

Wet and Dry Cooling System Services

Solutions for improved performance, efficiency and reliability



RENEWABLE | ENVIRONMENTAL | THERMAL

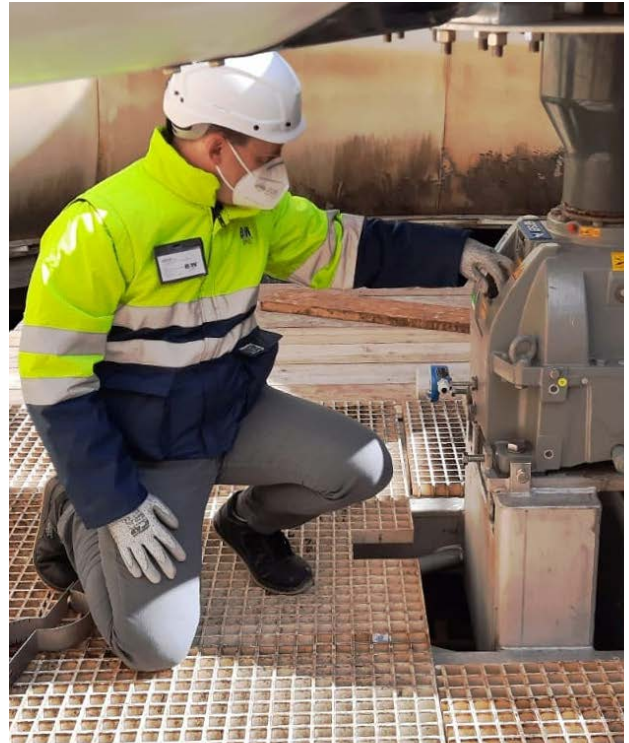
SPIG™ Wet and Dry Cooling System Services



As a leading worldwide supplier of SPIG™ cooling system solutions, Babcock & Wilcox Environmental (B&W) provides comprehensive after-sales services including operational support, maintenance, equipment upgrades, replacement parts and training.

Our worldwide team of expert service engineers provide flexible operating solutions to improve performance, efficiency, reliability and maintainability of existing equipment.

Long-term service agreements are also available to maintain your system for peak performance and availability.



Site Services and Upgrades

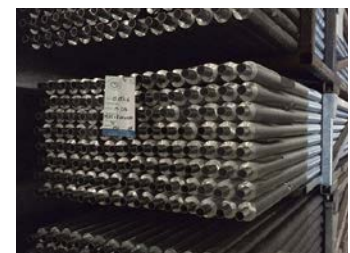
Wet Cooling Towers

- Complete replacement tower on existing basins
- Fill replacement
- Drift eliminator replacement
- FRP / PVC distribution replacement and reconstruction
- Hot water basin replacements
- Structural reconstruction
- Fan deck replacement
- Mechanical replacement of fans, gears, drive shafts and motors
- Hot water deck access ladders and plenum walkways
- Casing and louvers: FRP / plywood / PVC / cellular
- Stairways and ladders
- Fill and drift access, platforms
- FRP fan stack replacements
- Complete tower or individual cell refurbishment
- Crossflow to counterflow conversions
- Concrete tower internals and reconstruction
- Roof top replacement and repairs
- Fire and lightning protection



Air-Cooled Condensers and Air Fin Coolers

- | | |
|-------------------------------------|---|
| ■ Retubing | ■ Complete ACC upgrades |
| ■ Finned tube renovation | ■ Heat exchanger section expansion |
| ■ Tube bundle supply and renovation | ■ Mechanical improvements: fans, stacks, ducts, structural components and auxiliary systems |



Safety

As one of our primary core values, we regard the health and safety of each employee of utmost importance and will never be satisfied until our workplaces and job sites are free of all accidents and injuries.

Target Zero is a program that reflects B&W's commitment to safety. We are dedicated to preventing accidents and their associated costs by averting, eliminating or mitigating unsafe acts and conditions, and by responding properly to natural disasters and emergency situations.

As a company-wide program, the Target Zero process mandates that all employees, subcontractors, vendors and customers work together to practice and promote proper work habits, to develop positive attitudes, to use good judgment and to finish each and everyday injury-and-incident free.

We strive to be proactive and prevent accidents from occurring. Aggressive safety management techniques such as improved hazard recognition, hazard correction and employee involvement will help reduce incidents.



