

INDUSTRIAL WATERTUBE BOILER CAPABILITY



ACTOM

John Thompson

John Thompson is a division of ACTOM (Pty) Ltd with its principal focus on being the best boiler and environmental solutions company serving the power generation and industrial markets, both locally and internationally, with innovation and enthusiastic response. The company designs, manufactures, constructs and services industrial water tube and fire tube boilers. The company also designs and manufactures related products, incorporating heat transfer technology.

John Thompson is furthermore responsible for the service and maintenance of utility boilers, with Alstom's technical and engineering support.

Recognising the vast and challenging demands of ever tightening environmental regulations, the company also supplies and services gas cleaning equipment.

Our world-class manufacturing facility, located in Cape Town, was established in 1954 and has been developed and expanded over the years to become one of the top facilities of its kind in the Republic of South Africa.

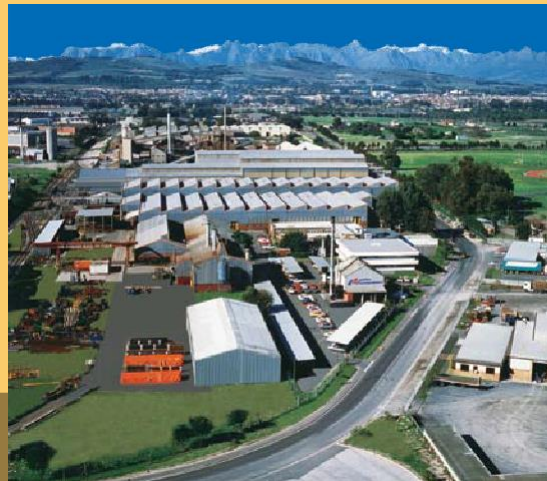
John Thompson is listed by Lloyds Register of Industrial Services as an approved manufacturer for Class I fusion welded pressure vessels and was also the first in Africa to be certified by the ASME.

Our Quality System has been assessed to the ISO 9001 system by the SABS and listed accordingly. We have designed and built equipment in accordance with a number of international codes and specifications. These include AD Merkblätter, ASME, British Standard Specification, ANCC (Italian), TRD and EN.

- ISO 9001:2008
- Lloyds Certificate of manufacture
- BBEE - Level 3 contractor
- Fully comply to OHS act and other safety requirements
- CIDB 9ME Qualification

