

# B&W ROLL WHEEL™ PULVERIZERS

The Pulverizer of Choice



RENEWABLE | ENVIRONMENTAL | THERMAL



*The B&W Roll Wheel pulverizer design results in superior mill performance and cost benefits.*

## Value and dependability built into every pulverizer

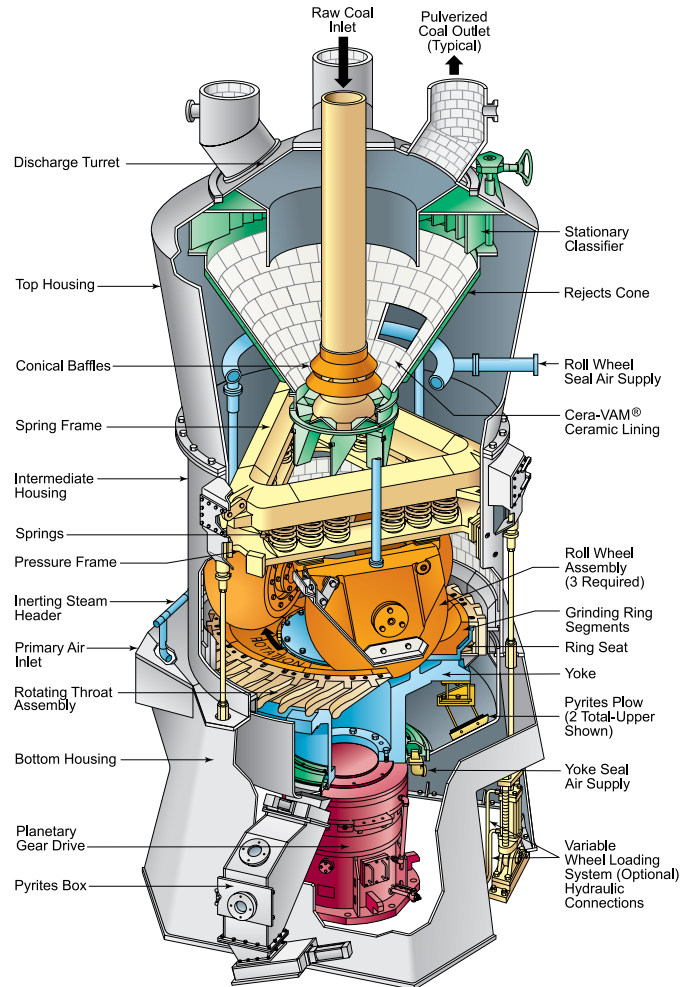
Successfully managing the assets of today's coal-fired power plant requires an understanding of the many components that make up a complete system. Reliable coal pulverizer performance is one element that is essential for sustained responsive power plant operation.

### More than the name has changed

Since introducing the roll wheel pulverizer, Babcock & Wilcox (B&W) has made substantial and extensive modifications and improvements to the original design. These major design changes have significantly improved boiler load-following capability and overall performance of the roll wheel pulverizer.

B&W has designed, manufactured and placed in operation more than 1,100 roll wheel pulverizers, grinding a wide range of coals at power stations throughout the world. The B&W Roll Wheel™ pulverizer has set the standard for high availability, reliable operation and low maintenance. These benefits contribute to stable steam generator performance regardless of station duty.

The B&W Roll Wheel pulverizer design has been optimized for safety and operation on sub-bituminous coals.



*The B&W Roll Wheel pulverizer has set the standard for value – high availability, reliability, durability and ease of maintenance.*

### Performance and cost benefits of the B&W Roll Wheel pulverizer

- Reduced operating and maintenance costs
- Capacity maintained throughout wear cycle
- Lower pressure drop
- Flexible load-following capability
- Excellent turndown
- Improved component wear life via ceramic protection
- Improved combustion efficiency (reduced unburned carbon) when equipped with a DSVS® classifier
- Ability to achieve optimum fineness when grinding a wide range of coals via on-line adjustment of roll wheel pressure and classifier speed (DSVS) or vane angle adjustment (externally adjustable louver classifier)
- Easy maintenance through a single, large access door
- Fully backed by B&W technical design experts and local field engineering support personnel

## **B&W Roll Wheel™ Pulverizer Capacity:**

**Up to 230,000 lb/hr  
(104,300 kg/hr)**

*Based on 50 HGI coal and  
70% passing 200 mesh sieve  
(70% passing 74 micron)*

## Design features for new and retrofit pulverizer applications

B&W continuously develops new technologies to improve the reliability and overall performance, and to reduce the operation and maintenance costs of the roll wheel pulverizer. Our design innovations have proven effective in applications worldwide.

