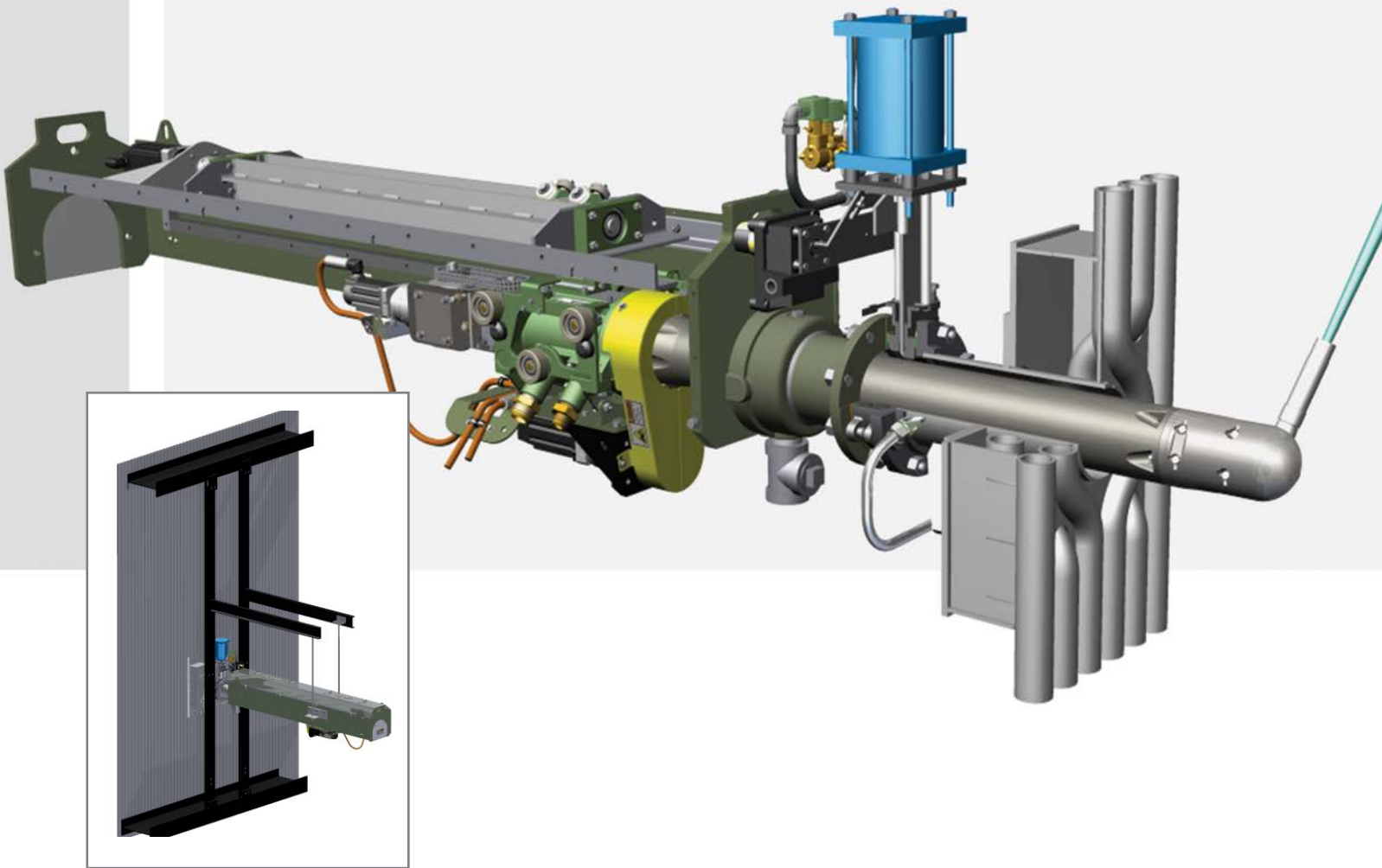


Diamond Power® HydroJet®-Retractable

Furnace water cleaning system



ENERGY | ENVIRONMENTAL

HydroJet®-Retractable furnace cleaning system

The Diamond Power® HydroJet®-Retractable (HydroJet-R) furnace water cleaning system, provided by Babcock & Wilcox (B&W), represents a major breakthrough in furnace water cleaning technology. Earlier systems articulated the nozzle at the boiler wall; the HydroJet-R cleaning system extends the articulating nozzle into the furnace, vastly improving cleaning area coverage and effectiveness.

