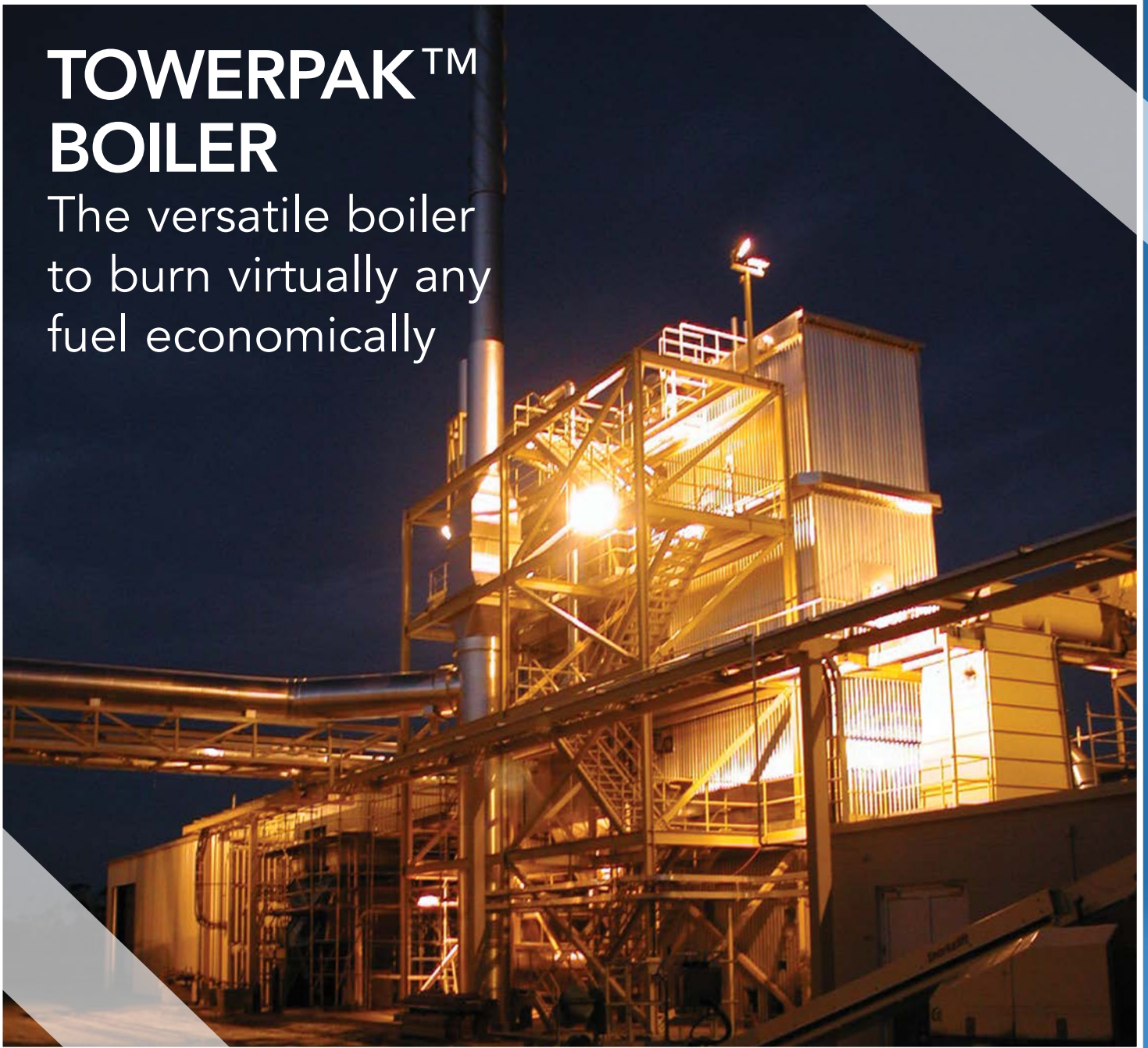


TOWERPAK™ BOILER

The versatile boiler
to burn virtually any
fuel economically



BABCOCK
& WILCOX

ENERGY | ENVIRONMENTAL

B&W Towerpak™ Boiler

Versatility and reliability for cost-effective steam production

The Babcock & Wilcox Company's (B&W) Towerpak™ boiler is a version of our Stirling™ power boiler designed for the lower capacities often required by industrial plants. It incorporates many of the design and manufacturing technology features of the Stirling boiler including furnace construction details, convection surface design and circulation enhancements. The versatility of the Towerpak boiler to burn virtually any fuel, alone or in combination, is especially useful for industrial applications.

Towerpak boilers are bottom supported, with either one or two drums depending upon design pressure and customer requirements. Maximum modularization of the boiler is a key design feature. A completely shop-assembled furnace is provided for smaller sizes. Larger units are designed for maximum shop assembly and modularization for ease of field erection.



Depending upon steam capacity, major components are shop assembled to minimize field-assembly labor requirements, such as the complete furnace (top) or generating bank (bottom)

Key features provide many customer benefits

Furnace

Modular design

For Towerpak boilers up to 60,000 lb/h (7.6 kg/s) steam capacity, the furnace is typically shop assembled. For larger units, the furnace, superheater and generating bank are modularized to minimize field-assembly labor requirements.

Bottom supported

The full range of Towerpak sizes are bottom supported so that boiler support steel requirements are minimized. Only platform support for access to the boiler and associated equipment is necessary.

Superheater

Optimized surface arrangement

Superheater arrangement is designed for modular construction. This eliminates the need for field tube welding. Superheater tube spacing is designed for the most effective heat transfer.

Steam temperatures up to 1000F (538C)

The Towerpak boiler design allows superheater sizes large enough to achieve controlled steam temperatures up to 1000F (538C) for electric generation applications. The boiler design and superheater surface arrangement are optimized to provide the required steam temperature with minimal use of high-cost alloys.

