time supplying the machine with an empty mold for the production of the next pipe.

The production capacity of the Variant depends very much on the product size and shape. Tecmold currently produces one 1.500mm diameter pipe in approx. 15 minutes, and one 4.000x2.000mm box culvert in approx. 30 minutes. Generally there are two operators necessary to run the machine, only.

Radial press for circular pipe

The 11m high radial press RP 1225-4 is the latest high-tech, automatic pipe machine developed by Schlosser-Pfeiffer that is a perfect addition to the Variant for smaller diameter pipe. Tecmold is convinced by the radial press frequency controlled bell end compaction, the pressing unit with distributor head that is rotating in the opposite direction to the pressing head which is ensuring a precise and tension-free embedding of the reinforcement and the alternatively swiveling or rotating spigot former. The turn table with frequency controlled drive hands over a mold with a finished pipe to the forklift while at the same time

supplying the machine with an empty mold for the production of the next pipe. Tecmold is producing on the radial press reinforced and non-reinforced pipe, mainly with diameter 300-1200mm and 2,5m length. The pipes are produced fully auto-

matically, with individual vibration of the bell, rotating and rising speed of the pressing unit as well as forming and finishing the spigot. Wall thickness and mix design, among other information, can be stored in the Siemens S7 control system to make sure



The molds for the pipes and box culverts were supplied by TGM



The molds are automatically filled with the correct amount of concrete, while the rising pressing unit is forming the pipe from the inside



The MBK cage welding machine is producing all cages for round pipe produced at Tecmold



Finished pipe are transported by forklifter to the curing area where they are demolded and covered with foil for 24 hours

that for each individual pipe the correct set of production data is used. Whenever needed, the feeder hopper weighing orders concrete automatically to ensure that a new production cycle always starts with a sufficient amount of concrete to form the pipe.

The production capacity currently is about 27 pipes per hour for diameter 300mm, and 9 pipes per hour for diameter 1200mm.

Finished pipe are taken by a forklifter to be brought to the open floor curing area. In the curing area, the pipes are demolded by vertical stripping. On its way back to the radial press, the forklifter takes a new reinforcement cage that is produced on an automatic cage welding machine to bring it to the pipe machine. Besides the forklifter driver, only one other operator is necessary to supervise the production of the radial press machine.



Tecmold is testing tensile splitting force capacity and density of the pipe according to Brazilian NBR standards



Luis Antonio Povoas, Managing Director of Tecmold and Eng. Luciano Weingaertner, the Production Manager, are completely satisfied with their new pipe machinery

Automatic cage welding machine

The MBK BSM-250-R cage welding machine can produce cages up to 3,00m length and 2.500m diameter, with 6-24 longitudinal bars (5-10mm) and 5-12mm circumferential reinforcement from coils, depending on the size of cage to be produced. Tecmold is currently producing different sizes of round pipe with diameter 300-1.500mm. With 300mm diameter, they produce approximately 200 cages per day, and with 1500mm diameter approx. 100 cages per day - during one shift. All cages necessary for the Tecmold production range can be produced very efficiently with the MBK cage machine. Due to PLC control, electronical welding-point-control and high welding capacity, an optimal welding quality is achieved even in case of frequent change of diameter with one operator only.

Very important for Tecmold, when they decided to purchase this machine, were the low maintenance and service expenses that in the meantime completely proved to fulfil the expectations.

Curing and quality control

In the curing area, the pipes are demolded and covered with foil. Typically, they cure in open floor conditions for 24 hours before the bottom pallets are released. The bottom pallets are manually cleaned and brought back to the moulding area where they will be used for new production cycles. Hardened pipes are transported to the stockyard.

According to Brazilian NBR standards, two pipe out of 100 need to be tested for their tensile splitting force capacity and their density. Tecmold purchased for this purpose the testing equipment from TGM, too. Internal and external factory production control systems guarantee a constant perfect quality.

Sealings are used in Brazil for waste water sewage systems, only. All other sewage systems, and also box culvert systems, are connected without sealings.

Customer satisfaction

Tecmold is very satisfied with the current situation of the production capacity of the new pipe machines. In the block and paver business, they have currently according to their own research approx 40% market share. For sure they are targeting a good market share in the future also in the pipe business, and with their new machinery they are in very good shape to reach their goals.

FURTHER INFORMATION



Tecmold Industria e Comercio Ltda
Rua Nissin Castiel, 385
Distrito Industrial de Gravataí - RS
CEP 94045-420, Brazil
T +55 51 34325000
F +55 51 34325005
www.tecmold.com.br



Schlosser Pfeiffer GmbH
Scheidetalstraße 19 a
65326 Aarbergen-Kettenbach, Germany
T +49 2736 497611
F +49 2736 4978336
post@schlosser-pfeiffer.de
www.schlosser-pfeiffer.de



Hess Group
Freier-Grund-Straße 123
57299 Burbach-Wahlbach, Germany
T +49 2736 49760
F +49 2736 497620
info@hessgroup.com
www.hessgroup.com



MBK Maschinenbau GMBH
Friedrich List Str. 19
88353 Kisslegg, Germany
T +49 7563 91310
T +49 7563 2566
info@mbk-kisslegg.de
www.mbk-kisslegg.de



TGM
Rua Progresso, 221
Distrito Industrial - Cx. Postal 96
Corupá - SC
CEP 89278-000, Brazil
T +55 47 3375 2177
F +55 47 3375 2177
venda@tgm.ind.br
www.tgm.ind.br