

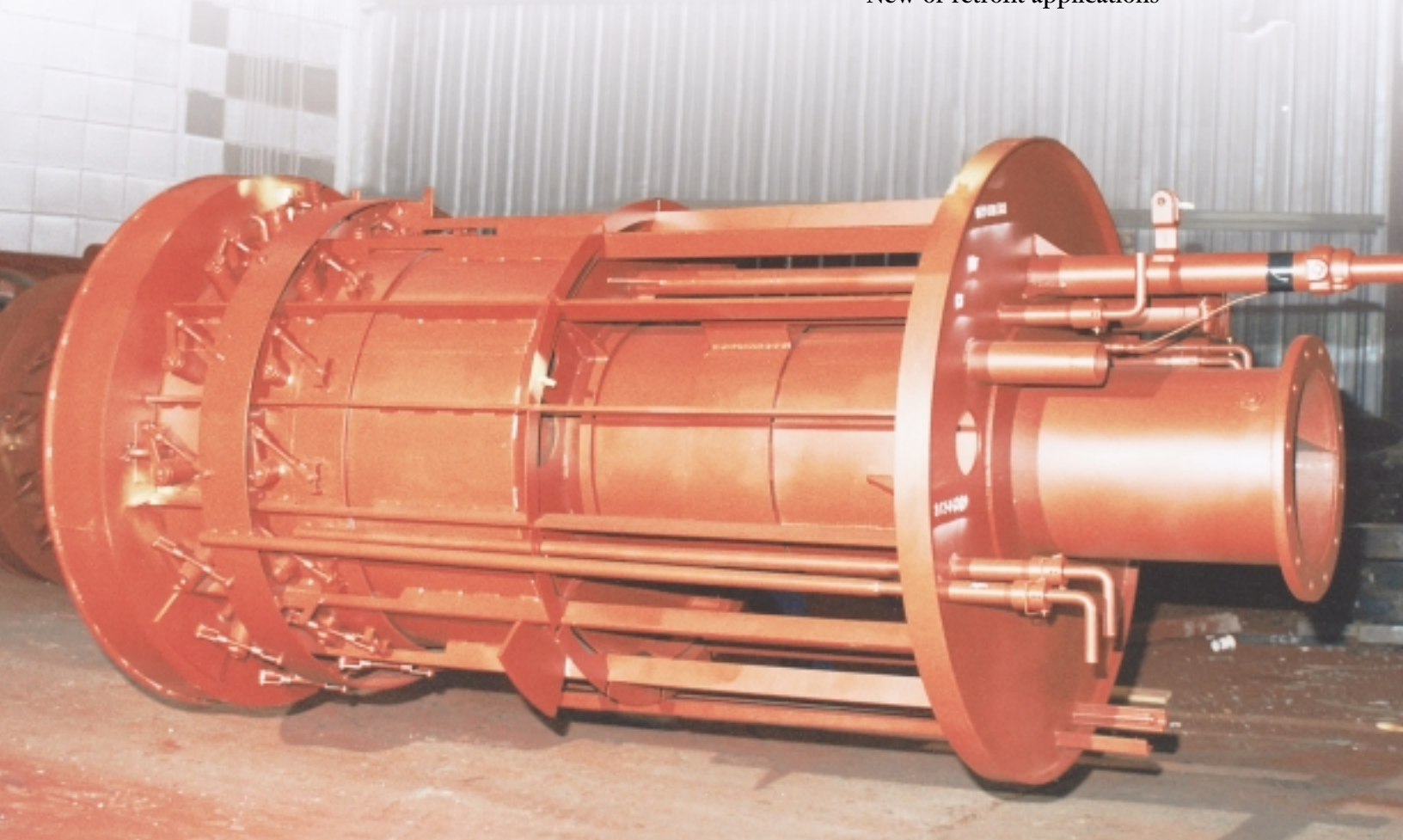
The DRB-4Z™ Burner: Maximum NO_x Reduction for Coal-Fired Applications

Babcock & Wilcox (B&W) has a long history of successfully reducing NO_x emissions on coal-fired boilers. We have sold nearly 100,000 MW of low NO_x combustion equipment since the early 1970s. The DRB-4Z™ burner is the most advanced coal burner yet developed by B&W. It can help utility and industrial plants achieve ever more stringent NO_x reduction targets.

The completely shop-assembled DRB-4Z burner can fire a wide range of coals, and in combination with natural gas and oil. Minimizing NO_x levels in the combustion process is increasingly important as NO_x limits become more restricted.