Drums and generating bank

A two-drum generating bank is provided for low-pressure applications where a large amount of generating bank surface is required. Higher pressure applications use a one-drum design. The generating bank for one-drum applications is a proven modular design with a long history of success in recovery and Stirling power boiler applications.



B&W can supply a wide range of heat transfer equipment, combustion systems and environmental equipment for a complete package that meets customer requirements.



Fuel flexibility is a key feature of B&W's BFB Towerpak design.

Equipment flexibility

Heat transfer equipment such as economizers, tubular air heaters, water coil air heaters, steam coil air heaters or condensing heat exchangers can be provided to meet a wide range of customer requirements.

Economizers

Bare tube and extended surface economizers can be supplied to provide increased boiler efficiency. The economizers are shop assembled into modules that can be quickly installed and connected to the boiler flues and piping.

Combustion air heating

Combustion air heating can be a critical requirement for biomass fuels that typically have a wide range of moisture content. Tubular air heaters are available for high air temperature requirements normally associated with high-moisture fuels. Water coil or steam coil air heaters can also be used to supplement or replace the tubular air heater if required.

Combustion systems

Bubbling fluidized-bed technology

For applications firing a wide variety of fuels, or when the fuel is consistently high in moisture, a bubbling fluidized-bed (BFB) boiler may be the best option. B&W has many years of experience supplying BFB combustion systems for a wide range of fuels including biomass, wood waste, bagasse and paper mill sludge.

Stokers

Stoker combustion applications include wood, bagasse, other biomass, coal or any combination of fuels. Vibrating grate stokers are most common in Towerpak applications, although traveling grate stokers have also been provided. As part of the stoker combustion air system, B&W provides the PrecisionJet™ overfire air system. This system provides reduced carryover and lower emissions when compared with other overfire air systems.

Other combustion options (gas or liquid)

Towerpak boilers can also be used for waste fuels such as carbon monoxide (CO), blast furnace gas (BFG), coke oven gas (COG) and refinery gases.

Auxiliary fuel burners

Start-up burners are typically oil or natural-gas fired. Auxiliary fuel capacity up to maximum continuous rating can be provided for small and mid-sized boilers with a stoker.

Emissions control

Along with our steam generation solutions, we can supply emissions control equipment for a total package solution. Our proven technologies include systems to control particulate, nitrogen oxides, sulfur oxides, and other hazardous air pollutants.



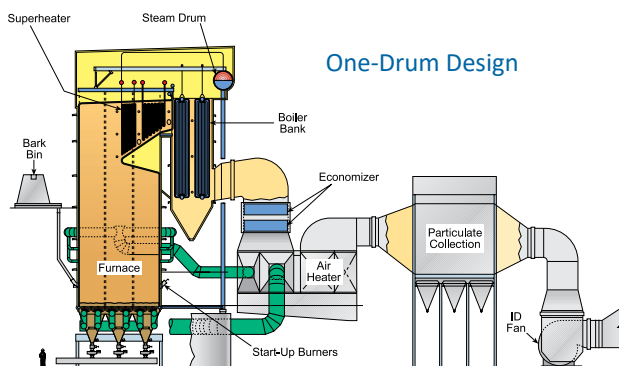
The Towerpak boiler is backed by B&W's vast experience in meeting the ever-changing steam generation and environmental equipment needs of both the process and utility industries.

Rely on the experience of B&W

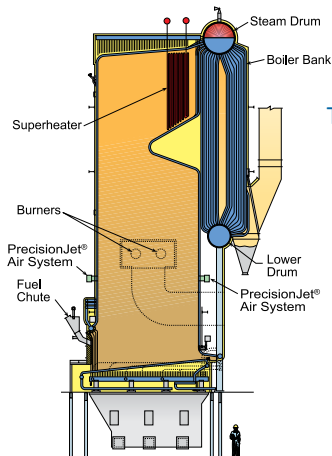
Since 1867, B&W has built its reputation on reliability. We have the experience and flexibility to meet the ever-changing needs of both the process and utility industries. The Towerpak boiler is no exception to B&W's long list of capabilities in providing dependable steam production. Since its inception in the early 1970s, our Towerpak boiler design is providing more than 1000 MW of thermal output and 4,500,000 lb/h steam flow.

B&W Towerpak Boiler Specifications

	Shop Assembled	Field Erected	High Capacity
Fuels	Solid fuels such as wood, bagasse, other biomass, municipal solid waste, refuse-derived fuel and stoker coal; also oil, natural gas and other gaseous or liquid fuels such as CO, BFG, COG and refinery gases.		
Capacity	20,000 to 60,000 lb/h (2.52 to 7.56 kg/s)	60,000 to 150,000 lb/h (7.56 to 18.9 kg/s)	150,000 to 300,000 lb/h (18.9 to 37.8 kg/s)
Temp	Saturated to 750F (399C)	Saturated to 900F (482C)	Saturated to 1000F (538C)
Pressure	150 to 1000 psig (1.03 to 6.90 MPa)	150 to 1600 psig (1.03 to 11.03 MPa)	1000 to 2600 psig (6.90 to 17.9 MPa)



One-Drum Design



Two-Drum Design

Total-Scope Services

Construction and field operations are also available from B&W. Customers are served through a strategic network of field sales and service offices, agents, licensees and joint ventures located around the world.

B&W's wide range of aftermarket product support services include:

- Project management
- Boiler construction and repair
- Start-up and commissioning
- Training programs
- Field service, inspection and diagnostic testing
- Engineered upgrades and supply of replacement parts for any make or type of boiler
- Balance of plant construction and repair



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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.