### WEARESISTOR® tires increase wear life

B&W's patented WEARESISTOR® asymmetric roll wheel tires are designed for extended service life. Each tire includes additional material in the high-wear areas of the tire's cross-section. B&W also offers the WEARESISTOR LP (low-profile) tire and LP grinding ring segments. This grinding element design combines the extended wear life of the asymmetric design with a low-profile geometry.

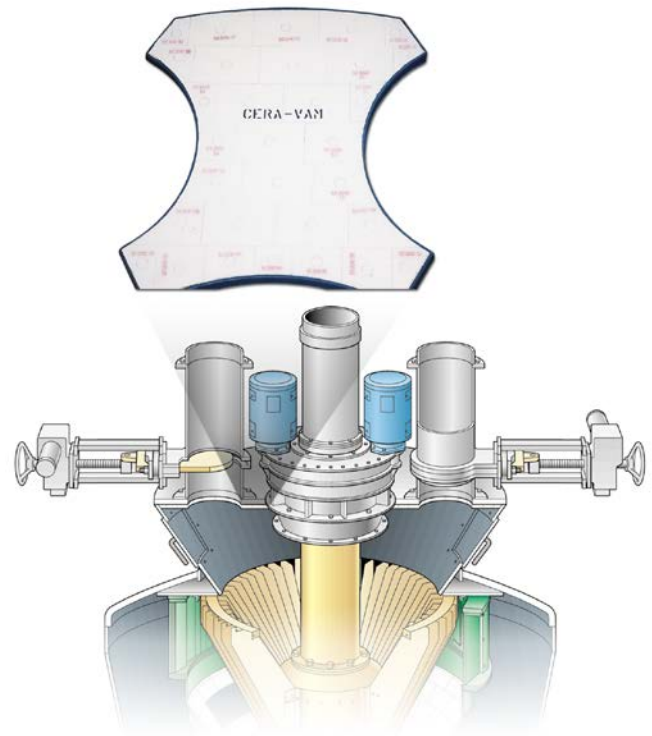
Field testing of low profile geometry wear parts has demonstrated a reduction of pulverizer power consumption while maintaining fineness, capacity and turndown. The extra wear material incorporated in the WEARESISTOR and WEARESISTOR LP tire/segment designs extends the grinding element wear life, and thus reduces maintenance costs.

### Erosion-resistant ceramic components

B&W pioneered the use of Cera-VAM® lining, a high density alumina ceramic, for erosion resistance in coal-pulverizing systems. Cera-VAM outperforms cast abrasion-resistant steels, irons, silicon carbides and cast basalt to protect against destructive erosion by abrasive coals. Cera-VAM reduces maintenance requirements by extending wear-life cycles. For many coals, Cera-VAM protected components outlast several sets of grinding parts.



*B&W's WEARESISTOR and WEARESISTOR LP tires incorporate extra wear material into high-wear areas to extend service life and reduce maintenance costs.*



*Cera-VAM® lining outperforms cast abrasion-resistant steels, irons, silicon carbides and cast basalt to significantly extend the wear life of pulverizer components.*

### Magotteaux

Through a strategic alliance, B&W provides its advanced coal pulverizer wear parts from Magotteaux®, a leading supplier of high wear, severe duty castings and differentiated wear solutions. B&W's pulverizer tires, grinding segments, grinding rings, balls and other wear components are now manufactured at Magotteaux's worldwide facilities. This supplier relationship will provide unique benefits to our customers by combining Magotteaux's metallurgical expertise and experience in casting high wear, abrasion resistant material with B&W's expertise in coal pulverizer and boiler design, operation and optimization.

### Xwin® pulverizer tires and segments

Xwin material technology from Magotteaux combines the extreme high hardness of ceramic with the mechanical properties of high chromium metal for maximum wear resistance and wear life. The Xwin technology is available for B&W's Wearesistor roll wheel tires and segments in standard profile, low profile, or wide profile designs.

