

**\* FOCUS ON**



## INDUSTRIAL COMBUSTION SYSTEMS

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In order to obtain a complete Combustion System various components are available to be matched with the Industrial Combustion Head, such as fuel pre-processing units, combustion air fans and control panels.

## COMBUSTION HEAD

Standard combustion and low NOx combustion versions can be supplied according to customers requests

## FUEL UNITS

Several kinds of Gas Trains and Oil Heating Pumping Units are available according to the plant requirements:

- Pressure reduction and regulation units allow to bring gas pressure available in the line, sized to values suited to the specific application.
- Gas trains include a series of safety and control devices for gas feeding to the burner.
- The oil unit skids come ready assembled and tested for fast installation
- Electric or steam/electric oil heaters may be used and a double system with backup filter and pump is also available.

## SEPARATE FAN

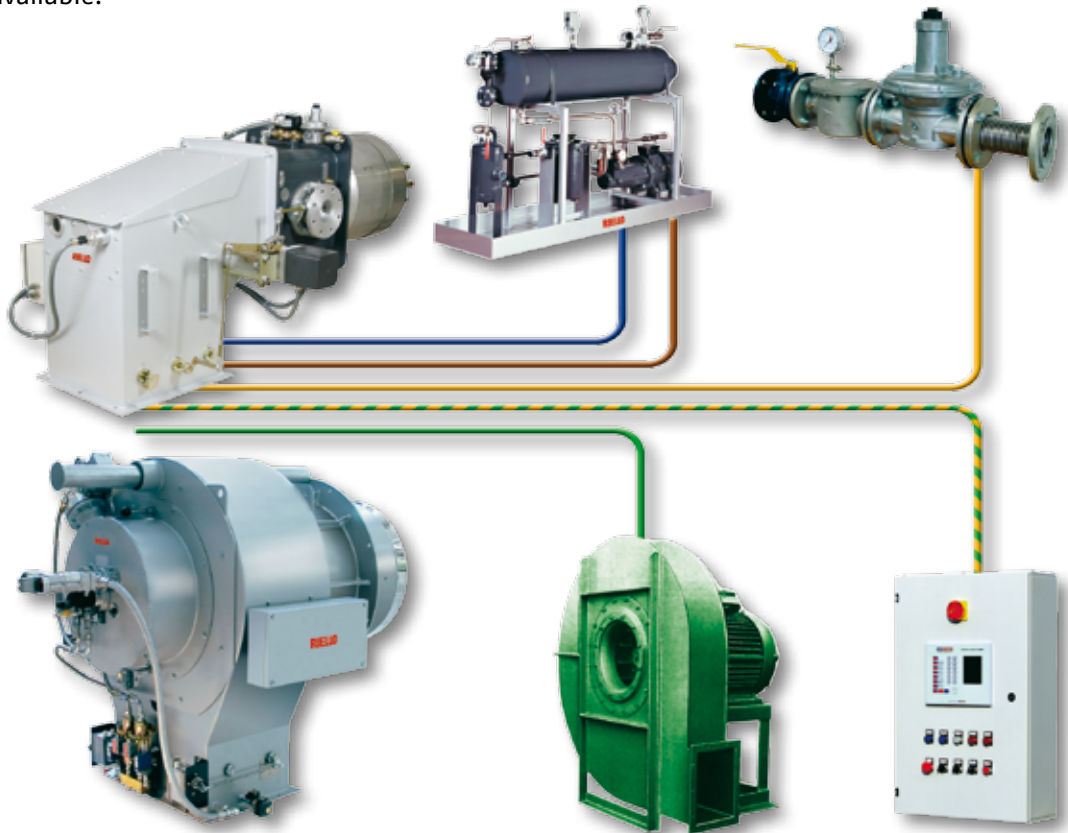
The use of a separate fan allows:

- The matching with high boiler combustion pressure
- The working with pre-heated combustion air to reach a higher system efficiency
- The reduction or the elimination of fan noise.

