

Prinzing Pfeiffer GmbH, 65552 Limburg an der Lahn, Germany

New Radial Press for the production of concrete pipes at Dongsung in South Korea

■ Marlene Neumann, Jan Nemitz, Topwerk Group, Germany

The South Korean company Dongsung Concrete, one of Jeju Island's largest concrete pipe plants, decided to expand its product portfolio. As part of the company's long-standing partnership with a world leading supplier, Prinzing Pfeiffer, its fully automatic Radial Press RP 1625-5 concrete pipe production machine met all the concrete plant's requirements. Prinzing Pfeiffer is part of the Topwerk Group, a leading global group of companies specializing in producing machines and systems for the mass production of concrete products. Dongsung Concrete is now perfectly equipped to meet the increasing demand for high-quality concrete pipes in the DN 300 - 1600 range, which are essential for the numerous infrastructure projects in the thriving Jeju-do region.

Dongsung Concrete stands out in the island's geographically limited market with consistently high product quality. They supply more than 60% to government and general construction projects in the Jeju-do market. In April 2023, the Ministry of Economy and Finance honored the company with the award for its significant role in its construction projects.

The Radial Press RP 1625-5 and its features

The Radial Press RP 1625-5 supplied by Prinzing Pfeiffer is a fast, high-performance machine for manufacturing concrete pipes with a maximal internal diameter of 1600mm and up to 2.5m in length. With Radial Press, the concrete is compacted by being radially pressed against the outer mould by a rotat-

Front view of Radial Press RP 1625-5



Side view of Radial Press RP 1625-5





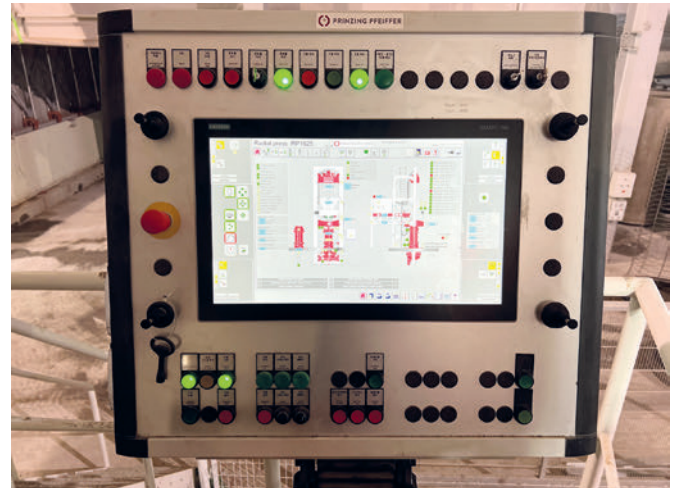
Production process

ing roller head with compacting and distributing tools. The counter-rotation principle of compacting and distributing parts of the roller head ensures that the built-in reinforcement cage does not twist. With the high drive power of the pipe making machine the production of thick-wall and double-reinforced pipes is possible.

As opposed to machines where the pipes are demoulded in the machine area, Radial Press products remain in the mould while being transported by a forklift to the curing area and are then demoulded. In order to fully utilize the machine's performance, it is operated with two moulds and a turntable. Once the production of a pipe is completed, the Radial Press turntable rotates 180°, moving the mould to be demoulded to the forklift, while the second, empty mould is rotated into the production position. While the next pipe is being manufactured, the finished pipe is demoulded in the curing area and the empty mould with a base pallet and reinforcement cage is then prepared for the next cycle and then positioned on the turntable.

In the case of production with the Radial Press with two moulds, one mould is always available for immediate production. Downtime due to demoulding in the machine, as in the case of the alternative pipe making machines, is eliminated and, therefore, the cycle times are shortened and production output is considerably increased. The Radial Press RP 1625-5 from Prinzing Pfeiffer operates with a hydrostatic drive which offers outstanding efficiency, higher torque and much lower demand for electrical loads. The machine's modular design and compact, sturdy frame optimizes space utilization and enhances its lifetime. Additionally, the height-adjustable working table and the quick-change system (QCS) allow fast and safe change of pipe sizes and significantly shorten downtime.

Apart from high reliability, Dongsung experience lower parts wear and a lower noise level compared to the other machines.



