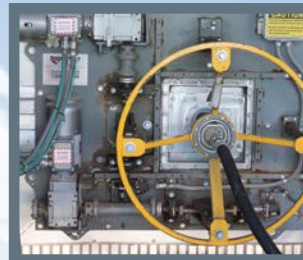


# Diamond Power<sup>®</sup> Boiler Cleaning Solutions



RENEWABLE | ENVIRONMENTAL | THERMAL

***Seven out  
of ten  
utility power  
plants feature  
Diamond Power  
sootblowers.***





Owners and operators worldwide have come to rely on the Diamond Power® line of boiler cleaning technologies from Babcock & Wilcox (B&W). In fact, seven out of ten utility power plants feature Diamond Power sootblowers.

We lead the industry in providing advanced sootblower and intelligent control designs. Our extensive experience gives us a unique perspective on the optimal, most efficient and cost-effective way to clean boilers that burn a variety of fuels, in any operating condition.






Using steam, compressed air or water, Diamond Power boiler cleaning systems are trusted to remove deposits, prevent boiler pluggage, and maintain boiler efficiency. For more than 100 years, our specialized designs and configurations have met customer needs for precision, reliability and efficiency.

Additionally, we fully support your aftermarket requirements and provide services such as equipment upgrades and rebuilds, quality replacement parts and field engineering services. Our wide range of monitoring tools and intelligent control systems can help you operate your equipment more effectively and efficiently.

# Diamond Power Boiler Cleaning Solutions

# Boiler Cleaning Equipment

Product	Features & Benefits	Cleaning Coverage	Applications
<b>IK-555*</b> Long retractable sootblower 	The IK-500 retractable sootblower series is the workhorse of the industry - the standard for online boiler cleaner needs.	Cleaning coverage from 13700 mm up to 16750 mm	<ul style="list-style-type: none"> <li>• Superheaters</li> <li>• Reheaters</li> <li>• Economisers</li> <li>• Generating banks</li> <li>• Fired heaters</li> <li>• Incinerators</li> <li>• Cat crackers</li> <li>• SCRs</li> </ul>
<b>IK-545*</b> Retractable sootblower 	A rugged sootblower for the utility market that is designed for heavy duty cleaning jobs.	Cleaning coverage from 7600 mm up to 13700 mm	<ul style="list-style-type: none"> <li>• Superheaters</li> <li>• Reheaters</li> <li>• Economisers</li> </ul>
<b>IK9M</b> with dry-hub carriage 	<p>The IK9M retractable sootblower is designed specifically for low maintenance, reliability, versatility and maximum cleaning performance.</p> <p>Incredibly rugged, this sootblower stands up to the most severe environment and can be used in the Utility, Pulp &amp; Paper and industrial plants.</p> <p>It is built with pre-galvanized materials which allows for the complete sootblower beam to be galvanized with no exceptions.</p>	Cleaning coverage is up to 12 m	<ul style="list-style-type: none"> <li>• Superheaters</li> <li>• Reheaters</li> <li>• Economisers</li> <li>• Generating banks</li> <li>• Fired heaters</li> <li>• Incinerators</li> <li>• Cat crackers</li> <li>• SCRs</li> </ul> <p><i>Note: for special applications, partial travel versions are available.</i></p>
<b>IK-525*</b> Retractable sootblower 	The Diamond Power IK-525 retractable sootblower is the industry standard for online boiler cleaning needs.	Cleaning coverage to 7600 mm	<ul style="list-style-type: none"> <li>• Superheaters</li> <li>• Reheaters</li> <li>• Economisers</li> <li>• Generating banks</li> <li>• Fired heaters</li> <li>• Incinerators</li> <li>• Cat crackers</li> <li>• SCRs</li> </ul>
<b>IKSD-E</b> 	The proven, heavy-duty construction of the IKSD-E recovery boiler sootblower makes it suitable for up to 24 operations per day (or more depending on steam conditions), and offers a logical balance between initial cost and lifetime maintenance.	Cleaning coverage up to 7.6 m	Recovery boiler applications in Pulp & Paper mills: <ul style="list-style-type: none"> <li>• Superheaters</li> <li>• Reheaters</li> <li>• Economisers</li> <li>• Generating banks</li> </ul>
<b>IK-4M</b> 	<p>The IK-4M is designed for use in industrial applications such as oil-fired heaters, waste heat and package boilers.</p> <p>The IK-4M conserves on expensive blowing media and reduces cycle cleaning time. Superior performance for a moderate investment.</p>	Cleaning coverage up to 6.5 m	<ul style="list-style-type: none"> <li>• Superheaters</li> <li>• Reheaters</li> <li>• Economisers</li> <li>• Generating banks</li> <li>• Fired heaters</li> <li>• Incinerators</li> <li>• Cat crackers</li> </ul> <p><i>Note: for special applications, partial travel or non-rotating rake-type versions of the IK-4M are available.</i></p>