EACH AND EVERY DAY

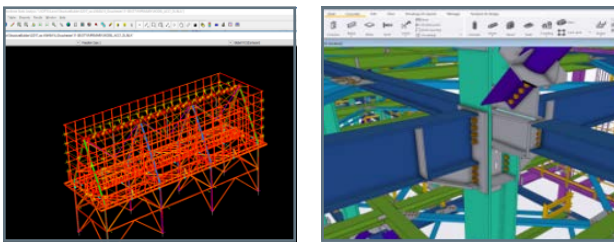
Target Zero is promoted, reinforced and measured at all company locations across the globe and is based on these principles:

- Employee participation and accountability
- Management leadership, commitment and accountability
- Hazard prevention and control
- Training
- Procedural compliance
- Continuous improvement

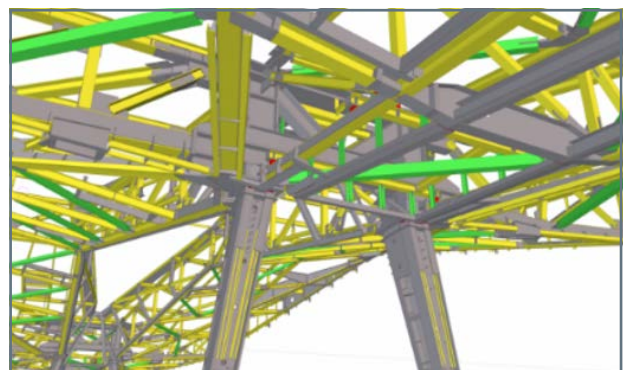
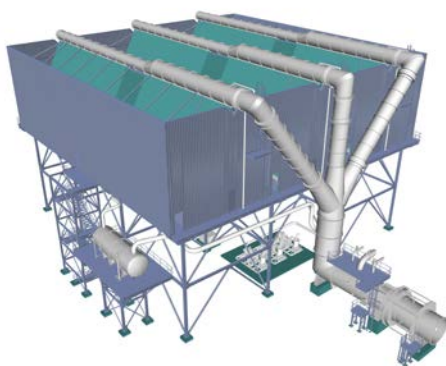
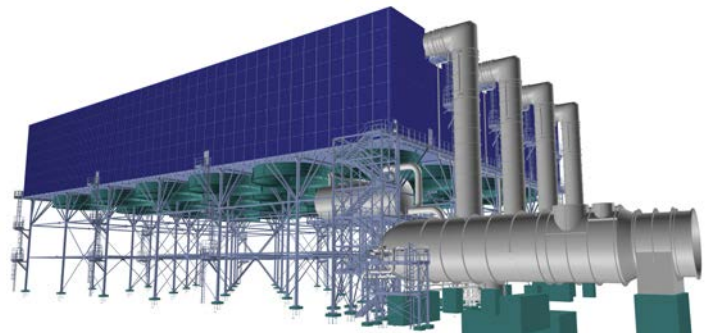
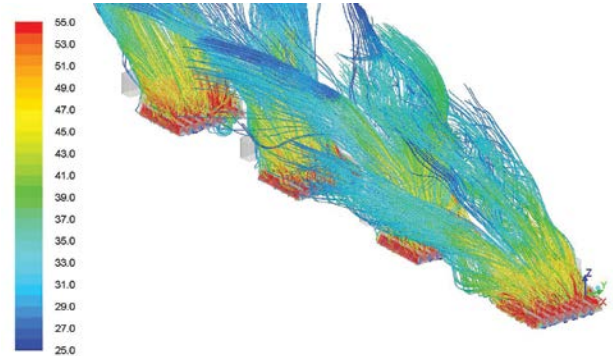


Engineering

B&W designs cooling systems engineered in accordance with national and international standards (UNI-EN, ISO, ANSI, AMSE, ASTM, AISC) and to the guidelines of the Cooling Technologies Institute (CTI).

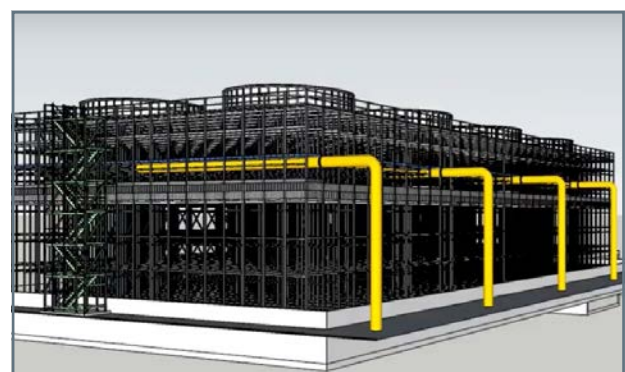


Proprietary software developed from in-house research, along with performance data from commercial installations, is used to design our thermodynamic systems. Computational fluid dynamics (CFD) analysis is used to simulate critical plant conditions to better define complex fluid dynamics models to design systems for optimum performances.



