

# PACKAGE BOILERS



Your One-Stop Global Energy Supply Partner

# ACTOM

# Introduction

JOHN THOMPSON has a long history in the boiler industry and has its roots in the Industrial Revolution of nineteenth-century England. Now, John Thompson is a division of ACTOM (Pty) Ltd, with its principal focus on being the best boiler and environmental solutions company.

We specialise in the design and manufacture of package firetube boilers and industrial watertube tube boilers and also retrofit and maintain utility boilers and environmental equipment.

This brochure covers the products and services of our Package Boilers business unit. The firetube boilers range in steam capacity from 1 t/h up to 32 t/h and include coal-fired boilers, biomass-fired boilers, oil / gas-fired

boilers and custom-designed waste-heat boilers.

John Thompson's head office and factory are located near Cape Town and during the past 60 years we have supplied over 4 000 firetube boilers to customers in many industries in Africa, Europe, South-East Asia, the Middle-East, South America and Australia.

All of our boilers now incorporate spiral-tube technology, developed

in our test centre, which enhances thermal efficiency and reduces fuel consumption and CO<sub>2</sub> emission.

The boilers are currently designed and manufactured in compliance with the latest international standard, EN12953, and are inspected and certified by an Approved Inspection Authority before dispatch.

For further information about John Thompson, its boilers and services, please visit our website: [www.johnthompson.co.za](http://www.johnthompson.co.za)

## BOILER PRODUCT RANGE

Oil / Gas	THOMPSON ENVIROPAC											
	Model number		TE500	TE650	TE800	TE1000	TE1200	TE1600	TE2000	TE2600	TE3200	
	Steam output	kg/h	5 000	6 500	8 000	10 000	12 000	16 000	20 000	26 000	32 000	
	Boiler rating	kW	3 134	4 075	5 015	6 269	7 522	10 030	12 537	16 298	20 059	
	Oil consumption	kg/h	302	392	482	602	723	961	1 202	N/A	1 922	
	Gas consumption	Nm3/h	329	427	525	656	788	1 047	1 309	1 702	2 094	
	Oil: GCV 43 400 kJ/kg, efficiency 86% on GCV, 92% on NCV Gas: GCV 41 300 kJ/Nm3, efficiency 83% on GCV, 89% on NCV											
Coal / Biomass	THOMPSON EUROPAC											
	Model number		TU180	TU320	TU500	TU675	TU800	TU1050	TU1350	TU1600	TU2100	
	Steam output	kg/h	1 800	3 200	5 000	6 750	8 000	10 500	13 500	16 000	21 000	
	Boiler rating	kW	1 128	2 006	3 134	4 231	5 015	6 582	8 463	10 030	13 164	
	Coal consumption	kg/h	177	314	491	663	785	1 031	1 326	1 571	2 062	
	Coal: GCV 27 500 kJ/kg, peas size grading, efficiency 84% on GCV, 87% on NCV Steam output on biomass is subject to the fuel analysis											
	Biomass	THOMPSON TORRIPAC										
Model number		TO400	TO600	TO1000	TO1600	TO2000	TO2500					
Generator rating		kg/h	4 000	6 000	10 000	16 000	20 000	25 000				
Wood consumption		kg/h	1 509	2 264	3 776	5 996	7 490	9 363				
Wood chips: NCV 8 256 kJ/kg, moisture content 50%, efficiency 87.70% on GCV, 70.68% on NCV Steam output: based on 105°C feedwater temperature, operating at 28 bar Performance and fuel consumption is subject to biomass analysis												
Oil / Gas		THOMPSON REDIPAC										
		Model number		TR100	TR200	TR300	TR400	TR500				
	Steam output	kg/h	1 000	2 000	3 000	4 000	5 000					
	Boiler rating	kW	627	1 254	1 880	2 507	3 134					
	Oil consumption	kg/h	63	125	189	251	309					
	Gas consumption	Nm³/h	69	136	206	273	337					
	Oil: GCV 43 400 kJ/kg, efficiency 84% on GCV, 90% on NCV Gas: GCV 41 300 kJ/Nm3, efficiency 82% on GCV, 88% on NCV											
Wood	THOMPSON SIMPAC											
	Model number		TS400	TS500	TS600							
	Steam output	kg/h	4 000	5 000	6 000							
	Boiler rating	kW	2 510	3 140	3 760							
	Wood consumption	kg/h	791	990	1 186							
	Wood loas: NCV 15 000 kJ/kg, moisture content 25%, efficiency 77% on GCV, 85% on NCV											

**Note:** Standard design pressures are 11, 14, 17.25, and 20 bar(g) (except the Torripac). Steam output from and at 100°C (at a barometric pressure of 101.3 kPa absolute). While all information is given in good faith, it should be confirmed before establishing any contractual commitment.