Product	Features & Benefits	Cleaning Coverage	Applications
<p><b>IK1M-TE</b></p> 	<p>A part-retractable sootblower incorporating a travelling motor drive, which, through reduction gearing and a lead screw, translates a carriage along a supporting guide tube. A lance tube, attached to the carriage, propels an element across the boiler.</p>	<p>Cleaning coverage up to 12 m</p>	<p>Industrial applications:</p> <ul style="list-style-type: none"> <li>• Back-end section of coal- or oil-fired boilers</li> <li>• Economisers</li> <li>• Air heaters</li> <li>• Fluidized beds</li> <li>• Waste heat boilers</li> <li>• HRSGs</li> <li>• Cogeneration</li> <li>• Biomass boilers</li> </ul> <p><i>Note: special applications are available for Ljungstrom-type air heaters and furnace water cleaning jet tubes up to 1100° gas temperatures</i></p>
<p><b>G9B</b></p> 	<p>Designed for applications such as stationary, marine, waste heat boilers, and direct-fired oil-heater applications, where gas temperature zones inside the boiler permit a fixed cleaning element. May also be used for cleaning low-temperature gas zones in large boilers, including reheaters, economisers, and gas recirculation and precipitator ducts.</p>	<p>Cleaning coverage up to 6 m</p>	<ul style="list-style-type: none"> <li>• Economisers</li> <li>• Generating banks</li> <li>• Fired heaters</li> <li>• Incinerators</li> <li>• Stationary</li> <li>• Marine</li> <li>• Waste heat boilers</li> <li>• Direct-fired oil-heaters</li> <li>• Reheaters</li> <li>• Gas recirculation and precipitator ducts</li> </ul>
<p><b>IR2H</b></p> 	<p>A short retractable sootblower designed for a wide range of boiler applications. The most common usage is on furnace walls, generating tube tanks, or division wall tubes, generally on coal-fired boilers.</p>	<ul style="list-style-type: none"> <li>• Travels 254 mm</li> <li>• Blowing are up to 360°</li> <li>• Cleaning radius up to 3 m</li> </ul>	<ul style="list-style-type: none"> <li>• Furnace walls</li> <li>• Generating banks</li> <li>• Division wall tubes</li> <li>• Generating banks</li> <li>• Mounts on the outside of the furnace wall and projects a nozzle a short distance into the furnace</li> </ul>
<p><b>IK510 LR Dual Media</b></p> 	<p>Gas-gas heaters are cleaned with steam, but at plant shut down, the baskets are cleaned with high pressure, well-controlled water jets. Precisely designed nozzle head and rugged sootblower structure provides positive cleaning without damaging heat exchanger materials.</p>	<p>Travel up to 7.7 m</p>	<ul style="list-style-type: none"> <li>• Gas-gas heaters</li> <li>• Air heaters</li> </ul>
<p><b>HydroJet® 1000 EU</b> water cleaning system</p> 	<p>The HydroJet® water cleaning system is a key component of an intelligent cleaning system. This system, built on our proprietary controls, provides a closed-loop control system that utilizes sensors and software to provide real-time cleaning solutions that go beyond conventional cleaning.</p>	<p>Cleaning coverage up to 30 m</p>	<ul style="list-style-type: none"> <li>• Furnaces</li> </ul>
<p><b>Hydro Shower™</b> cleaning system</p> 	<p>Fully automated, roof-mounted boiler wall cleaning system which streamlines daily plant operations, improves personnel safety, and optimizes operating time, service lifetime and energy production.</p>	<p>Hose travel up to 30 m</p>	<ul style="list-style-type: none"> <li>• Open radiant passes of waste-to-energy and biomass-fueled boilers</li> </ul>
<p><b>Pneumatic Rappers</b></p> 	<p>Specially designed rapping system removes ash deposits from horizontal pass heat exchangers by means of stimulating resonance vibrations; eliminates need for steam, air or water consumption</p>	<p>Complete tube banks in horizontal passes</p>	<ul style="list-style-type: none"> <li>• Horizontal pass convection tube banks in waste- and biomass-to-energy plants and industrial boilers</li> </ul>