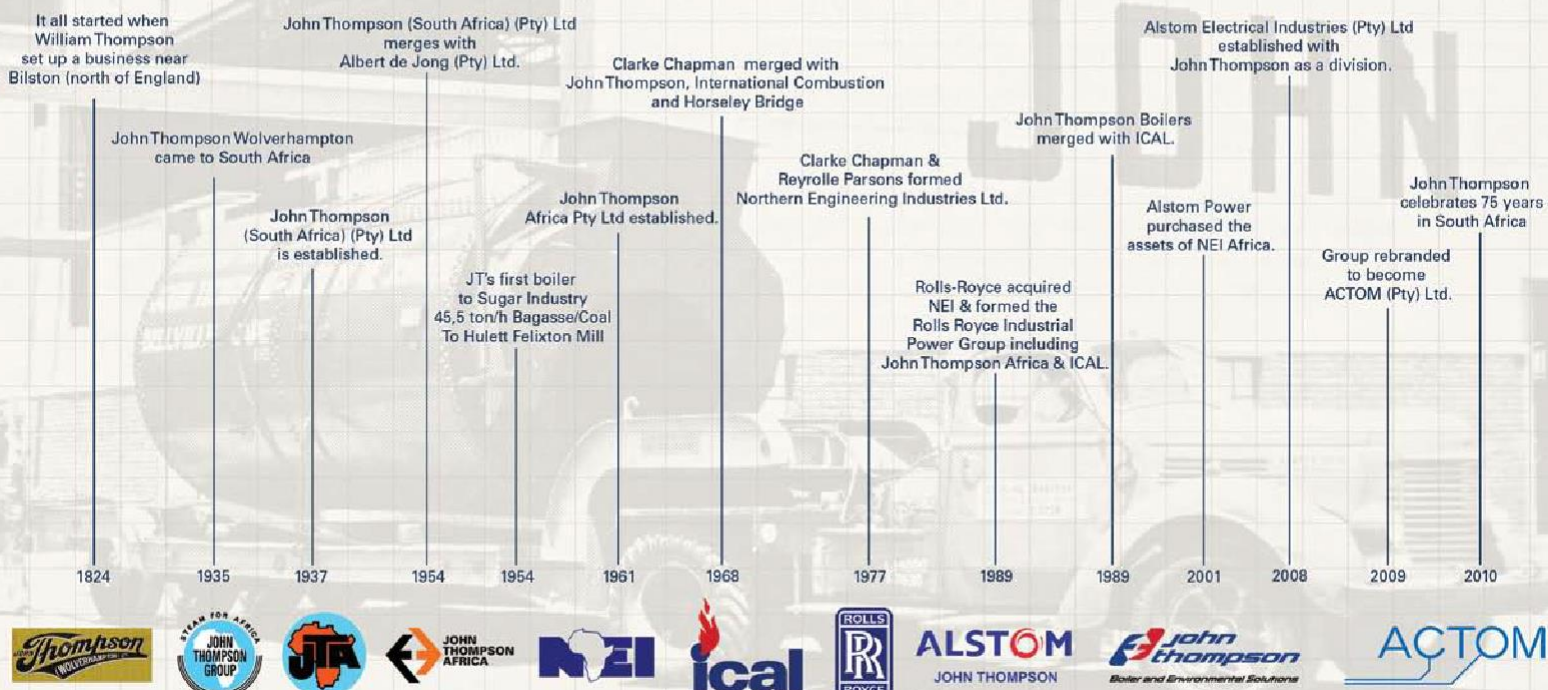


www.johnthompson.co.za



With 140 years of history in the boiler industry, the roots of the John Thompson company go back even farther to 1824. In that year William Thompson set up a business near Bilston in the north of England, to build iron boats.

John Thompson through history - 1824 to present



Industrial Watertube Boilers

The Business Unit supplies new boilers and combustion equipment to a variety of industries. An overall service is provided, incorporating: supply of new boilers, capacity and efficiency improvements to older boilers, repairs and maintenance, supply of OEM spares, reliability studies and metallurgical services.

New Boilers

The range of new boilers includes:

- Coal-fired boilers with travelling grate and CAD spreader stokers
- Biomass fired boilers with CAD spreader stokers as well as pinhole and dumpgrates
- Oil/gas-fired boilers
- AFBC and CFBC boilers
- Lean Gas fired boilers
- Waste heat recovery boilers

Our customer list covers a wide range of major industries throughout sub-Saharan Africa including: sugar, food and beverage, chemical, petrochemical, steel, metallurgical, pulp and paper, textiles and many others. As a world-class internationally competitive operation we were contracted by the World Bank, under the auspices of the Global Environmental Facility, as a technology transfer source to assist Chinese boiler manufacturers burning low-grade high ash Chinese coals to reduce emission levels to acceptable international standards. A 75-t/h JOHN THOMPSON coal-fired watertube boiler incorporating the high-efficiency zoned CAD stoker was manufactured at the Jinan Boiler Works outside Beijing as a verification unit prior to general manufacture in China.

Retrofitting, Repair and Maintenance

Our teams are available at short notice for routine or emergency procedures. Refurbishment, retrofitting, shutdowns, service contracts, relocating and rebuilds are carried out on all types of boilers, furnaces and mechanical plant and associated equipment. Our service covers more than 100 industrial units of original equipment manufacture (OEM) as well as numerous non-OEM units.

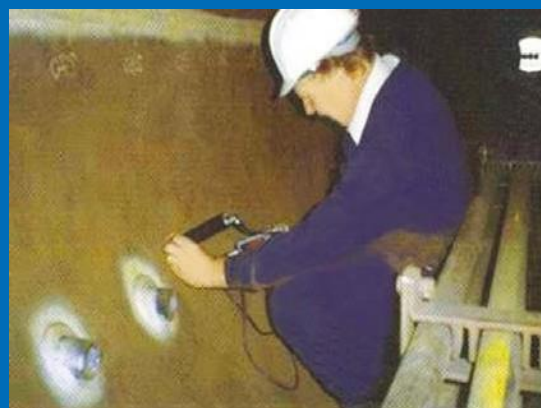
Construction Operations

Our construction department has the teams and equipment to undertake specialist site erection, lifting and rigging services, new installation of piping, vessels and tanks, steelwork erection and specialist welding services for our industrial customers.