Advantages of the Xwin technology include:

- Extended running life of tires and segments
- Increased time between maintenance cycles
- Reduced pulverizer operating and maintenance costs
- Longer consistency of grinding profiles
- Extended duration of optimal pulverizer performance



*Xwin material technology from Magotteaux combines the extreme high hardness of ceramic with the mechanical properties of high chromium metal for maximum wear resistance and wear life.*



*B&W provides flexible shipping and assembly arrangements based on each customer's unique requirements.*

## Rotating throat provides optimal primary air control

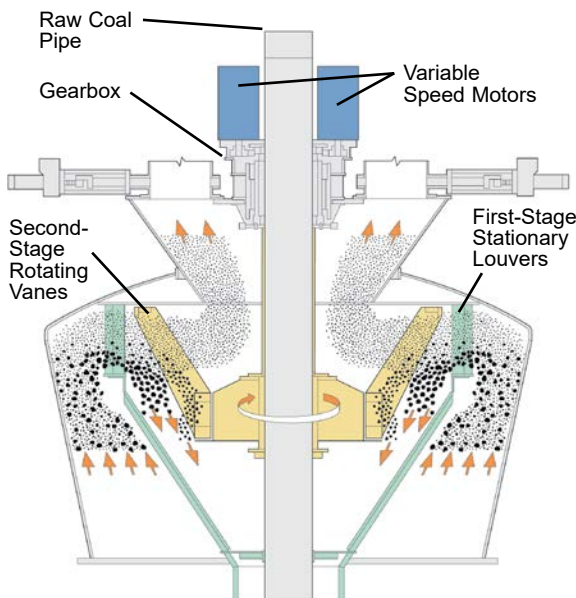
The vertical-wall low pressure drop rotating throat provides optimal primary air distribution, permitting pulverizer operation at recommended primary air-to-fuel ratios. As a result, the rotating throat reduces coal spillage that can occur with poor air distribution and high pressure drop that occurs when operating at higher than recommended primary air-to-coal ratios. It also more than doubles the wear life compared to the stationary throat. On new applications, the rotating throat minimizes fan power requirements, and in upgrade installations, reduces operating costs. It also allows removal of the gearbox without disassembling the throat components.

## DSVS® rotating classifier

B&W's exclusive DSVS® rotating classifier incorporates the best features of both the stationary (static) and rotating classifiers, and can be installed in new or retrofit applications. The DSVS classifier offers increased flexibility to take advantage of a wide (and sometimes lower quality) range of coal. For existing equipment, the DSVS classifier helps in low-NO<sub>x</sub> burner retrofits by providing higher fineness that reduces unburned carbon. Fineness levels can be adjusted by changing the classifier speed while the mill is on-line. The compact DSVS classifier can be easily installed on existing B&W and non-B&W pulverizer equipment.

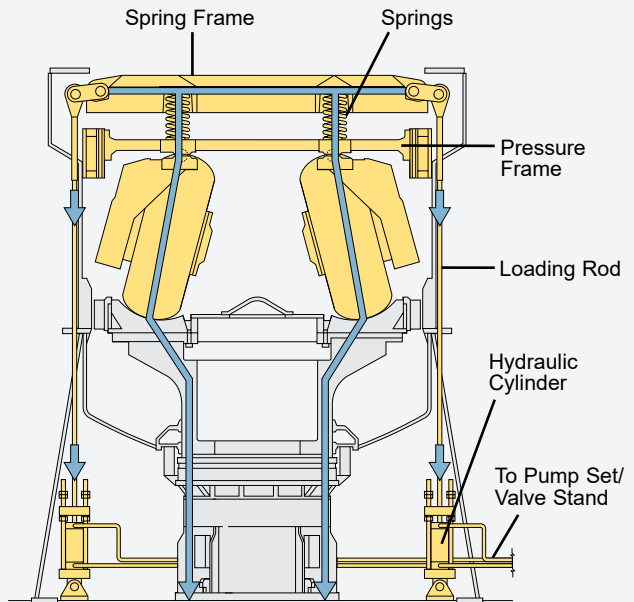
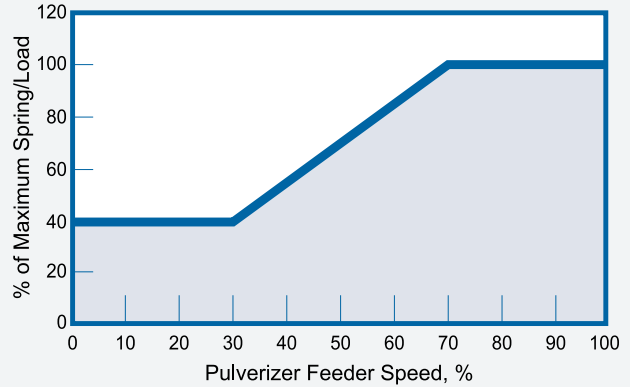
## Auto-spring™ loading system for improved turndown and coal quality variation