# Replacement Parts and Performance Upgrades

We can also provide high performance tubular products for most other brands. Our Assured Stock Program® inventory management system is available to plan your specific material requirements and minimize inventory levels.





An experienced product support staff with access to detailed component lists is dedicated to providing the correct OEM parts for your specific application, vintage and model of boiler cleaning equipment.

Our engineered upgrades are evaluated for potential savings in cleaning media usage.



Product	Features & Benefits	Applications
<p><b>Poppet Valves</b></p> 	<ul style="list-style-type: none"> <li>• Direct valve action</li> <li>• Adjustable pressure control</li> <li>• Flexible seat &amp; disc prevents leakage</li> <li>• Stellite seat welded in 40, 60 and 120 bar rated valves</li> <li>• Positive valve closure</li> <li>• Carbon steel &amp; chrome moly</li> <li>• External adjustment version available</li> </ul>	<ul style="list-style-type: none"> <li>• Valve design applies across complete sootblower range</li> <li>• Suitable for steam and air sources</li> </ul>
<p><b>Diamondized® Feed Tubes</b></p> 	<ul style="list-style-type: none"> <li>• Hardened surface</li> <li>• Reduced wear</li> <li>• Increased packing life</li> <li>• Extended feed tube life</li> <li>• Reduced steam leakage</li> <li>• Will not pit, flake, crack, peel or spall off</li> <li>• Low maintenance</li> <li>• Financial benefits (up to 10 years with as-new performance)</li> <li>• No sootblower changes required for upgrade</li> </ul>	<ul style="list-style-type: none"> <li>• Suits all retractable sootblowers and applications</li> </ul>
<p><b>Drum Level Indicators</b> (ASME-code only)</p> 	<ul style="list-style-type: none"> <li>• Pressures up to 20.7 MPa</li> <li>• Direct viewing</li> <li>• Indirect viewing</li> <li>• Gauge glass or multi-electrode alarms</li> <li>• Various vision lengths and centers</li> <li>• Bi-color viewing and direct, reflective or fibreviewer options</li> <li>• Temperature equalizing</li> </ul>	<ul style="list-style-type: none"> <li>• Viewing for all steam drum boilers</li> </ul>
<p><b>Gemini® Nozzle</b></p> 	<ul style="list-style-type: none"> <li>• Improved cleaning</li> <li>• Cost saving through fuel efficiency</li> <li>• Low steam consumption</li> <li>• Investment casting</li> <li>• Multiple jet sizes</li> <li>• Longer lasting</li> <li>• Innovative internal flow pattern</li> <li>• Reduction erosion</li> <li>• Increased energy</li> </ul>	<ul style="list-style-type: none"> <li>• Suits all retractable sootblowers</li> <li>• Low pressure applications</li> </ul>