Innovative web-based data acquisition and visualization system type "Karajan" with overview and real-time machine and production data

An additional benefit to the machine is the Karajan control panel, including the visualization system for Radial Press developed by Prinzing Pfeiffer. This system is based on the multifunctional platform Simatic IPC427 with Touch Panel made by Siemens and runs on the Windows 10 standard operating system made by Microsoft Corporation. Its main characteristics are the stability and speed of the industrial hardware and the flexibility of the Windows-based software solution. The visualization system offers the following performance features:

- Multiple fine tuning of the production process via Program pre-selection and Machine data
- Direct execution of the machine movements via manual functions (Control)
- Diagnostic system for PLC program sequences as well as step chain control
- Recording and displaying trends of the multiple parameters
- Monitoring of the PLC parameters via the status display
- User-friendly multiple language interface

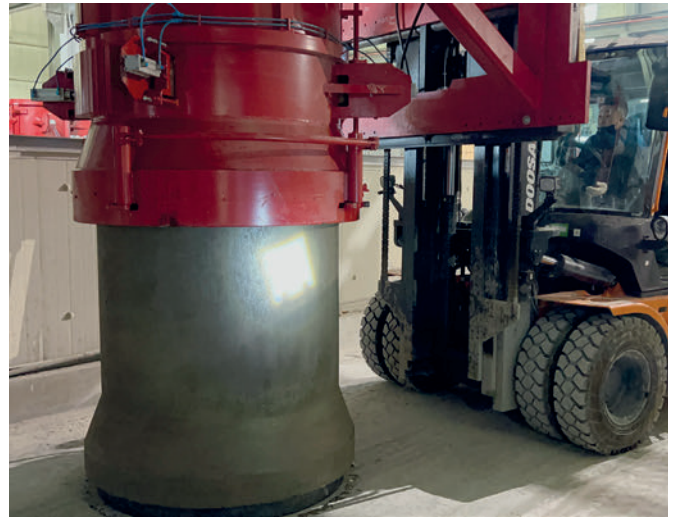
Installation and commissioning Process

The installation of the RP 1625-5 began in July 2023 and was challenging due to the limited space in the production building and the need to keep the multiple existing machines in operation during the installation process. Crucial to the success was handling the pre-assembled Radial Press which required a 300-ton mobile crane - the only one available on Jeju-do Island. The entire company staff and companies in the near gathered outside of the factory to watch the Radial Press being lifted 30 meters high and carefully placed, through the open hall roof, onto the foundation. After a professional and rapid final assembly, the first concrete pipes DN 600 were produced in August 2023.

The collaboration between Dongsung Concrete and Prinzing Pfeiffer, initiated in June 2020 with discussions led by



Dimensionally accurate spigot end



Automatic demoulding process with forklift



Demoulded concrete pipes DN 1000



Pipe production with two moulds

Andreas Bartuli, has developed into a productive and trustful partnership. The Radial Press RP 1625-5 system increases Dongsung's pipe production capacity. It complies with South Korea's new regulations and enables the company to produce much more efficiently and meet the highest product quality and range standards. Maintenance issues and high downtimes associated with previous machines are a matter of the past, and the company's strategic investment is already contributing to its success.

Dongsung's Vision for the Future

Dongsung's CEO, Cheoljong Kim is delighted with his decision to choose the Radial Press from Prinzing Pfeiffer: "Deci-

sion making process took a very long time. We have visited manufacturers who have two different types of machines. The main question was to select which type: hydraulic or electric. When we compared the two different types, we felt that the hydraulic option has more production capacity to produce any size (very small to huge). The Prinzing Pfeiffer's Radial Press was introduced in Korea decades ago but still operates today. Korea Tools Inc. as the representative of Prinzing Pfeiffer in South Korea played a crucial role in facilitating the entire process. Their efficient and responsive cooperation, extensive trade experience between Germany and South Korea, as well as involvement from bidding to commissioning greatly contributed to the smooth installation, training, and successful commissioning."



Outstanding collaboration of all parties (from left: Andreas Bartuli, Head of Sales Prinzing Pfeiffer; Cheoljong Kim, CEO Dongsung Concrete; Hyungchan Kim, President Dongsung Concrete; Charlie Six, Supervisor Prinzing Pfeiffer)

Looking ahead, Dongsung plans to expand its product range to include larger diameter pipes and slotted drain pipes, utilizing the wide range of capabilities of the new Radial Press RP 1625-5. This expansion is intended to strengthen the company's leading position in the concrete industry and help it meet the increasing demands of the island's infrastructure sector in the best possible way. ■



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FURTHER INFORMATION

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