Metallurgical Services

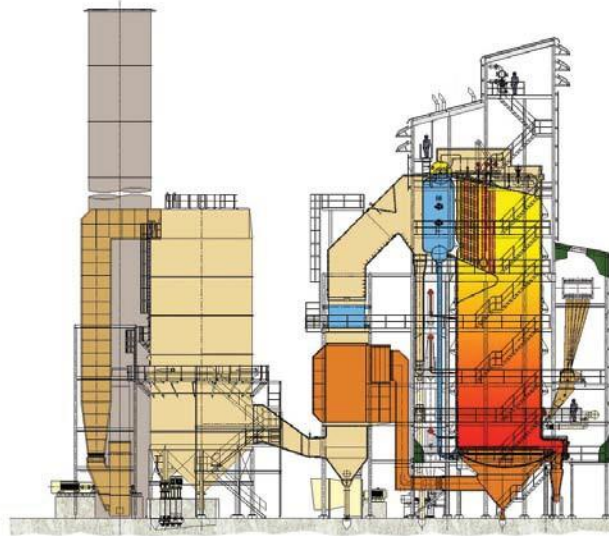
As a leader in the field of boiler technology, John Thompson has extensive materials engineering facilities for both in-plant and on-site investigations. These facilities enable detailed investigations to be conducted to establish the metallurgical condition of materials and failure analysis. The methods involved range from hardness inspections and thickness checks to detailed metallographic examination using replication.



Sugar Industry

JOHN THOMPSON places much importance on the cane sugar industry. Through its policy of continuous development, boiler designs have evolved from the earlier refractory backed hearth and self feeding designs to the panel walled units with single pass generating banks and more recently to the monodrum design.

The boiler support system can be of the bottom, girth or top design depending on the specifics of the particular unit.



160 T Bidrum 45 Bar bagasse and woodwaste fired boiler.



Continuous Ash Discharge (CAD) Stokers

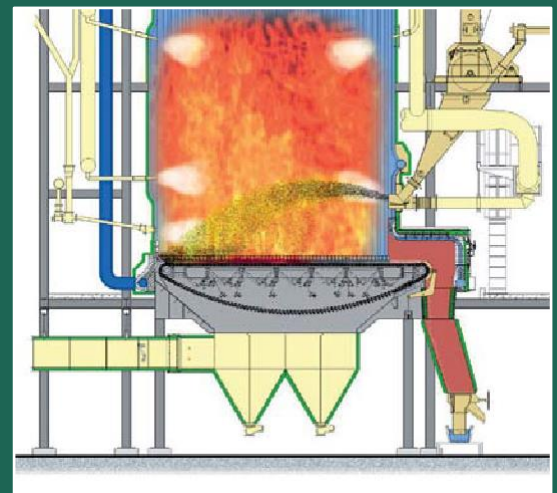
Features

- Catenary tensioned
- Controlled undergrate air distribution
- Self cleaning
- Handles wide range of fuels
- Variable speed drive
- Uniform fuel distribution
- Grit refining option
- High combustion efficiency
- High availability
- Low maintenance

Continuous Ash Discharge (CAD) stokers are regularly installed in coal fired industrial boilers particularly when there is a requirement for a fast response to load swings. In addition, the CAD stoker is prescribed when coal has to be burned in combination with biomass such as bagasse, wood chips, bark, sunflower seed husks, cotton stalks, etc.