Product	Features & Benefits	Applications
<p><b>Progressive Helix Mechanism</b></p> 	<ul style="list-style-type: none"> <li>• Longer lance life</li> <li>• Less tube erosion</li> <li>• Improved cleaning</li> <li>• Simple installation</li> <li>• Precise indexing</li> <li>• Higher efficiency</li> <li>• Reduced operation and maintenance cost</li> </ul>	<ul style="list-style-type: none"> <li>• Suitable for most long retractable blowers</li> <li>• Recommended for high blowing pressures and frequent cycles</li> </ul>
<p><b>PowerTrain®</b></p> 	<ul style="list-style-type: none"> <li>• Maintenance free</li> <li>• Leak free</li> <li>• Service life exceeds 50,000 cycles</li> <li>• 3-year warranty or 30,000 cycles</li> <li>• Conversion available</li> <li>• Self lube bearings</li> <li>• No oil changes</li> <li>• Environmentally friendly</li> </ul>	<ul style="list-style-type: none"> <li>• Suitable for all IK-500, IK-600 and IKSD-E sootblower models</li> </ul>
<p><b>Live Loaded Gland</b></p> 	<ul style="list-style-type: none"> <li>• Minimizes condensation and steam leakage</li> <li>• Prolongs packing life</li> <li>• Eliminates torque setting of packing nuts</li> <li>• Allows easy monitoring of packing wear</li> <li>• No additional clearance required</li> <li>• Maintains constant packing load</li> <li>• Compensates for packing wear</li> </ul>	<ul style="list-style-type: none"> <li>• Suitable for all long retractable blowers</li> <li>• Recommended for high pressure and frequent cycle sootblowers</li> </ul>
<p><b>Heat Flux Sensors</b></p> 	<ul style="list-style-type: none"> <li>• Real-time management of heat flux and fouling</li> <li>• Departure from nucleate boiling input</li> <li>• Indicates successful operation of furnace cleaning devices</li> <li>• Monitors thermal shock from water cleaning</li> <li>• Utilizes traceable tube material</li> <li>• ASME certified</li> <li>• Indicates appropriate cleaning intervals</li> </ul>	<ul style="list-style-type: none"> <li>• All furnace areas</li> <li>• Recommended for intelligent control systems</li> </ul>
<p><b>Stainless Steel Wall Box</b></p> 	<ul style="list-style-type: none"> <li>• Cost-effective alternative to expensive air piped/purged wall boxes</li> <li>• Minimizes boiler puffing</li> <li>• Reduces sootblower component corrosion</li> <li>• Increases life of front rollers</li> <li>• Reduces maintenance</li> <li>• Reduces unsafe sparking</li> </ul>	<ul style="list-style-type: none"> <li>• Designed to provide a low pressure seal between lance tubes and the wallbox in a negative pressure or balance draft recovery boiler</li> <li>• Retractable sootblowers</li> </ul>

# Aftermarket Services

B&W's component rebuild and upgrade services can help extend the life of your existing Diamond Power or other suppliers' equipment. Our service centers are fully equipped for a wide range of services, from simple poppet valve rebuilds to complete sootblower refurbishment.

## Equipment Rebuilds and Upgrades/Exchanges

IK-555 carriage

IK-545 carriage

IK-525 carriage (both pre-series one and series one)

IK-4M carriage

IK-600 carriage

IK-700® carriage

IK-AH carriage

Powertrain carriage conversions and equipment exchanges

Full grease carriage conversions and equipment exchanges

Full oil bath carriage conversions

A2E rotary puff sootblower

G9B rotary sootblower

IR rotary wall sootblower

Poppet valve (both standard and EAPC)