Installation/maintenance made safe and easy

The HydroJet-R furnace cleaning system provides a high-pressure water cleaning system along with the substantially lower installation cost of a simple, 6 in. (152 mm) furnace wall opening. This reduces boiler wall modifications and eliminates the complex wall boxes and refractory modifications required to accommodate larger wall openings. When operating the system, the high-pressure articulating nozzle is inserted into the boiler during the cleaning cycle, then retracted outside the boiler to its rest position. This isolates the nozzle from the damaging boiler heat and provides easy access for routine maintenance. Plant staff are fully protected from the heat of the furnace due to a gate valve between the lance tip and the furnace opening, so there are no safety concerns about exposure to furnace gases during maintenance.

Increase in boiler efficiency and performance

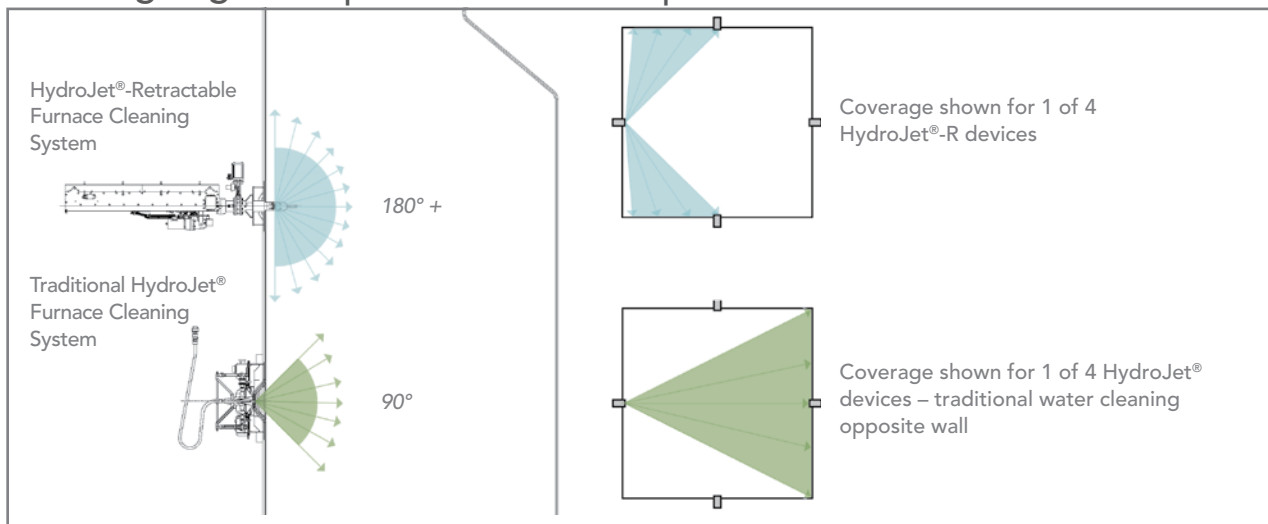
The HydroJet-R furnace cleaning system's articulating nozzle assembly provides unparalleled performance for advanced boiler cleaning because of its full 180° nozzle rotation both horizontally and vertically. Traditional water cleaning devices rotate 90° in each axis. Therefore, the HydroJet-R cleaning system is capable of cleaning more furnace surface areas, including adjacent or opposite walls, and is the ideal tool for cleaning furnace hopper slopes. The water jet length can be much shorter with the HydroJet-R system installation when cleaning adjacent walls; however, like traditional water cleaning devices, it can still provide opposite wall boiler cleaning when needed. This unique design provides further flexibility with alternative mounting configurations, and can clean previously unreachable furnace areas with greater efficiency and reduced water consumption.

Intelligent control integration

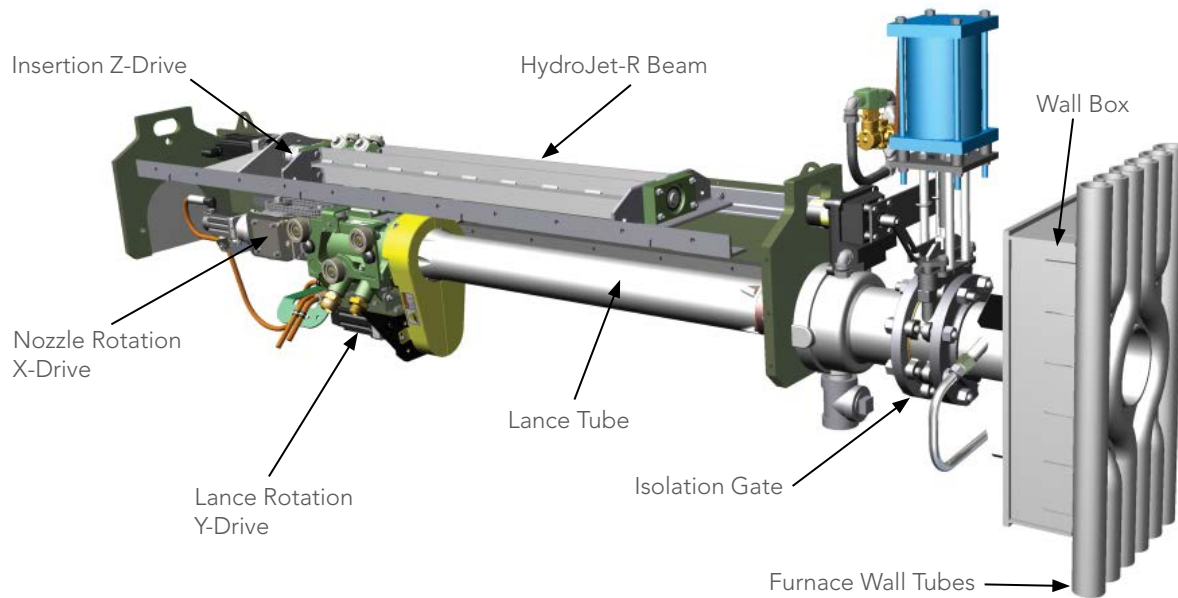
The HydroJet-R furnace cleaning system is designed for integration with B&W's Titanium™ intelligent sootblowing (ISB) system. Titanium ISB provides optimized furnace cleaning for improved boiler heat rate performance. Its adaptive capability has proven especially beneficial for sites that require variable boiler loading or fuel switching.