B&W's Auto-Spring™ pulverizer loading system controls roll wheel loading on-line based on the coal feed rate. As a result, the Auto-Spring loading system can extend the turndown range. It allows improved high load pulverizer performance while maintaining important low load operating capability. The springs allow the rollers to move with the irregularities of the coal bed, isolating the motion from other pulverizer components.



The DSVS® rotating classifier provides the flexibility to take advantage of a wide range of coal grades and realize potential fuel cost reductions.

## Roll Wheel Spring Load vs. Coal Feed Rate



Retaining the features of our standard fixed loading system, B&W's Auto-Spring™ pulverizer loading system controls roll wheel loading on-line to provide extended turndown capability.

## Gearbox options provide reliable operation and less maintenance

B&W's triple-reduction, spiral-bevel geardrive was the first removable coal pulverizer drive in the United States. Our design has demonstrated an unsurpassed record for reliability and lower maintenance costs. B&W's planetary geardrive, with its compact construction, offers an economical option for select pulverizer models.

To return geardrives to as-new conditions for superior operation, we also offer a comprehensive remanufacturing program for geardrive assemblies.



The planetary geardrive is the standard offering for most pulverizer installations.

## B&W Roll Wheel pulverizer features translate to operational and maintenance benefits

Feature	Benefit	Availability
Cera-VAM® ceramic lining: Intermediate housing Classifier cone Turret Roll wheel wear bracket	Extended wear life and lower maintenance	Standard
Rotating throat	Reduces pulverizer pressure drop; optimal primary air control; reduces throat maintenance	Standard
Planetary geardrive	Economical and dependable drive	Standard
Triple-reduction geardrive	If desired to match existing equipment	Optional
Original profile tires	Available option	Based on owner's specific application
WEARESISTOR® asymmetric tires	Extended wear life	
WEARESISTOR® LP asymmetric tires	Extended wear life and reduction in power consumption	
Xwin® tires and segments	Maximum wear resistance and wear life	
Single, large access door	Easy access to internal components	Standard
Stationary louver classifier	Economical where coal quality is consistent	Optional
Adjustable louver classifier	Economical on-line fineness adjustment; improves operating flexibility where coal quality varies	Standard
DSVS® classifier	Reduces pressure drop; improves particle size distribution with less coarse end material; greater operating flexibility	Optional
Fixed loading system	Economical and dependable where coal quality is consistent and pulverizers are primarily base loaded	Standard
Auto-Spring™ loading system	Extends turndown range; reduces pressure drop at high loads; improves operating flexibility	Optional

The B&W Roll Wheel pulverizer can be custom equipped to meet specific operational or product challenges. The above table highlights those features that are standard on each pulverizer, as well as the options available to meet specific needs. These design features can be installed on existing B&W Roll Wheel pulverizers.

### Designed for easy maintenance

The B&W Roll Wheel pulverizer is designed with lower maintenance costs in mind. The components are arranged so that work can be performed through a single, large maintenance door. Specially designed tooling is provided with the pulverizer allowing a crew to handle pulverizer components efficiently and safely. The gearbox design permits easy removal without pulverizer teardown.

Internal components are easily accessed with our pulverizer's small footprint and large maintenance door, making it the perfect choice for both new and retrofit applications.

The B&W Roll Wheel pulverizer is a very reliable, low-maintenance plant component.



*A single, large access door, small footprint and specially designed tooling are features of the B&W Roll Wheel pulverizer that help reduce maintenance costs.*



*Today, with more than 1,100 B&W Roll Wheel pulverizers sold worldwide and six different sizes burning a variety of coals, B&W has the proven design and operating experience to meet your specific project requirements. This performance has made the B&W Roll Wheel pulverizer the pulverizer of choice for coal-fired boiler operators and owners.*

## The Babcock & Wilcox Company

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

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