Poppet valve EAPC exchange

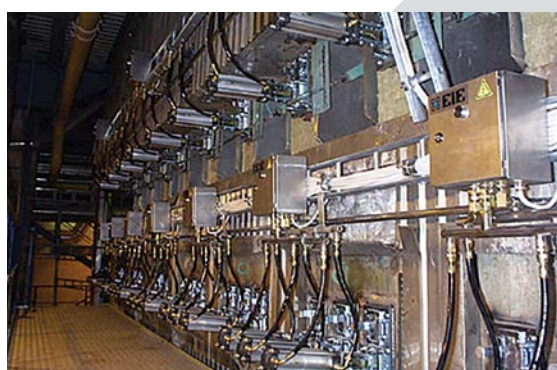
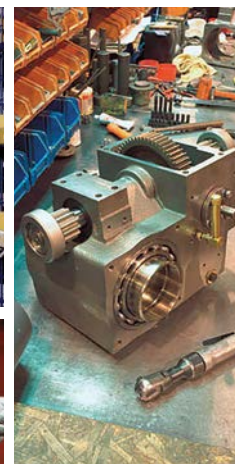
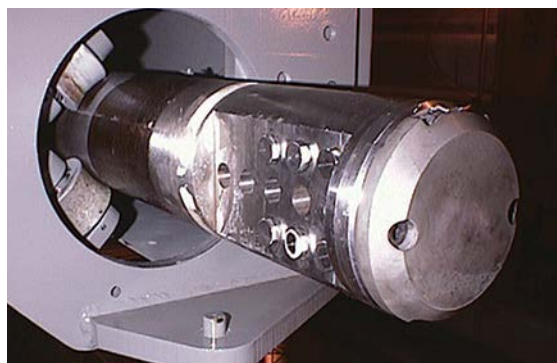
IR-3Z sootblower upgrade or exchange

Complete sootblower refurbishment

Auxiliary support refurbishment

AH diaphragm-operated poppet valve conversion to an air cylinder operator

Water level gauge rebuild





# Titanium<sup>®</sup> Sootblowing Controls and Intelligent Sootblowing

## TITANIUM™

The Titanium<sup>®</sup> sootblowing control systems from B&W upgrade the proven performance and reliability of the Diamond Power<sup>®</sup> SentrySeries™ sootblowing control systems into a modern platform.

The Titanium intelligent sootblowing (ISB) system combines the legacy Powerclean<sup>®</sup> and goal-based ISB systems into a powerful performance-driven system which is flexible and easy to use.

No matter which option you choose, all our Titanium controls and ISB systems can easily upgrade or replace your existing sootblowing system and can be installed on B&W and non-B&W boilers, regardless of the original sootblower manufacturer.



Titanium Product	Applications	Features & Benefits
Titanium Sootblower Controls	Controls up to 300 sootblowers, including water cleaning devices	<ul style="list-style-type: none"> <li>Includes historian for baseline data and trending</li> <li>Customizable configurations and operator displays</li> <li>Programmable for up to 70 sequences</li> </ul>
Titanium Intelligent Sootblowing	<ul style="list-style-type: none"> <li>For optimum control and boiler performance</li> <li>Monitoring of heat transfer sensors for estimation of thermal transient-induced furnace wall tube crack growth</li> </ul>	<ul style="list-style-type: none"> <li>Cleaning based on real-time, unit-specific boiler performance model and/or operational parameters</li> <li>Dynamic sequencing of individual blowers based on calculated effectiveness</li> <li>Custom calculations available for control or data gathering</li> <li>Potential for heat rate and unit efficiency improvements</li> <li>Reduced tube erosion</li> <li>Improved temperature and spray control</li> <li>Integrates with B&amp;W's combustion optimizer</li> </ul>
Sootblower Controls for Recovery Boilers	Specialized option for pulp and paper recovery boilers	<ul style="list-style-type: none"> <li>Same as sootblower controls (above)</li> <li>Includes variable header control for manual or intelligent modification of sootblowing flow and/or pressure</li> </ul>

# Diamond Electronics Cameras, Sensors, Temperature Monitoring and Gauges

B&W supplies state-of-the-art technology that allows plant operators to accurately view and monitor internal furnaces and processes in a variety of applications. Our Diamond Electronics line of boiler monitoring systems includes optical pyrometers for gas temperature measurement, camera systems, drum level gauges for low and high pressure boilers, and more.