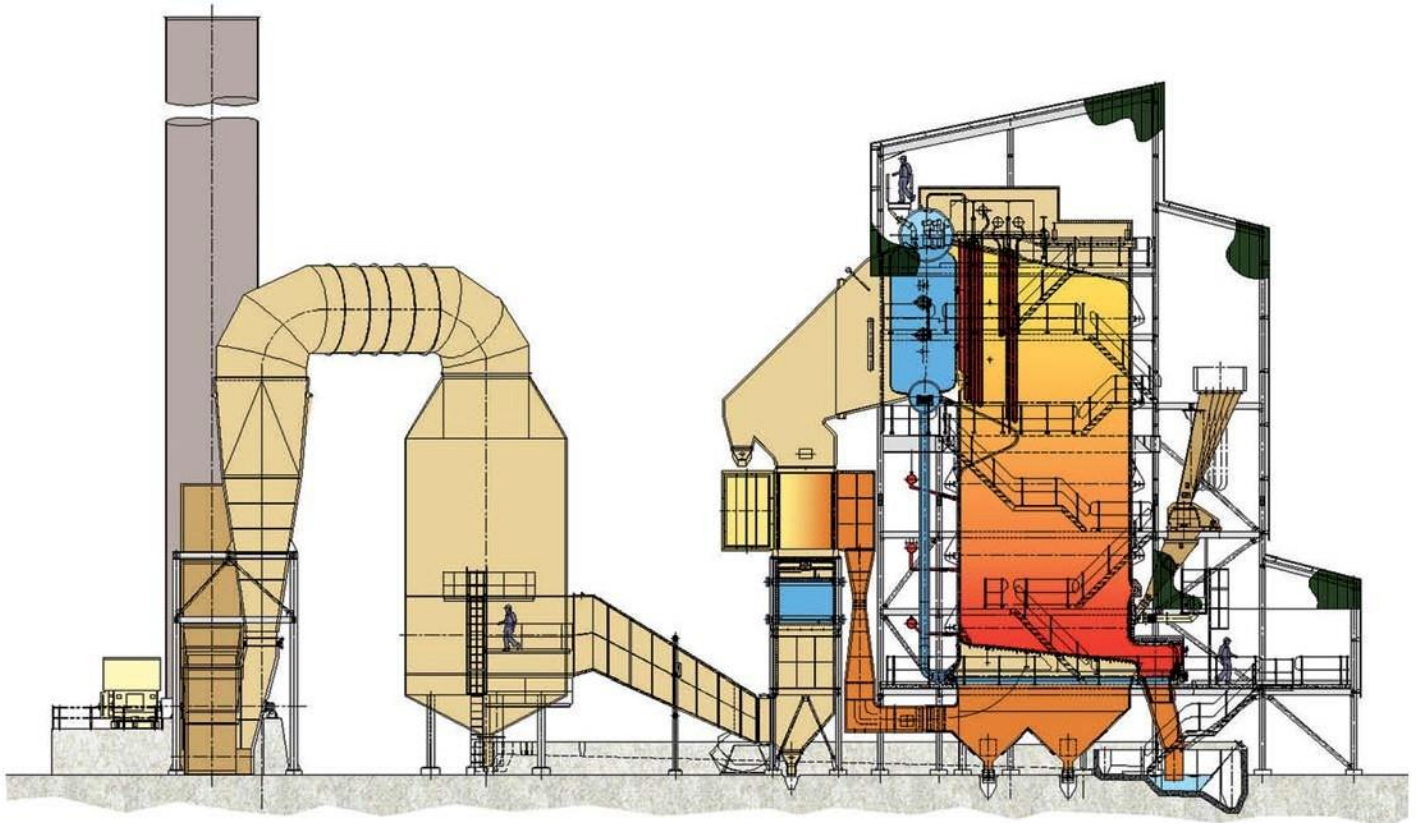
The stoker mat is driven by a variable speed drive through a reduction gearbox and a high torque universal coupling device. The stoker is catenary tensioned, eliminating the need for separate tensioning devices.

The mat consists of a series of several bands of grate bars attached to pairs of chains. The bars are manufactured from high grade, heat resisting, cast iron, substantially ribbed to provide rigidity as well as a large surface area to maximize the cooling effects from the undergrate air. The chains are driven by toothed sprockets on the front shaft and pass over guide rollers at the rear. The grate bars run on a series of cast iron skid rails bolted on to the stoker frame. Metal temperature thermocouples are embedded in the skid rails to provide monitoring and alarm functions.



Spring-loaded shoes prevent the grate from opening prematurely at the front, which would otherwise allow the entrapment of foreign material such as stones, tramp metal and the like. The grate bars are designed to hang open on the return chain strand allowing ash and riddings to fall freely into the hoppers.





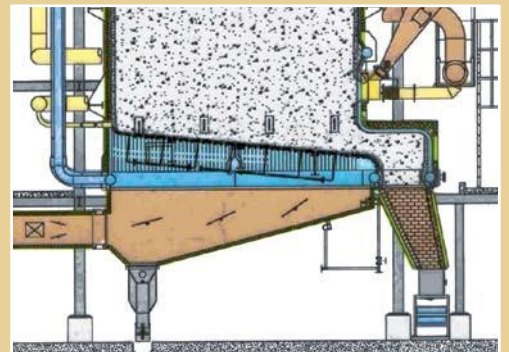
Typical bagasse fired boiler with pinhole grate.