## CONTROL PANEL

The control panel can be customised according to specifications, norms or other requests:

- It can be equipped with variable speed drive control to obtain lower noise emissions, lower electrical consumption and also higher turn-down ratio
- Oxygen control
- It allows the communication with remote supervision room thanks to the suitability with the most common protocols (Modbus - Profibus)
- All the electrical equipment can be included inside the plant installation main board.



# DB Series

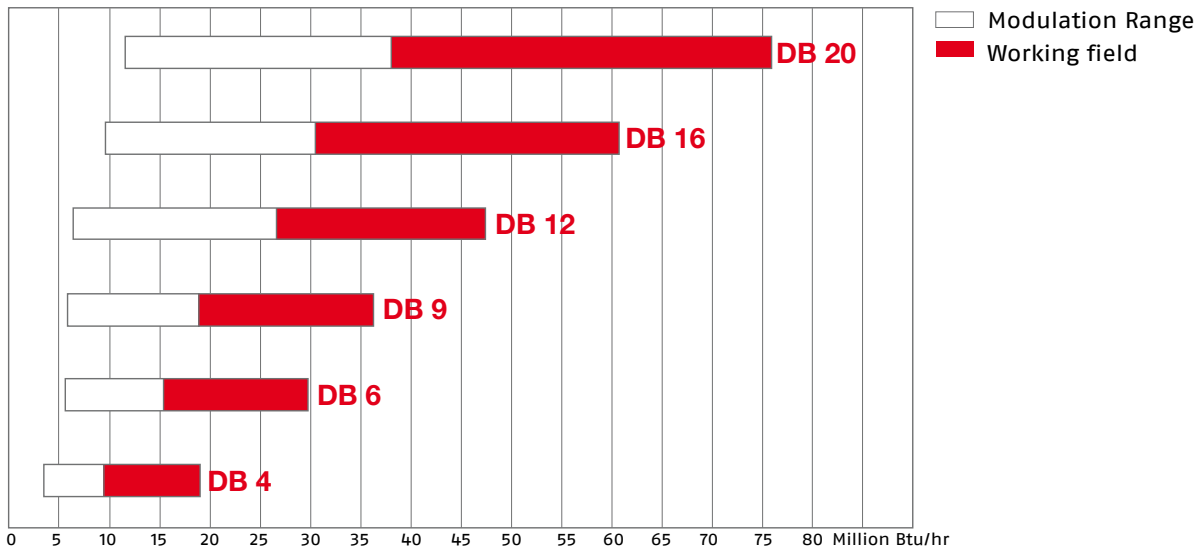
The new Dual Block "DB" Series has been designed for use in hot water smoke tube boilers, industrial steam generators as well as thermal oil generators. It is the evolution of TI family in terms of performances and modularity.

## MAIN FEATURES

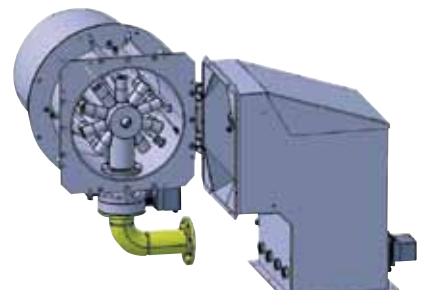
- New maintenance concept
- Full modulation and high turn down ratio
- Two combustion versions: low NOx and standard
- Low NOx emissions
- Two fuel-air ratio control versions: mechanical, electronic
- Ignition by gas/lpg pilot ignition system on DB 9, 12, 16, 20 models
- Pre-heated combustion air up to 302°F as standard (482°F with special insulation)
- Steam/air atomising system to burn high viscosity oil