## Cameras, Sensors, and Monitoring Systems

SmeltCam® infrared camera for recovery boilers

UtiliCam® infrared camera for utility boilers

TemPro® II infrared temperature measurement system

Wall-Eye® high-definition viewing system

KilnCam® temperature measurement camera for cement and lime kilns

SteelCam® temperature measurement camera for steel furnaces

GlassCam™ temperature measurement camera for glass furnaces

GASTEMP® XT extended range optical pyrometer for utility boilers

GASTEMP RB optical pyrometer for recovery boilers

Carryover monitor

Camera housings

Camera rodders



## Gauges and Level Indicators

### Series II

Single detection circuit (SDC) alarm module

Reflex gauge

1000FG transparent gauge

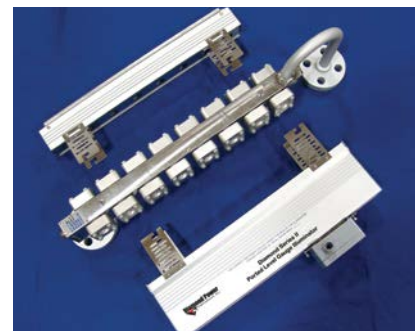
1 to 4 probe electronic level indicator

Ported level gauge (bi-color)

Multi-probe electronic level indicator




Vertical probe column gauge

Aftermarket parts



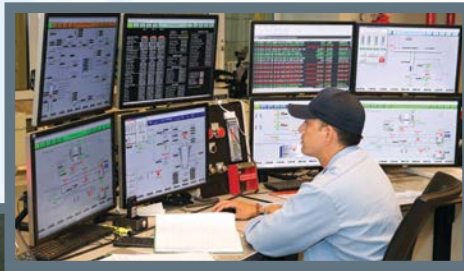
# Specialized Products for Pulp & Paper Applications

Products and upgrades have been developed by B&W for the unique recovery boiler applications in the pulp & paper industry.

Product	Features	Benefits
<p><b>SpoutRunner™</b> Automatic, enclosed smelt spout cleaner</p> 	<ul style="list-style-type: none"> <li>• Durable design can withstand harsh operating environments</li> <li>• Simple operation</li> <li>• Can be fully integrated with existing hoods or installed with custom hoods</li> <li>• Quick setup and removal for easy maintenance</li> <li>• Does not interfere with normal spout operation and manual rodding is still possible</li> </ul>	<ul style="list-style-type: none"> <li>• Minimizes operators' time around the volatile spout deck</li> <li>• Continuous spout cleaning provides undisturbed flow</li> <li>• Superior performance and more cost-effective than most comparable offerings</li> </ul>
<p><b>SprayRod™ -R Dual Rail</b> Retractable, automatic liquor gun cleaner</p> 	<ul style="list-style-type: none"> <li>• Automatic liquor gun cleaner</li> <li>• Utilizes existing liquor gun</li> <li>• Gun angle control for consistent liquor gun cleaning and symmetrical spray patterns</li> <li>• Local control of system settings</li> <li>• Easy to install, mounting to external wall (no tube welds)</li> <li>• Available for all recovery boilers</li> <li>• Dual supports for rugged applications</li> </ul>	<ul style="list-style-type: none"> <li>• Improves safety with an automatic process</li> <li>• Reduces manual rodding</li> <li>• Provides cost savings – up to an estimated 83% fewer annual rodding hours</li> <li>• Enhances operational efficiency – timed splash plate or nozzle cleaning to enhance furnace stability</li> <li>• Accurate repeatable and consistent gun angle</li> <li>• Retractable liquor gun with easy removal for maintenance</li> </ul>
<p><b>FlexRod®</b> Port rodder for automatic port cleaning</p> 	<ul style="list-style-type: none"> <li>• Cleans entire port: single stroke operation</li> <li>• High-temperature, wear-resistant cutting flex head</li> <li>• Air operated</li> <li>• Individual mount</li> <li>• Velocity sir dampers (optional)</li> </ul>	<ul style="list-style-type: none"> <li>• Provides efficient combustion throughput</li> <li>• Safer – reduces operator time in a hazardous area</li> <li>• Ease of maintenance</li> <li>• Reduce maintenance cost with automatic operation</li> </ul>



For more than 100 years, Diamond Power® boiler cleaning products and services have met customer needs for precision, reliability and efficiency.



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**BABCOCK  
& WILCOX**

RENEWABLE | ENVIRONMENTAL | THERMAL

Established in 1867, Babcock & Wilcox is a global leader in advanced energy and environmental technologies and services for the power, industrial and renewable markets.

For more information or to contact us, visit our website at [www.babcock.com](http://www.babcock.com).