

# COMBUSTION SOLUTIONS

Babcock Wanson designs and manufactures industrial burners and provides complete combustion solutions for all industrial applications



Babcock Wanson offers a complete range of products and services for your boiler house. Unlike most industrial boiler manufacturers, Babcock Wanson also designs and manufactures industrial burners, incorporating high efficiency and environmental performance. Customers also benefit from the peace of mind that comes with single source purchasing of both boiler and burner.



### BURNERS FOR:

- Fire Tube Boilers
- Water Tube Boilers
- Thermal Fluid Heaters
- Fired Steam Superheaters



### BURNERS FOR INDUSTRIAL PROCESSES:

- Furnaces
- Process Air Heaters
- Thermal Oxidisers

The overall technological mastery of the boiler room guarantees the perfect match of the system components and optimises investment and operating costs.

### Babcock Wanson burners are suitable for:

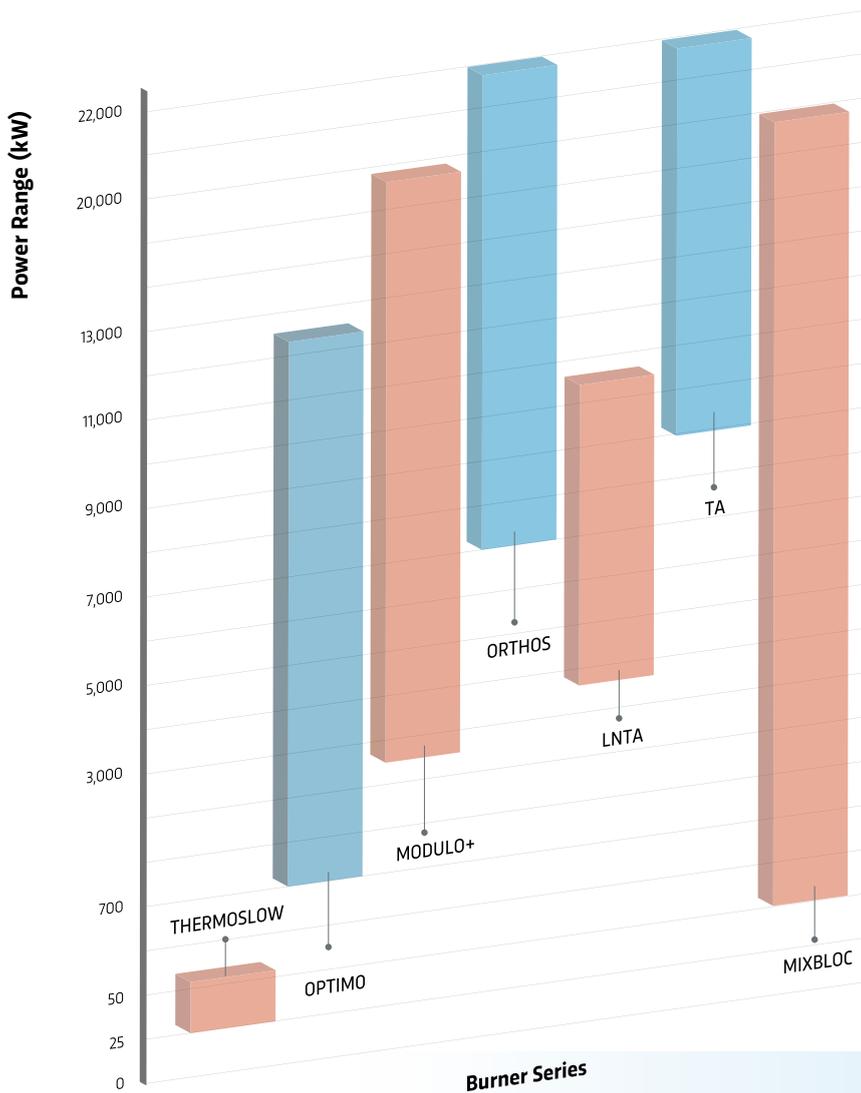
- **NEW INSTALLATIONS:** Babcock Wanson guarantees the compatibility between all burner and all equipment provided, thus ensuring the stated benefits, in terms of efficiency and emissions etc.
- **EXISTING INSTALLATIONS:** The industrialist who modernises their installation by the addition of a Babcock Wanson burner gives their existing equipment a new lease of life by improving efficiency and emissions performance.
- **BABCOCK WANSON AND OTHER MANUFACTURERS' SYSTEMS:** Babcock Wanson burners have been designed and rigorously tested for high performance when matched with one of its quality heating systems but can also be readily applied to other manufacturers' equipment.



## Burner Modification for Optimised Operation

**Babcock Wanson designs its burners to be highly flexible and has the expertise to modify those burners to meet client projects, with a particular fuel and mixed operation. Burner design is optimised for each boiler or heater.**

## BABCOCK WANSON BURNERS RANGE



Based on your boiler or process requirements, we provide tailor-made solutions to match those needs whilst providing the highest operating efficiency.

## FUEL COMPATIBILITY



- Babcock Wanson burners are developed for standard fuels: Gaseous Fuel and Light Fuel Oil
- Any specific fuels can be studied by our technical service department (Biogas, Tallow, vegetable oils, process gases....)
- Dual versions (gas/liquid) can be tailored to site demands

## H<sub>2</sub> READY



Babcock Wanson burners already have the capacity to operate with a significant proportion of hydrogen integrated with traditional gas fuel. For 100% hydrogen solutions, a combustion head tailored to that specific project will be required.