Pinhole Grates

John Thompson steam cleaned pinhole grates are ideal for burning relatively low ash content biomass fuels.

The principal advantages of this grate are:

- Lower capital cost
- No moving parts hence less maintenance
- High availability
- Carefully controlled air gaps resulting in uniform pressure drops and good cooling.



A multiplicity of jets are employed to ensure that only a small section of the grate is cleaned at any one time thereby ensuring that rapid re-ignition of the fuel is achieved. Steam jet pressures are controlled to ensure that adequate cleaning is obtained while at the same time ensuring that impingement-erosion is avoided. The grate bars are manufactured from temperature resistant cast iron and are profiled to nest closely on the support tubes.

On a new boiler installation, the floor tubes are watercooled, forming an integral part of the boiler circulation system.

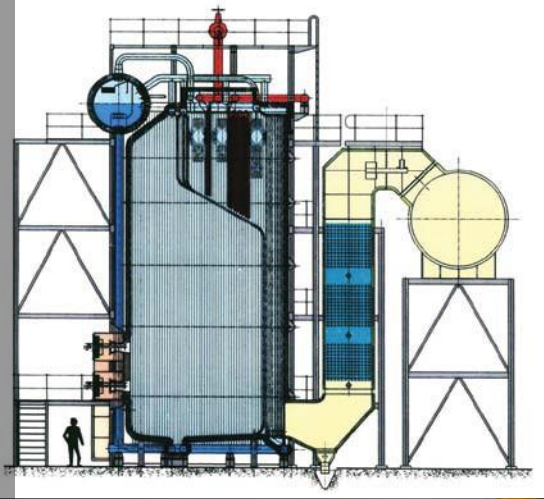
When a pinhole grate is retrofitted to an older boiler, the economics of the situation normally determine the installation of an air-cooled grate in which the cooling medium is high pressure overfire air. This economic arrangement allows for a boiler update without the additional cost of rearranging the boiler pressure parts.

Undergrate zoning is incorporated where required to facilitate the control and distribution of primary air across the length of the stoker. This consists of a series of small, self-cleaning hoppers each fitted with a damper capable of being adjusted whilst the boiler is on line.

Because of the substantially different physical characteristics, independent fuel metering devices are used for coal and biomass. Coal is metered by means of variable speed screw conveyors whereas biomass is generally metered via three-drum feeders. A combined coal/biomass pneumatic spreader ensures proper distribution of the fuels. Considerable development work was carried out on a combined coal/biomass pneumatic spreader to ensure proper distribution of the fuel.

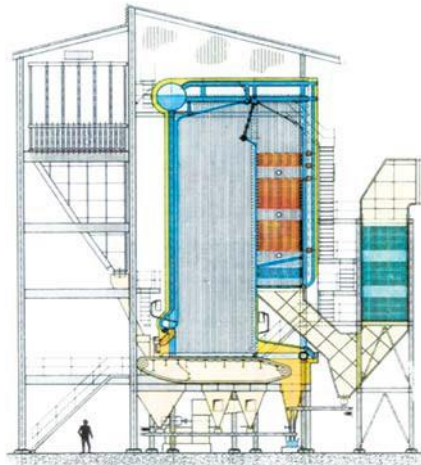
Oil and Gas fired Boilers

- Bi-drum or monodrum design
- MCR up to 300 tph
- Controlled or uncontrolled superheater
- High efficiency



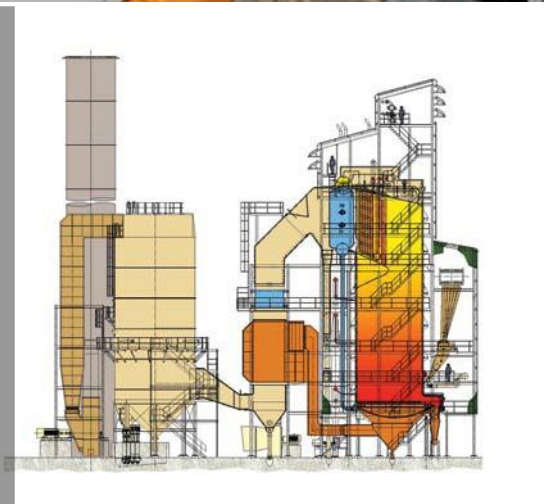
Coal fired Boilers

- MCR up to 230 tph
- Bi-drum or monodrum design
- Suitable for CAD or class L stoker
- Controlled or uncontrolled superheater
- High efficiency



