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HOBAS® CC-GRP Cooling Water Pipes Employed for Combined Cycle Power Plant

In May 2011 the turnkey EPC (Engineering, Procurement and Construction) contracting partner, German Siemens AG, assigned HOBAS for the design, production, delivery and installation of an underground cooling water line for one of the world's most modern combined-cycle power plants (CCPP). Erected next to Statkraft's existing power plant in Knapsack nearby Cologne in Germany the plant is designed to have a gener-ating capacity of about 430 MW and an efficiency of almost 60 percent.

HOBAS GRP Pipes have been standing their ground regarding high performance and quality in a vast field of applications for more than half a century. This as well as the service and expertise HOBAS offers can be exemplified by a cooling water line project implemented in the context of the construction of Statkraft's new combined-cycle power plant at the chemical park Knapsack in Hürth, Germany.

Winning Benefits

HOBAS not only trumped with a high tensile strength CC-GRP (centrifugally cast glassfiber reinforced plastics) pipe system comprising DN 1800 (D_e 1842), SN 5000, PN 2.5 and 5 pipes bends and tees designed for working temperatures up to 40 and 50 degrees but clearly aced out competing bidders thanks to comprehensive quality measures and proof as well a rigorous group-wide quality management system that ensures unvarying high quality at every single HOBAS Production Plant. A further advantage unique to centrifugally cast GRP pipes is the possibility to apply the 1 mm thick vinyl ester internal pipe layer required by the client Siemens.

HOBAS from A to Z

Apart from stringent product tests on the pipes, bends, tees and laminated joints which were conducted in-house as well as by independent experts such as the TÜV to verify compliance with standards and project requirements, the job comprised an array of supplementary work such as planning, engineering, site management, installation, and the final pressure test. Furthermore, HOBAS attached great importance to adhering to waste disposal, health and safety measures not least due to accumulations in the soil from a former coking plant. Trained personnel and instructions to the workforce in regard of these issues therefore formed a requisite part of the responsibilities at site.

Preparation and Installation

For an exact installation of the cooling water line and optimal future service of the pipe, HOBAS made sure that the pipe trench and bedding were prepared strictly in accordance with standards and client requirements. Since the soft sandy soil of the terrain would easily wash out

Year of construction	Client
2011	**Statkraft**
Total length of pipes	Contractor
130 m	**SIEMENS AG, Energy**
Pressure class	**Sector – Fossile Power**
PN 2.5 and PN 5	**Generation, D-Erlangen**
Diameter	Engineering
DN 1800	**HOBAS Germany**
Service temperature	Advantages
40-50° C	**smooth interior surface,**
Installation	**comprehensive quality**
open trench	**system**
Application	
Cooling water line	

from beneath the pipe, geotextiles were used forming a gravel cushion beneath the pipe and to envelope several layers of backfill material. Every step was documented in detail.

Given the restricted space, parallel construction works and to keep weather-dependent lamination on site to a minimum HOBAS opted for just-in-time deliveries of prefabricated pipe spools. The 10 to 12 meter-long spools were one after the other aligned and joined by lamination respecting tight lateral, horizontal and vertical tolerances of 25 to 30 mm per spool.

Site Inspections, Tests and Finalization

Strict inspections and tests at site were conducted throughout the whole installation. Checkpoints along the line for instance served to double check the line's correct position. Pipes as well as raw materials and joints underwent strict tests such 24 hour creep tests on pull-out drilled laminate cores by third party experts, and general inspection by the client in respect of dew point, bonding, hardness to Barcol, ovalization, general condition, etc.

Once the two parallel underground cooling water pipes were completed and the trench backfilled end of November the HOBAS Pipe was ready to pass its final test: The hydro test that served to prove the pipes' leak tightness and perfect bonding of the laminated joints lasted more than 70 hours to 1.1 times the design pressure. With this the job was successfully finalized to the complete satisfaction of the client who will consider HOBAS as reliable partner also in future industry projects. After the completion of the CCPP planned for mid-2013 the plant will supply up to 500,000 households with electricity.

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