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# Radial press for the production of steel reinforced concrete pipes at ZAO Concrete in Mytischtschi, Russia

Steel reinforced concrete is and remains the most in-demand building material for the production of different building products and constructions with excellent technical and economical properties. This building material is used amongst other things for the production of steel reinforced concrete pipes, which are used for the construction of supply and drainage pipes as well as the construction of storm water runoffs (rain sewers).

■ Alexander Probst, Prinzing-Pfeiffer GmbH, Germany ■

Rain sewers are enormously important, especially in small and large towns. Without them even normal rainfall or melting snow could have fatal consequences.

Like other towns all over the world, numerous large Russian towns have a serious problem with rain sewers caused by a lack of pipes, technical problems in the existing pipes and the high degree of wear of the systems in operation.

Rapid progress in house building leads to the constant enlargement of the water collecting areas and thus to the necessity to construct new rain water collecting mains. It is also often necessary to increase the diameters of the already existing pipes. The corresponding bodies in most Russian towns are currently working on extensive projects for the expansion of the rain sewers worth many billions of roubles. A successful realisation of these projects would be practically impossible without increasing pipe production capacities. This concerns first and foremost steel reinforced concrete pipes which, due to different factors, are ideal for the building of sewers.

In the construction of the remote pipelines, only concrete pipes can withstand the strong mechanical and chemical loads acting at the same time. Heavy and robust steel reinforced concrete pipes are not deformed by possible movements in the soil and retain their stable position and leak-tightness, almost independently of the environmental conditions, and they are resistant to corrosion.

Steel reinforced concrete pipes are high-tech products. Various types of pipe installations are permitted, since the maintenance of the pipes is simple. As opposed to plastic pipes, for example, there are no problems with the cleaning of the concrete pipes by high-pressure flushing.

The experiences of the leading European countries confirm the advantages of concrete pipes, because they offer a very high degree of safety and the price/quality ratio is good. It seems clear that more use of steel reinforced concrete pipes will be made in Russia too in the near future.

## The necessity for further development

The Russian Federation not only brought in fundamental economic reforms at the turn of the millennium; a genuine boom was observed in some branches of industry. The building industry developed particularly rapidly. In connection with the building boom, building material businesses also developed positive dynamics. Considerably more concrete and steel reinforced concrete products were supplied. Building construction also recovered. However, the concrete industry was already faced with serious problems by 2005; losses of profit were suffered.

There are two methods of dealing with this phenomenon. The first method is extensive: minimum outlay and increased production. The second method is intensive. Here the emphasis is placed on high-tech products with a high added value, whereby better prices can be achieved.

However, it is usually only the large and financially strong businesses that are in a position to be able to increase production capacities. They should concentrate on regions with an unsaturated market where such an increase in production is also needed.

For the majority of Russian companies the only way to survive is to develop technically sophisticated products, such as steel reinforced concrete pipes.

## Modern plants – made in Germany

ZAO Concrete in Mytischtschi near Moscow is celebrating its 40th anniversary in 2015. Ready-mixed concrete and concrete



Variant 2500 from Prinzing-Pfeiffer



*The Variant combines the compaction qualities of the Prinzing-Pfeiffer vibration technology with the freedom of a large choice of sizes and shapes.*

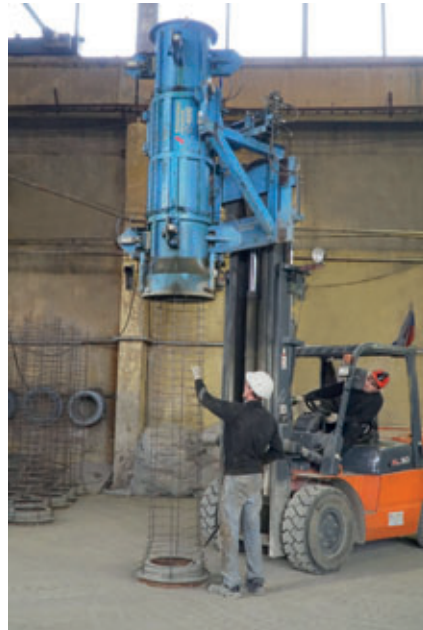


Radial press SP series RP-630

products were predominantly manufactured in the past. A fall-off in profits was recorded here too from mid-2000. In response to these events, part of the plant capacities was re-oriented and converted to the production of sophisticated high-tech products.

First of all the production of concrete piles was reorganised. Today over 60 km of piles of different sizes are manufactured each month in the plant. Four years ago the decision was also taken to manufacture pressureless steel reinforced concrete pipes.

The profitable production of high-tech concrete products without the use of modern technologies and plants is practically inconceivable. When the time came to look for suppliers of plants for the manufacture of



steel reinforced concrete pipes, the specialists from ZAO Concrete set their sights only on Western Europe.

The important role played by the Western European manufacturers in the modernisation of the Russian economy did not just begin in the recent decades; it is rooted with the history of the country. That is also reflected in the Russian language — in most technical terms the German roots are unmistakable. A great many innovations came to Russia from Germany or via Germany; they were brought into the country by German specialists working in Russia. Therefore German technology is traditionally highly respected in Russia.

### First stage

ZAO Concrete already had experience of German plants for the production of pavers

and masonry blocks. The German corporate philosophy in dealing with customers had convinced the company. There have been no problems with spare parts, training, consulting or the supply of information; installation and commissioning took place at the agreed time.

Further advantages of the German plants for the company are the high technical level, the operational safety of the equipment (environmental protection and occupational health and safety), the functional capability, the performance and the high flexibility.