In addition, we have developed in-house software for structural design of cooling towers, air-cooled condensers and air fin coolers.

Upon request, we can also provide detailed engineering for concrete cooling towers, fire walls and pump basins. To prevent fire propagation, our fire-fighting systems include deluge valves, heat-detectors and sprinklers.



Research & Development/Testing

Wet and dry cooling system product innovation and development is undertaken at our state-of-the-art research facility located at the SPIG technology center in Italy. The facility is specifically designed to analyze and test cooling towers components simulating a wide range of conditions and applications.



A dedicated team of experienced R&D engineers conduct thermal performance research on fill and nozzles, drift eliminator efficiency tests, noise tests on a variety of components, nozzle efficiency tests, and multi-row bundle tests, among many others. These activities are aimed to improve product quality, performance and dependability, as well as constructability and maintainability.



Examples of technology upgrades developed at our R&D facility include:

- UNICO™ online continuous monitoring system
- Propeller and slash type ECOJET™ spray nozzles
- H-MOON™ and CELLULAR2.0™ drift eliminators
- Y20™, LC25™ and TGR20™ fill
- FUTURA™ and HP600™ splash fill
- Single row bundles for ACCs



Online Monitoring



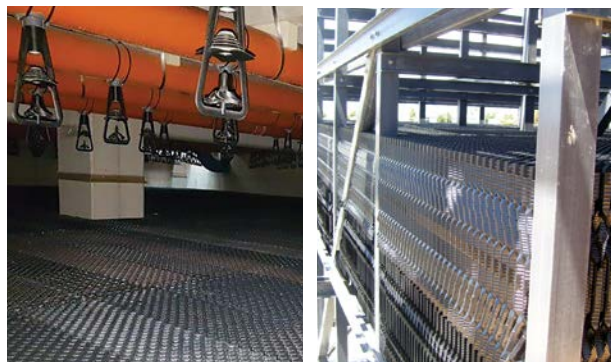
B&W developed the UNICO™ online monitoring system designed to help improve plant efficiency. This continuous monitoring system analyzes and processes a wide range of parameters and equipment conditions, providing optimized cooling system efficiency, maintenance cost reduction, and helps to avoid unexpected equipment failure.

A network of localized smart sensors collects data which are converted into digital form and sent to a supervisory system using wireless technologies. The supervisory system validates and integrates the data in a single database, processes the information to check process parameter variability and equipment reliability, detects potential problems, generates alarms and determines responses.

A web-based interface displays real-time critical information and equipment performance trends in a user-friendly interface, accessible from any device connected to the Internet.

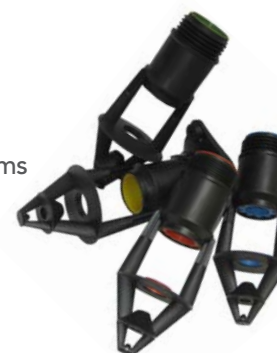


Spare and Replacement Parts



B&W's facility in Paruzzaro, Italy, is home to engineering, sales, project management, procurement, logistics, quality control, administration, and other specialized service functions for our SPiG cooling tower technologies. In addition to office and R&W laboratory space, more than 8000 square meters of indoor and outdoor warehouse space is available to store parts and other equipment. The warehouse is equipped with three loading docks and includes a bar-coding system to enable timely shipment and deliveries.

- Film fills
- Splash fills
- Distribution nozzles
- Drift eliminators
- Noise attenuation systems
- Air inlet louvers
- Multi-row bundles
- Fan stacks



SPIG™ Wet and Dry Cooling System Services

Our experience includes wet, dry and wet/dry hybrid cooling solutions. 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 seawater use.



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Quality, Health & Safety, and Environmental Management System is certified by



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Established in 1867, B&W is a global leader in renewable, environmental and thermal technologies and services for power and industrial applications.

For more information or to contact us, visit our website at www.babcock.com.