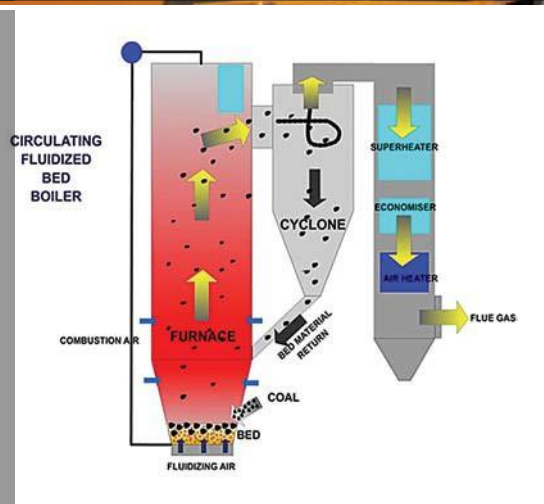
Biomass fired Boilers

- Multi fuel capability
- Bi-drum or monodrum design
- MCR up to 300 tph
- High efficiency
- Controlled or uncontrolled superheater



Fluidised bed Boilers

- Fuel flexibility
- Ultra low emissions
- High combustion efficiency
- Low capital cost
- MCR up to 300tph
- Low maintenance
- High availability

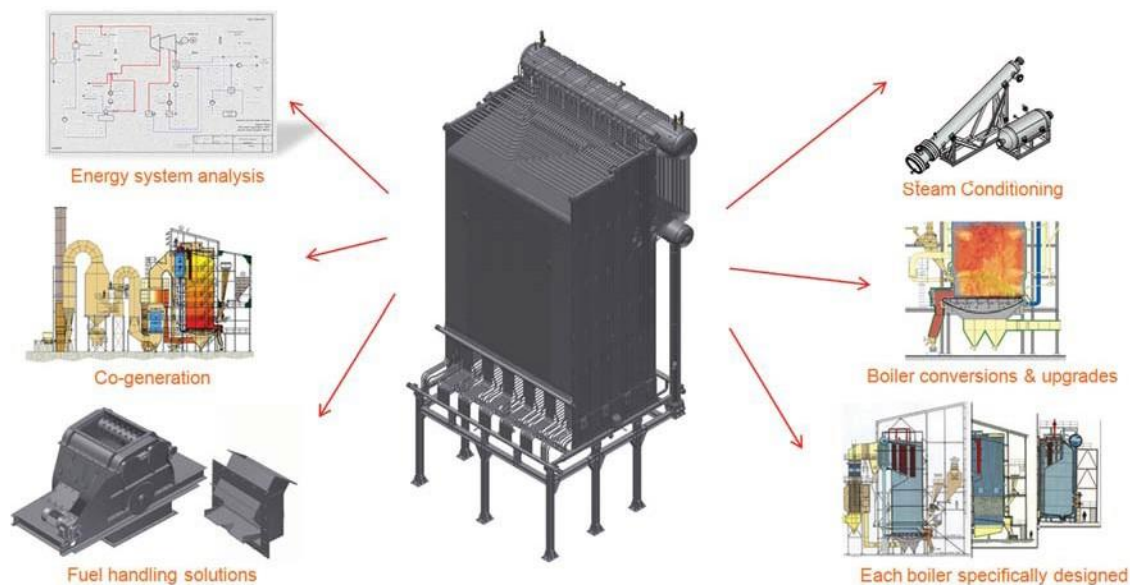


Waste Heat Recovery Boilers

60 T/h, 60 bar Saturated Steam Waste Heat Recovery Boiler under construction in Copper Smelter application.



Solutions Driven



Spares, Pressure Parts and Ancillary Equipment

A full range of original equipment spares is immediately available nationwide for all JOHN THOMPSON and ICAL boilers, stokers, mills and other ancillary equipment. A large proportion of cast spares are produced in our own foundry in Bellville, Cape Town, which is licensed to produce all castings under the Meehanite process. It is the only foundry in South Africa dedicated solely to boiler castings.



After Sales Service

This service includes the preparation of boilers for statutory inspections, re-tubes, and burner/stoker repairs as well as on or off site conversions including capacity and/or efficiency uprates. Our service teams also provide recommendations regarding maintenance and service contracts for trouble-free running of plant in addition to training and operational optimisation.