## OPTIMO High Efficiency



**Power range:** From 0.7 to 12.5 MW  
**Special feature:** High efficiency on small boiler capacity  
**Turndown ratio:** 8:1

- High-performance combustion head for low NO<sub>x</sub> emission
- Low noise operation
- A large flame view port on the front of the burner



## MODULO+ Low NO<sub>x</sub> and High Turndown Ratio



**Power range:** From 1 to 22 MW  
**Special feature:** Very low NO<sub>x</sub> operation  
**Turndown ratio:** 12:1

- Extended operating flexibility
- Improved energy savings
- High combustion efficiency, thanks to minimum excess air over the entire operating range
- Optimised operating performance due to reduced number of stop / start cycles

## ORTHOS Super High Turndown Ratio



**Power range:** From 7 to 22 MW  
**Special feature:** Ideal for industries whose process requires large power variations  
**Turndown ratio:** 30:1

- Meets specific industrial needs
- Provides significant energy savings by avoiding stop / start cycles



## LNTA & TA Robust and Durable



- Power range:** From 3.5 to 10.5 MW in Monobloc (LNTA)  
From 9 to 22 MW in bi-bloc (TA)
- Special feature:** Benefiting from Babcock Wanson's years of expertise and experience
- Turndown ratio:** 8:1

- Fully digital controls for efficient operation
- Reduced NO<sub>x</sub> emission
- Moulded aluminium shell for reduced weight



## MIXBLOC Air Duct Type



- Power range:** From 0.05 to 20 MW
- Special feature:** Provides high temperature air – up to 800°C in standard form – with no flue gas losses
- Turndown ratio:** 20:1

- Can be installed in small spaces and to suit an existing ductwork configuration
- Constructed for horizontal or vertical operation
- Can work upstream or downstream of the process air fan under positive or negative pressure

## THERMOSLOW Very Low Power Solution



- Power range:** From 25 to 65 kW
- Special feature:** Allows a rapid restart of the boiler and therefore almost immediate steam production

- Maintains pressure within a boiler during long-term standby operation without steam flow and with the minimum of energy losses
- Particularly useful for backup solutions to avoid process downtime
- Can be operated in three phases: Ignition mode, Standby mode, Hot-stand-by mode

## Environmental Performance



Over recent years great strides have been made in burner technology and their associated controls to reduce environmental impact. Babcock Wanson burners have been designed and rigorously tested to provide high performance with low NO<sub>x</sub> emissions, as well as low CO & CO<sub>2</sub> emissions. All equipment is built to meet the needs of all European legislation.

## High Efficiency



Babcock Wanson has been working for many years to increase the burners energy performance. These developments have resulted in high technology burners.

- Turndown ratio up to 30:1
- Low level of excess air throughout the range
- Optimum synergy of burner / heating body

### 'Good Loop' Concept

The GOOD LOOP concept is integrated in the boiler. It uses EGR (exhaust gas recirculation) technology and thus significantly reduces NO<sub>x</sub> emissions, which are already low thanks to the Babcock Wanson burner's combustion efficiency.

This exclusive technology of Babcock Wanson can be applied to an existing burner and improve its performance without any modification of its design.

### R-Eco system: Combustion Air Preheating

The R-ECO solution improves boiler efficiency up to 98% by recovering residual heat from combustion gases and at the same time reducing NO<sub>x</sub> emissions thanks to the Flue Gas Recirculation (FGR) system.

All industrial processes require heat and/or produce heat. Recovering and reusing this heat makes the production process more sustainable and offers financial benefits in addition to meeting environmental requirements.

## BEST AVAILABLE TECHNOLOGY

Babcock Wanson has invested heavily to provide wide burner ranges and worked with some of Europe's leading technology partners

- **Burner Management System (BMS) has been developed to give high quality combustion across the whole range**
- **Digital solution: Navinergy connected boiler**
- **Most accurate control of fuel / air ratios**

## TEST FACILITY

Babcock Wanson provides two test platforms that are equipped with sensors and appropriate instrumentation to measure combustion parameters.

- **Burners up to 8MW with any fuels types. The pressure of the furnace can be adapted to each context**
- **The facility is equipped with a CFD flow simulator**



**Babcock Wanson's commitment to quality extends well beyond our products. Our aim is to ensure the equipment supplied and maintained by Babcock Wanson runs as efficiently as possible with minimum downtime. Babcock Wanson offers a complete range of preventive and corrective maintenance contracts, tailored to meet clients' needs.**

Babcock Wanson provides a wide network of experienced field services engineers. They are able to attend site with minimal notice and their experience and proficiency enables them to identify and resolve any issues quickly.



## Warranty Extension

A burner is a combination of complementary technologies and performance of the boiler house relies on it. With a Service Contract, Babcock Wanson can ensure the burner performance over extended periods (up to 10 years extended warranty).

- Efficiency
- Environmental performance
- Availability
- Performance improvement

## Spare Parts

With a stock of over 30,000 spare parts for quick delivery, Babcock Wanson is able to supply replacement parts to meet all operational needs. Babcock Wanson has sufficient capacity for planning, execution and delivery of spare parts to ensure industrial processes remain competitive and reliable.

Spares can be obtained by contacting the nearest Babcock Wanson office or via direct access to the website.

Spare Parts service is provided by a responsive and motivated team ready to meet clients' needs and can also provide training in how to replace parts.

## Performance Commitment

Preventative maintenance, on call duty and remote follow up enable Babcock Wanson to provide a high level of availability of the facility and minimise boiler room disruption.

Thanks to the checks and adjustments performed as part of the Service Contract, steady reliable performance within the boiler room is achieved.

## Training

Babcock Wanson's experienced trainers provide in-house or external courses suited to the needs of a wide range of personnel, from operators and maintenance staff through to managers.

Around 600 people attend Babcock Wanson courses each year. Whether on the Babcock Wanson test platforms or directly on site-installed equipment, the trainers will teach the necessary activities and impart the knowledge required to ensure reliable and safe equipment operation.

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