Major factors influencing the selection of the plants were the process capability and the functional capability as well as the quality and the range of the products to be manufactured.

Constant market observation, the exchange of information with other Russian concrete plants and regular trade fair visits helped to find a supplier for the new plant.

The Prinzing-Pfeiffer plant was ultimately chosen; in the opinion of the ZAO Concrete specialists this plant met all the requirements for the plant.

The Variant 2500 machine was purchased, initially with only one production side, but with the possibility to retrofit a second production side for higher capacities in the future.

At first, pipes were manufactured in the diameters 400, 500, 600, 800 and 1000 mm. Within a very short time the customer had familiarised itself with the production, the technology had been mastered, the production capacity had been reached and new products had been brought onto the market.



*The SP radial press is particularly suitable for the production of reinforced and unreinforced bell pipes, jacking pipes, spacing pipes, pipes with two spigot ends as well as manhole pipes, manhole rings and manhole bottom parts*



## Second stage

The next stage of the reconstruction of the production plants was not accompanied by a search for an equipment manufacturer, since it was clear that the co-operation with Prinzing-Pfeiffer would continue.

In the second stage, ZAO "Concrete" invested in:

- the second production side of the Variant 2500
- the additional moulds for the extension of the pipe range, among other things for the jacking pipes which are very important today
- a radial press, SP series RP-630

The acquisition of the radial press was a special event. A plant with such a high level of technology and productivity was still the exception in Russia. The Russian plants were mainly characterised by semi-automatic and automatic plants for the manufacture of pipes and manhole rings.

The production capacity at ZAO Concrete has increased many times over since the second modernisation phase – the output per shift has increased from 80 to 220 pipes. This increase in productivity naturally means a lowering of the unit cost prices. In addition, the steel reinforced concrete pipes manufactured in Mytischtschi are of high quality.

The steel reinforced concrete pipes from ZAO Concrete meet all requirements of the technical standards and directives. They are also characterised by their very high surface smoothness.

Credit goes to both Prinzing-Pfeiffer and ZAO Concrete for this high quality. Prinzing-Pfeiffer built a plant to enable these high product qualities. ZAO Concrete has developed the corresponding technological infrastructure and production organisation needed to allow the entire potential of the plant design to unfold. ZAO Concrete has additionally organised careful checking at each stage of the technology chain, and a certified laboratory with highly-qualified specialists supervises the production.

Radial press and Variant together have made it possible to cover almost the entire range of steel reinforced concrete pipes. With the help of the radial press it is possible to manufacture a wide range of products, including special pipes such as the jacking pipes mentioned earlier, which normally have a double reinforcement and various attachments (such as transport anchors).

It is also very important that the work of the two plants – Variant and radial press – in one production facility does not represent in-plant competition. In fact, they complement each other harmoniously, each plant fulfilling its own task.

Times are not easy for the Russian economy at present. Therefore it is particularly important not to lose orders and personnel. The example of ZAO Concrete shows how modern, highly developed equipment can help with that. ■

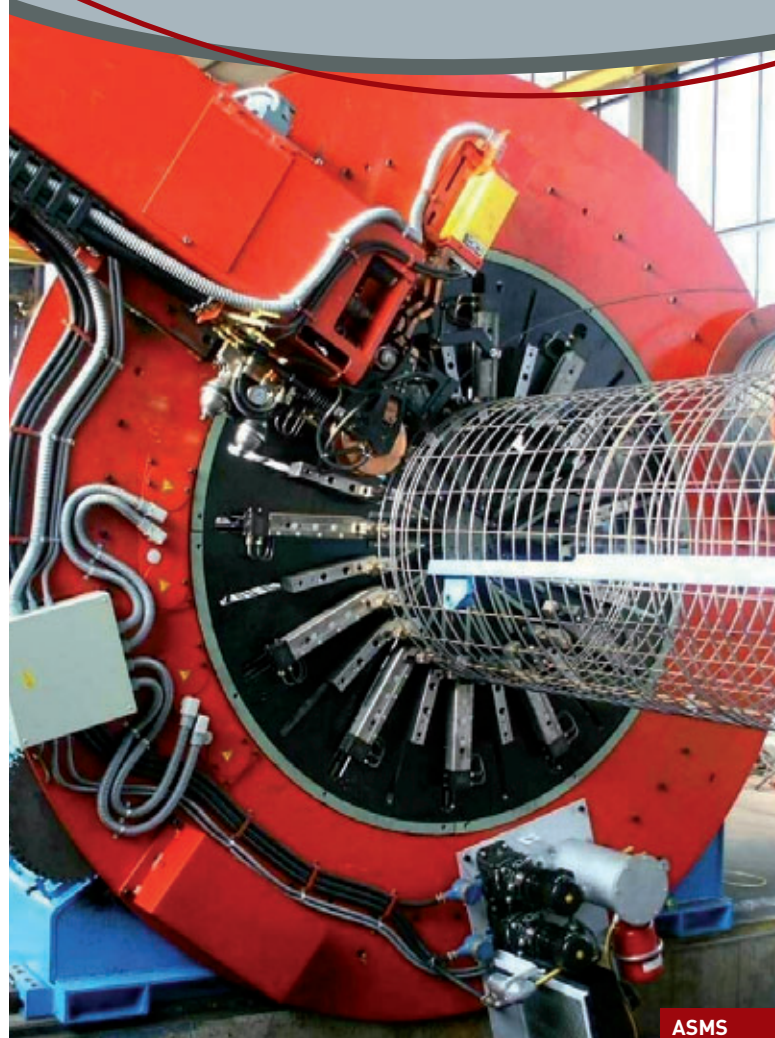
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