Cleaning angle comparison — furnace plan views



HydroJet®-R Furnace Cleaning System at Rest Position



Features and Benefits

■ System hardware is located outside the furnace at rest with gate valve isolation

- No seal air fans required for continual cooling
- Plant maintenance staff do not have to work adjacent to an opening in the furnace
- The device is not continually exposed to the heat of the furnace, thereby extending life of components

■ Nozzle insertion into the furnace allows a full 180° of rotation both horizontally and vertically

- Shorter path length to many surfaces is possible, dramatically reducing water flow rate and disturbance on the boiler, and ensuring cleaning effectiveness
- Installation flexibility – alternative mounting locations can be used without sacrificing results
- Superior cleaning reach of surfaces such as hopper slopes
- Range of rotation increases system redundancy when a device is out of service

■ Servo motors with integrated encoders used for nozzle position monitoring

- Controls design is now much simpler, increasing reliability
- System interconnecting wiring has also been simplified, reducing project cost

■ 6 in. (152 mm) round wall opening used in the furnace wall instead of custom designed, square openings

- Much lower hardware and installation cost for the wall opening
- Routine wall opening outage maintenance on metal and refractory is eliminated

■ Controls are fully integrated to B&W's intelligent sootblowing system

- Operators access one location for all furnace cleaning functions
- Cleans the furnace as part of an overall intelligent boiler cleaning/performance strategy
- Patented furnace intelligent sootblowing approach facilitates long tube life

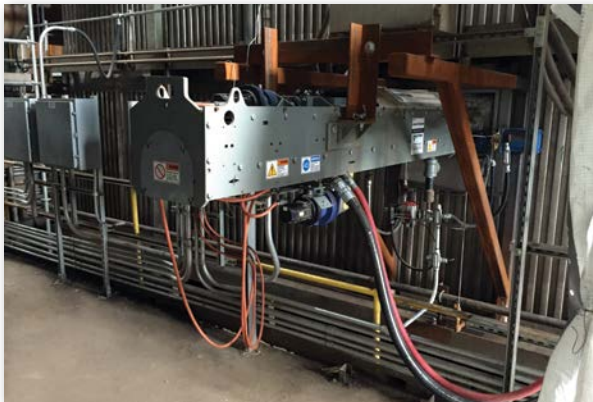
HydroJet-R furnace cleaning systems are available in two common configurations

Basic system configuration

consists of two HydroJet-R units that provide across-boiler wall cleaning and adjacent wall cleaning.

Advanced system configuration

consists of four HydroJet-R units. This allows all four walls to be cleaned from the adjacent wall, minimizing water usage and the associated boiler disturbances. The advanced system configuration provides the optimum cleaning solution, reduces water consumption, improves cleaning efficiency, and can maximize your return on investment (ROI).



HydroJet-R system installation (top cover plate removed for maintenance)

Modular design

The HydroJet-Retractable furnace cleaning system delivers advanced water cleaning technology while providing a safe environment for routine maintenance.

Components are modularized to facilitate quick change-outs for routine repairs or overhauls. A rigid beam assembly houses the insertion drive. The dynamic assembly module contains all major working components including gear motors, rotary union, lance tube, and spray nozzle. With this design, routine maintenance and repairs can be made at your convenience away from the boiler or in any B&W service center.



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Babcock & Wilcox supplies Diamond Power boiler cleaning and Allen-Sherman-Hoff ash handling equipment and systems.

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