## FIRING RATES



DB 6 SE BLU - Air intake from above



Left/right hinge can be supplied for an easier maintenance

## ER Series

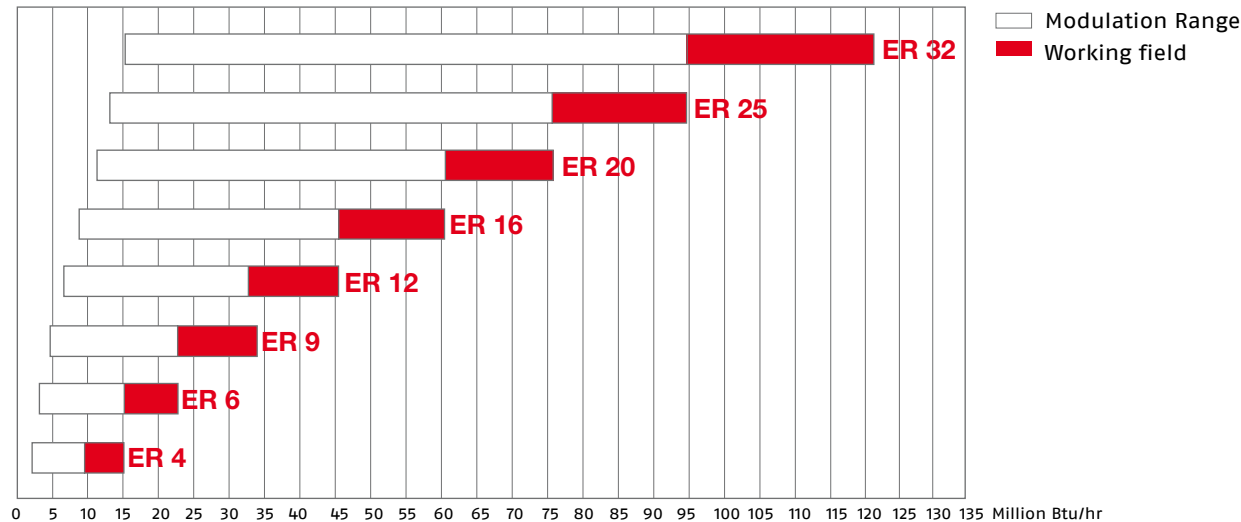
The “ER” series is the Riello Burners range for application on water tube D shape boilers, thermal oil generators, multiple burners systems and marine boilers applications. Thanks to the air register it allows to get a flame perfectly matched to the combustion chamber.

### MAIN FEATURES

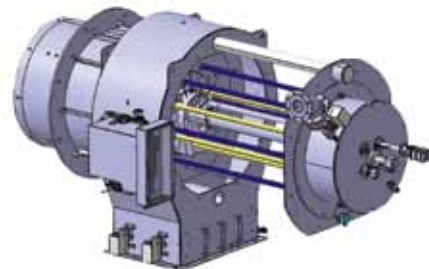
- Adjustable flame shape
- Flame stability disk made up of axial swirlers
- Low air pressure drop: to smaller fan motor
- Low NOx emissions
- Air intake on 360° every 45°
- Ignition by gas/lpg pilot ignition system
- Steam/air atomising system to burn heavy oil up to 80°E @ 122°F
- Mechanical or electronic air-fuel ratio control.



### FIRING RATES



Low NOx emissions: • fuel staging techniques.  
• two internal air distribution circuits.



Easy access to the combustion head.

## DB and ER Control Equipment

The air fuel ratio control is available with mechanical or electronic cam

- mechanical cam: it is the easiest and most known solution. The air-fuel mixture is controlled by a cam according to an adjustable mechanical profile
- electronic cam: it represents the high tech configuration. The air-fuel mixture is controlled by single control position servomotors installed directly on the air damper and on the fuel modulator.

A microprocessor manages the working of single servomotors.

- Operation can be:
  - Intermittent (the burner stops at least one time every 24 hours)
  - continuous (the burner control system is equipped with specific flame detector, control box and hydraulic circuit available to work continuously for over 24 hours).