B&W's DRB-4Z low NO_x burner offers:

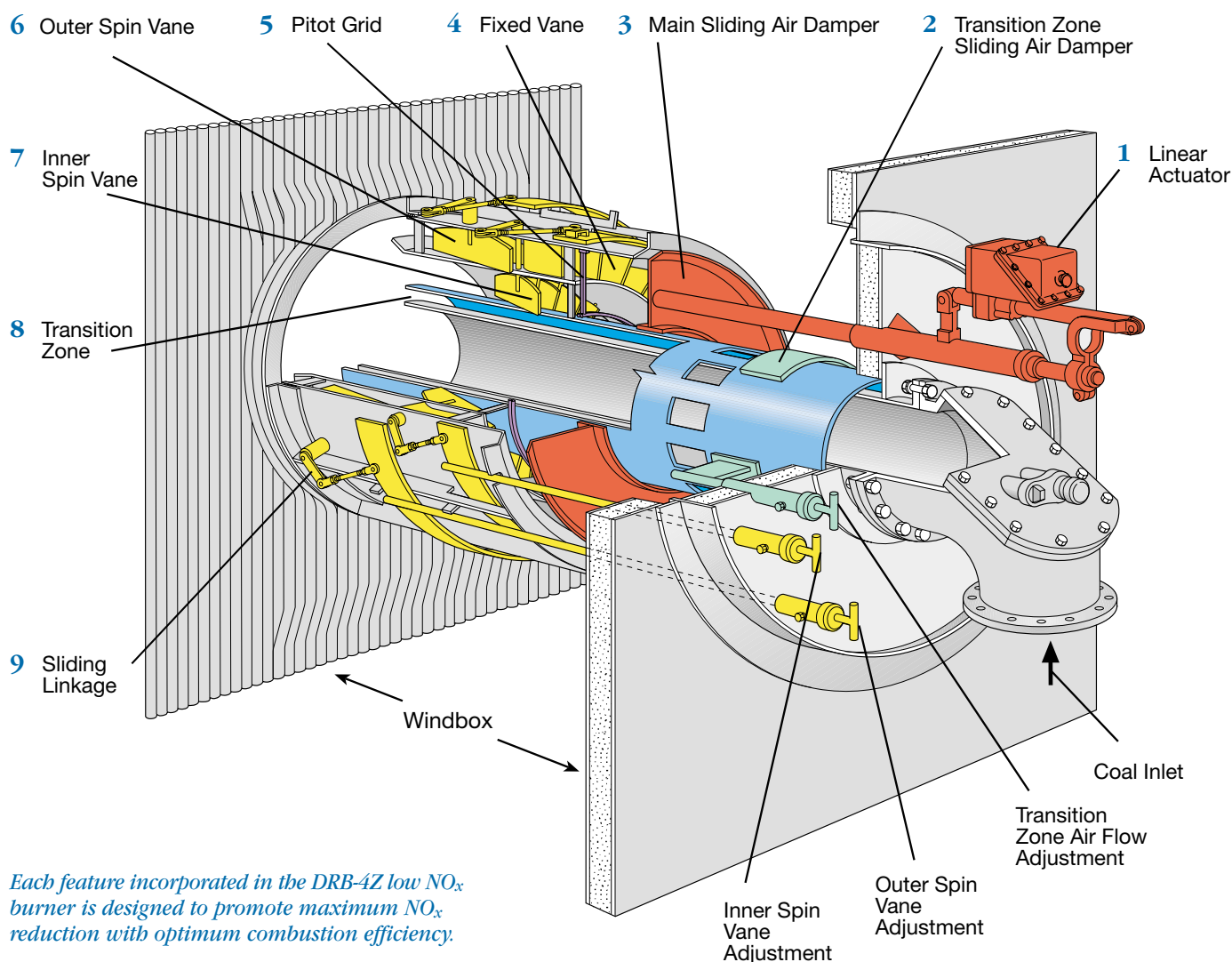
- Maximum NO_x reduction for coal-fired applications
- Superior mechanical reliability and operation
- Rugged construction, integrated design
- Complete shop assembly - ready for installation
- New or retrofit applications



