

Cooling Towers

Wet, Dry and Hybrid Cooling Solutions



ENERGY | ENVIRONMENTAL

Field-Erected Cooling Towers



Export refinery in Saudi Arabia



Cooling towers at a power plant in India



FRP cooling towers – construction phase



Wooden cooling tower for a 220 MW power plant

Global Cooling Tower Expertise

SPIG S.p.A. (B&W SPIG) operates globally supplying an extensive range of turnkey cooling systems. Since 1936, we have designed, engineered and installed many state-of-the-art projects for a wide range of industries, including oil and gas, petrochemical, power generation, cogeneration and combined cycle, and district heating and cooling, to name a few.

Our experience includes wet, dry and wet/dry hybrid cooling solutions as dictated by site-specific requirements. We can supply both mechanical and natural draft systems and design for a wide range of project specifications such as high seismic loads, vibration control, corrosion, noise control, sub-freezing operation, and sea water use.

Cooling towers can be manufactured using fiber reinforced polymer (FRP), concrete or wood.

Fiber Reinforced Polymer Cooling Towers

FRP cooling towers have gained acceptance as a smart alternative to wood, concrete or aluminum thanks to its outstanding properties. FRP cooling tower structures consist of a frame work made by structural shapes of fiberglass composite, stiffened with diagonal braces to transfer wind, earthquake and other live loads to the basin. A large area of the fan deck is walkable and designed to allow easy maintenance of the tower, accessible from ground level via stair/ladder and completely surrounded by handrails.



FRP cooling towers at a refining and petrochem complex in Saudi Arabia

FRP cooling towers are considered the preferred material for harsh and corrosive environments such as oil refineries and petrochemical facilities, offering high strength, weather resistance, long-term performance, light weight, dimensional stability, and noise and vibration absorption. Customers realize benefits from long life operation, minimized downtime and maximized plant performance and availability.

B&W SPIG FRP cooling towers are flexible solutions, reducing assembly times and designed according to international standards (CTI, EN, DIN, ASTM).

With over a half century of experience, our installed and operating FRP cooling towers are cooling a noteworthy total water flow of about 6,500,000 m³/h.

Concrete Cooling Towers

The concrete design cooling tower structure is made with reinforced concrete and is suitable to resist aggressive waters. The precast concrete design has been implemented to meet stringent project deadlines.

The shell and structure is designed to resist wind loads as requested by local codes and standards. It can also be designed to resist seismic loads if required at the plant location. Calculations consider the dead and live loads of the complex while running at full capacity.



Concrete cooling towers

Wooden Cooling Towers

B&W SPIG's wooden cooling towers use pressure treated timber which is carefully selected and treated for cooling tower use.

Structure cladding is provided by means of FRP corrugated panels. The fan deck is made of M/F boards provided with suitable supports to withstand normal live and operation loads.



FRP cooling towers – 900 MW power plant in Turkey



Wet/dry cooling tower serving 600 MW power plant



2 x 600 MW power plant in India



850 MW sea water cooling towers at a combined cycle power plant in Qatar

Hybrid Cooling Towers

Hybrid cooling tower technology (wet/dry) is available for visible plume abatement in cold or humid ambient conditions in proximity of inhabited places, such as airports. The hybrid wet/dry design has the additional advantage of saving water.

B&W SPIG's environmentally sound wet/dry technology avoids the environmental impact of coupling a wet cooling tower and a dry section (air-cooled heat exchangers) producing dry and hot air.



Hybrid installation in the U.S.



Hybrid installation in Italy

Sea Water Cooling Towers

Process industries located in coastal areas which use once-through cooling systems have a negative impact on the marine ecosystem when discharging the water back to the sea at a higher temperature. Stringent environmental regulations on industrial cooling water usage and discharge have made such once-through systems not environmentally viable.

Environmental standards now require that the process water is cooled before discharging to the sea to avoid thermal shock to marine life. B&W SPIG has executed many successful sea water cooling applications ranging from power plants, petrochemical facilities, smelting complexes, etc.



Sea water cooling tower, 2 x 425 MW combined cycle power plant

B&W SPIG cooling towers for sea water applications are directly contributing to safeguarding the delicate marine ecosystem and reducing environmental impact. Our sea water cooling tower technology saves costly desalinated water, which also results in reducing the carbon footprint.

When using sea water as make up, material selection is very important. B&W SPIG uses corrosion-free plastic for the cooling tower structure and the main internal components, and the mechanical equipment is protected with suitable coatings to provide the highest degree of protection for salt water applications.

Noise-Abated Cooling Towers

The noise generated in a cooling tower is mainly due to the fan and the water flowing through the tower into the basin.

After careful analysis, experienced B&W SPIG engineers offer suitable solutions to meet project requirements. Low noise or ultra low noise fans can often be used to provide reduced fan noise levels.

To reduce the noise levels caused by the water falling, B&W SPIG has engineered a floating noise attenuation system which can be installed into the basin.

Additional noise control solutions may be specified, including inlet or outlet silencers, or sound proofing boxes to encapsulate the motors. B&W SPIG has extensive experience with such customized solutions with many successfully operating systems throughout the world.



Noise-abated cooling towers at an 800 MW power plant

Service for Optimal Performance

To help avoid unscheduled downtime and achieve optimal plant performance, B&W SPIG offers a wide range of services such as maintenance, overhaul, revamping, spare parts supply, and online remote monitoring. B&W SPIG's comprehensive service portfolio includes inspections, structural and thermal repairs, upgrades, refurbishment and the addition of new cells.

In addition, a customized online continuous monitoring system is available to improve plant efficiency by processing parameters and mechanical equipment conditions. The UNICO smart system is suitable for optimizing cooling tower operation.

B&W SPIG provides flexible, customized technical solutions to satisfy any customer requirement.



Vibration monitoring



UNICO predictive maintenance system

About B&W SPIG

B&W SPIG, a subsidiary of The Babcock & Wilcox Company, is an Italian-based global provider of custom-engineered cooling systems and services. Established in 1936, B&W SPIG has project-related operations in nearly 50 countries and employs approximately 250 people in locations worldwide. We have been providing an increasingly extensive range of high quality cooling towers, air-cooled condensers and related services.

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