### ....ABOUT ELECTRONIC CAM VERSIONS

The Digital Burner Management System, also called Electronic Cam, is a microprocessor-based device designed for the control and supervision of forced draft burners. It includes the standard function of a Flame Control Panel and in the meantime manages the air-fuel ratio by independent servomotors, with high accuracy position, in order to obtain a perfect output control and to assure a correct combustion and safe operation on all modulation range. By the absence of joint clearance and mechanical hysteresis, present in traditional mechanical systems that utilize cams and linkage, combustion quality is improved. The addition of the Oxygen Trim Integration Kit can guarantee air-fuel mixing near stoichiometric ratio throughout the whole burner range, to obtain an higher efficiency, and also allows to monitor, store and remote O2, CO2 and CO emissions values. Electronic cam allows to use bus protocol communication and can be also matched with the Variable Speed Drive operation in order to obtain low energy consumption, lower sound emissions and a high turn down ratio (over 1:10 on gas DB series).



Micromodulation



On board electronic cam version with flame safeguard inside reduces installation time and cost



Separate control panel version according to customers specification



Exhaust gas analyser available as option for electronic cam version.

Main features:

- continuous measurement of exhaust gas
- trim operation on air damper
- microprocessor controlled
- automatic calibration
- 4-20 mA analogue output signal for O2-CO-CO2-NO-efficiency-exhaust gas temperature.



System Components

HEATING PUMPING UNITS



**Series SG – DG**  
SG 160 – 250 – 320 – 400 – 500 – 800 – 1000 – 1500  
DG 160 – 250 – 320 – 400 – 500 – 800 – 1000 – 1500

**Delivery**  
100 – 951 gal/hr



**Series SN – DN**  
SN 250 – 320 – 400 – 500 – 650 – 800 – 1000 – 1500  
DN 250 – 320 – 400 – 500 – 650 – 800 – 1000 – 1500 – 2000

143 – 951 gal/hr

PRESSURE REGULATING / REDUCING UNITS



**Series LPRT**  
LPRT 40 – 80 – 160 – 250 – 500 – 750 – 1000 – 1500 – 2000

**Inlet pressure**  
< 7,2 psi



**Series HPRT**  
HPRT 80 – 160 – 250 – 500 – 750 – 1000 – 1500 – 2000

7,2 – 58 psi

SAFETY / REGULATING GAS TRAINS



**Series MBC**  
MBC 1200 SE 50 – MBC 1200 SE 50 CT  
  
MBC 1900 SE 65 FC – MBC 1900 SE 65 FC CT  
MBC 3100 SE 80 FC – MBC 3100 SE 80 FC CT  
MBC 5000 SE 100 FC – MBC 5000 SE 100 FC CT

**Inlet pressure**  
< 5,2 psi  
  
< 7,2 psi

SAFETY / REGULATING PROPORTIONAL GAS TRAINS



**Series VGD**  
VGD 50 – VGDF 65 – VGDF 80 – VGDF 100

**Inlet pressure**  
< 7,2 psi

CENTRIFUGAL AIR FANS



**Series GCH**  
GCH 4020 – 5020 – 5040  
GCM 4540 – 5020 – 5040

**Delivery**  
28.252 – 176.573 ft³/hr  
141.259 – 335.489 ft³/hr



**Series GBJ**  
GBJ H0 5630 – 6320 – 6330 – 6380 – 712 – 717  
GBJ I0 6310 – 6320 – 6360 – 710 – 712 – 800A

123.601 – 706.293 ft³/hr

BURNER CONTROL PANELS



**Series QA**

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Technical Support

In Riello Burners' Application Engineering department a dedicated team works in cooperation with major OEM's to perform application matching and burner integration, optimizing performance to help our Customers achieving the competitive advantage they need. We can offer a great support in terms of burner application consulting, analysis for product re-engineering, job development, integrated system proposals and assistance for international standards compliance. Training, start-up, commissioning and after-sale assistance are also performed by headquarter expert engineers.



Textile factory, Italy: no. 3 units DB 6 SE BLU gas burners



District heating, Romania: no. 10 units ER 20 dual fuel burners (gas/heavy oil)