Low NO_x DRB-4Z™ Coal-Fired Burner

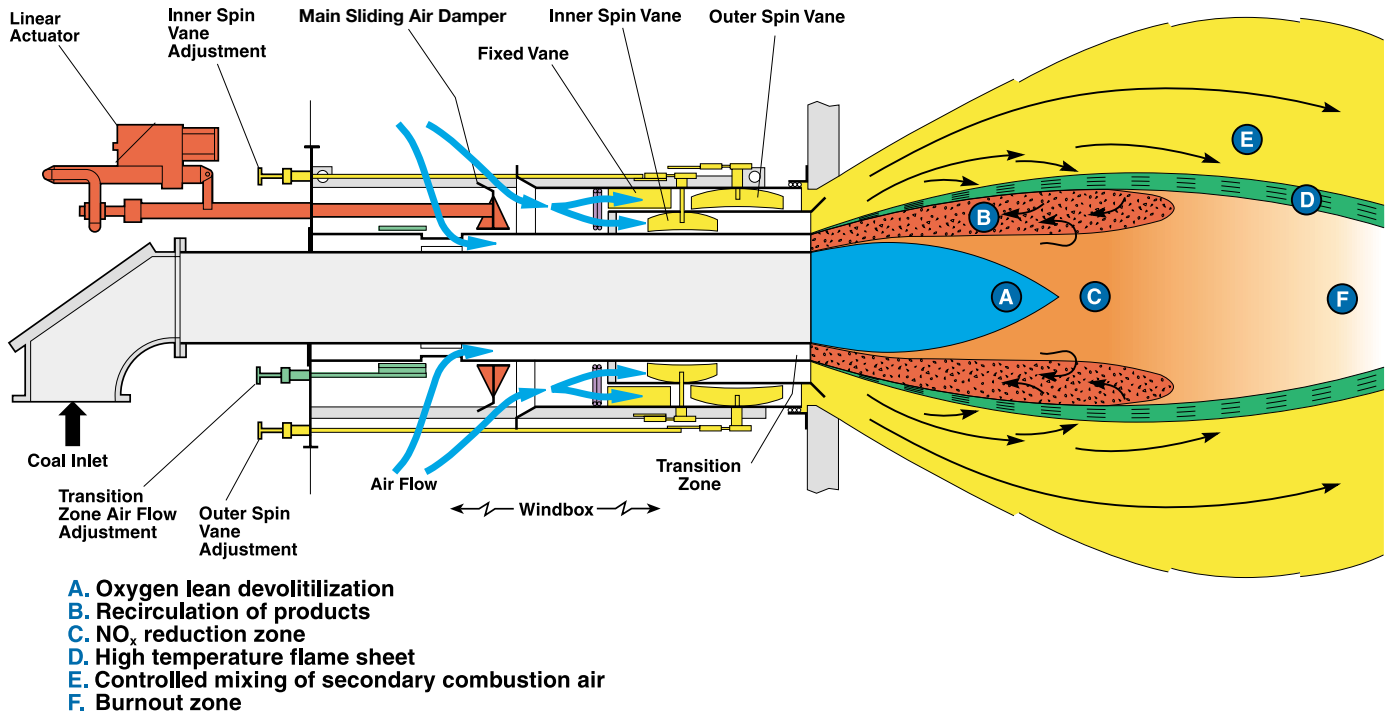
Mechanical Design Features

Components	Features/Functions
1 Linear actuator	Easily adjusts the main sliding air damper position for light-off, full-load and idle/cooling
2 Transition zone sliding air damper	Regulates air to transition zone to optimize emissions
3 Main sliding air damper	Controls secondary air flow rate to the inner and outer air zones of the burner, independent of swirl
4 Fixed spin vanes for outer air zone	Improves peripheral air distribution within the burner and reduces pressure drop
5 Pitot grid	Provides a relative indication of air flow with a 30 point impact/suction device to balance air flow among burners during commissioning
6 Adjustable spin vanes for outer air zone	Provides proper mixing of the secondary air to the end of the flame
7 Adjustable spin vanes for inner air zone	Stabilizes ignition at the tip of the coal nozzle
8 Transition zone	Enhances NO _x reduction by providing limited recirculation regions between primary and secondary air streams
9 Sliding linkage	Heavy-duty, non-binding, lever arm movement to control inner and outer spin vane settings — position is optimized and fixed during commissioning



Each feature incorporated in the DRB-4Z low NO_x burner is designed to promote maximum NO_x reduction with optimum combustion efficiency.

Low NO_x DRB-4Z™ Coal-Fired Burner Combustion Zones



Rugged Design Ensures Durability and Reliability



Like all B&W combustion equipment, the parts exposed to the radiant furnace heat are constructed of high temperature alloy material (bottom of photo) ensuring long life and durability.

Patented Burner Design Improves NO_x Reduction

The advanced DRB-4Z is designed to produce lower emissions by featuring a patented transition zone. This zone acts as a buffer between the fuel rich flame core and secondary combustion air streams. Actual emissions from applications will depend on site-specific parameters such as coal type and existing furnace and burner configuration. This design improves mixing and flame stability by limiting recirculation between air streams. These recirculation regions transport combustion products back toward the oxygen lean zone for NO_x reduction.

The DRB-4Z low NO_x burner was developed using proprietary computational fluid dynamic computer modeling. The prototype burner was refined through an extensive program of large-scale combustion tests performed in B&W's Clean Environment Development Facility (CEDF). The DRB-4Z burner design is solidly based upon the proven performance and experience of B&W's history with low NO_x combustion equipment.

Alternate DRB-4Z burner configurations for natural gas and fuel oil firing are also available. Coupled with our leadership in advanced overfire air systems and SCR technology, B&W has the experience to meet the most stringent NO_x reduction requirements.



**BABCOCK
& WILCOX**

RENEWABLE | ENVIRONMENTAL | THERMAL

Established in 1867, Babcock & Wilcox 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.

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B&W's overfire air equipment is based upon the same rugged mechanical features as the DRB-4Z low NO_x burner. Our leadership in the field of NO_x reduction technology began in 1962 with the first patented overfire air port design. We have sold more than 21,000 MW of overfire air systems.



Through extensive research, B&W continues to develop innovative improvements in ultra low NO_x combustion technology. B&W has the engineering, manufacturing and project management experience to achieve optimum combustion and post-combustion system solutions. Contact your regional B&W sales office for more information on the DRB-4Z ultra low NO_x burner.