

# Powdered Activated Carbon for Mercury Control

Babcock & Wilcox (B&W) has actively researched, developed and commercialized mercury mitigation solutions since the early 1990s.

Extensive research indicates that the form of mercury present in flue gas, either elemental or oxidized, is a key factor in developing an integrated mercury emissions control strategy.

B&W's powdered activated carbon (PAC) injection technology is a technically and commercially proven approach to remove mercury emissions in power plants.

Based on the specific application requirements, B&W can design and supply an integrated system for mercury control which incorporates PAC injection, MercPlus™, Mitagent™ and Absorption Plus (Hg)™ technologies. In addition, the entire air quality control system (AQCS) can be evaluated to determine the co-benefits for mercury capture that will minimize PAC injection to provide the lowest cost system while achieving mercury emissions requirements.

## Technology and system features

- Standard PAC
  - Removes 95 to 96%+ of total mercury if mercury oxidation is greater than 85%
  - Used predominantly when firing bituminous coals, or subbituminous coals with halide addition
- Brominated PAC
  - Removes 95 to 96% of elemental and oxidized mercury
  - Used with low chlorine coals



*B&W can evaluate the entire AQCS to determine the co-benefits for mercury capture that will minimize PAC injection.*

- Systems typically have the flexibility to use either standard or brominated PAC based on reagent cost and changes in fuel characteristics.
- Computational fluid dynamics (CFD) modeling is used to optimize the injection grid design and PAC usage.
- When firing high sulfur coals, or when a selective catalytic

reduction (SCR) system is installed on a unit firing subbituminous, western bituminous, or lignite coals, the sulfur trioxide (SO<sub>3</sub>) generated can interfere with PAC effectiveness. Dry sorbent injection can be integrated to aid in mercury capture while optimizing PAC consumption.

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- Bulk material storage, handling and transport system includes:
  - Truck/rail unloading
  - Silo
  - Weigh hopper and feeders
  - Transport air blowers
- Optimized mercury capture and reduced PAC consumption is available with:
  - **MercPlus™** fuel additive – used when firing PRB or other low chlorine coals.
  - **Mitagent™** fuel additive – allows less halide usage to attain the same oxidized fraction of mercury in the flue gas.
  - **Absorption Plus™** system – used in conjunction with wet flue gas desulfurization systems to prevent elemental mercury re-emission.

### Technology benefits

- Low capital, operation and maintenance costs
- Easy to operate
- Proven performance

### Why B&W

Few can match B&W's experience in providing:

- Boiler and steam generator technologies
- Overall power plant process emissions control
- Integrated environmental system solutions

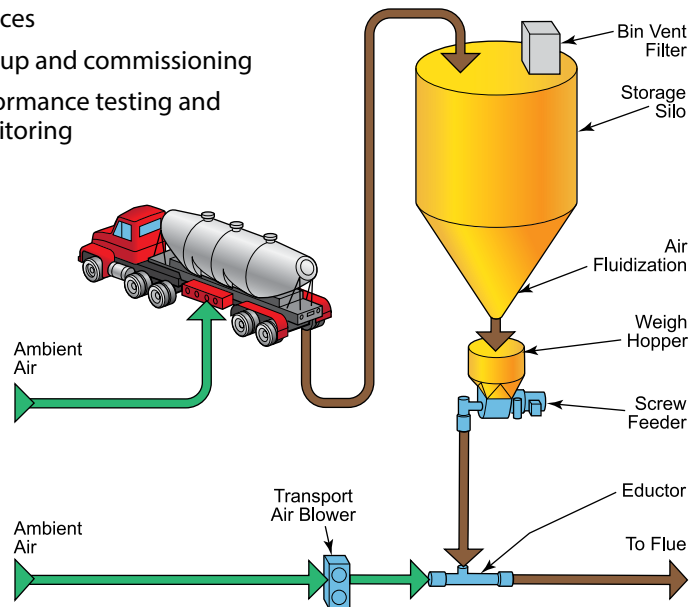
B&W's environmental professionals are experts at recognizing opportunities to apply proven technologies to existing equipment. We understand the benefits achievable within the entire air quality control system to meet your mercury emissions requirements. As a single-point contact, our complete package of environmental upgrade and aftermarket services includes:

- Engineering assessment
- Complete system engineering
- Balance-of-plant equipment
- Engineered equipment upgrades
- Project management
- Installation and construction services
- Startup and commissioning
- Performance testing and monitoring

- Field engineering services
- Replacement parts

### Integrated solutions

Providing solutions backed by experience and aggressive research, B&W continues to develop new products and technologies to add to its wide range of emissions control equipment and systems solutions. Our total integrated system approach to pollutant mitigation can provide you with the greatest flexibility, accountability, optimized performance and certainty of outcome, while minimizing both capital and operating costs.



Typical powdered activated carbon flow diagram.

[www.babcock.com](http://www.babcock.com)

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