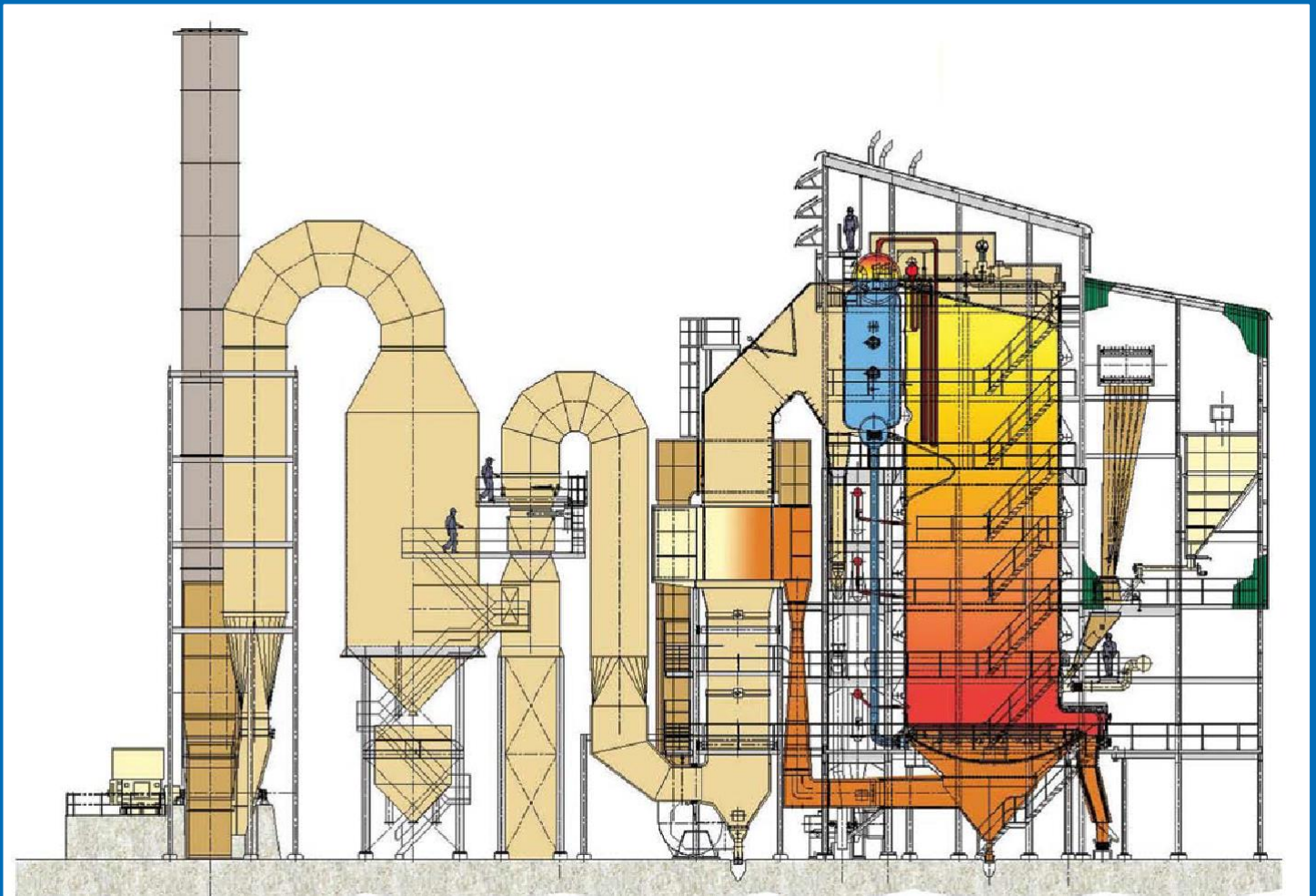
CAPABILITIES AT A GLANCE

Variety of new boilers to suit various fuels and applications:

- Grate fired units of bi-drum and monodrum designs for biomass and coal
- Oil and gas fired boilers
- AFBC and CFBC boilers for a variety of fuels
- Lean gas fired boilers
- Waste heat recovery boilers.

Aftermarket business incorporating:

- Capacity uprates
- Efficiency improvements
- Retubes, repairs and maintenance
- Combustion equipment
- OEM spares
- Reliability studies
- Inspections and metallurgical surveys
- Training
- Operational optimisation.



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