## Services

- Manufacturing
- Technical support
- Steam out-sourcing
- Turnkey installation
- Energy management
- High technology NDT
- Repairs & refurbishment
- Metallurgical inspection
- Boilerplant management
- Commissioning & testing
- After sales service & spares
- Operator & supervisor training
- Coal /Oil /Gas / Biomass conversions



Thompson Spiral - Tube Technology

## Ancillary Plant

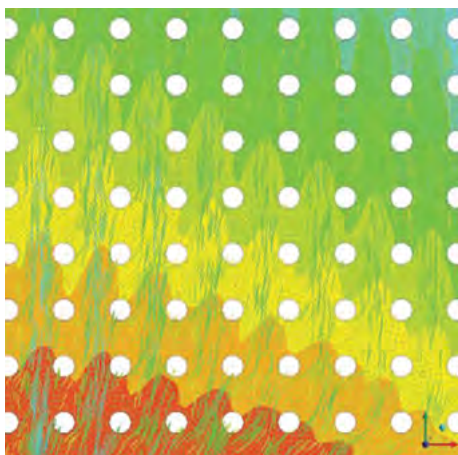
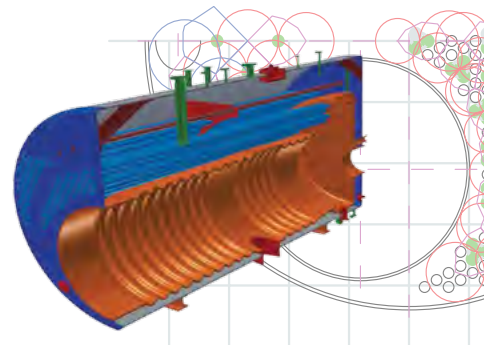
The following ancillary plant is available:

- Multi-cyclone grit collectors to reduce particulate emission to below 250 mg/Nm<sup>3</sup>
- Pulse-jet fabric filters (bag filters) to reduce particulate emission to below 50 mg/Nm<sup>3</sup>
- Atmospheric and pressure type deaerators
- Custom-designed waste-heat boilers
- Feedwater storage tanks
- Ducting and chimneys
- Fuel handling plant
- Ash handling plant
- Blowdown vessels
- Oil ring mains
- Economisers
- Pipework

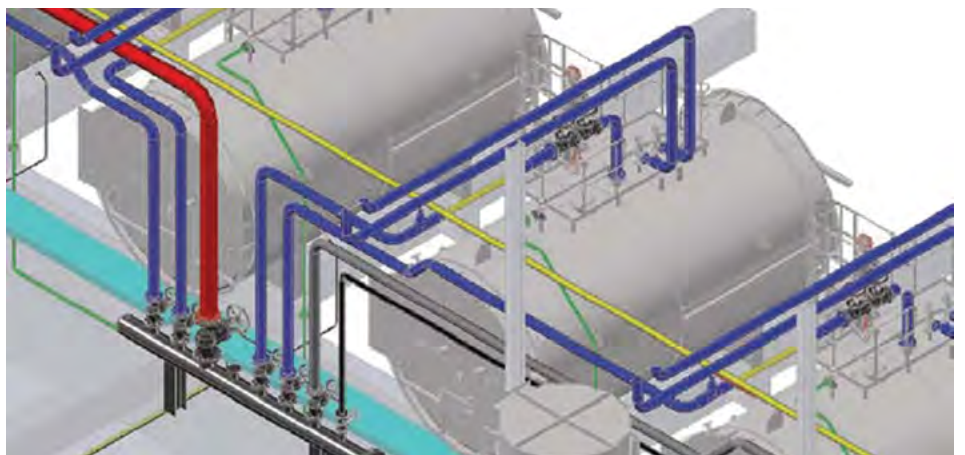
## Engineering Capabilities

Our design and engineering staff undertake work in the following disciplines:

- Boiler design
- Pipe stressing
- Circulation modelling
- Combustion modelling
- Pressure vessel design
- Instrumentation and control
- On-site investigations and audits
- Computational fluid dynamics (CFD)



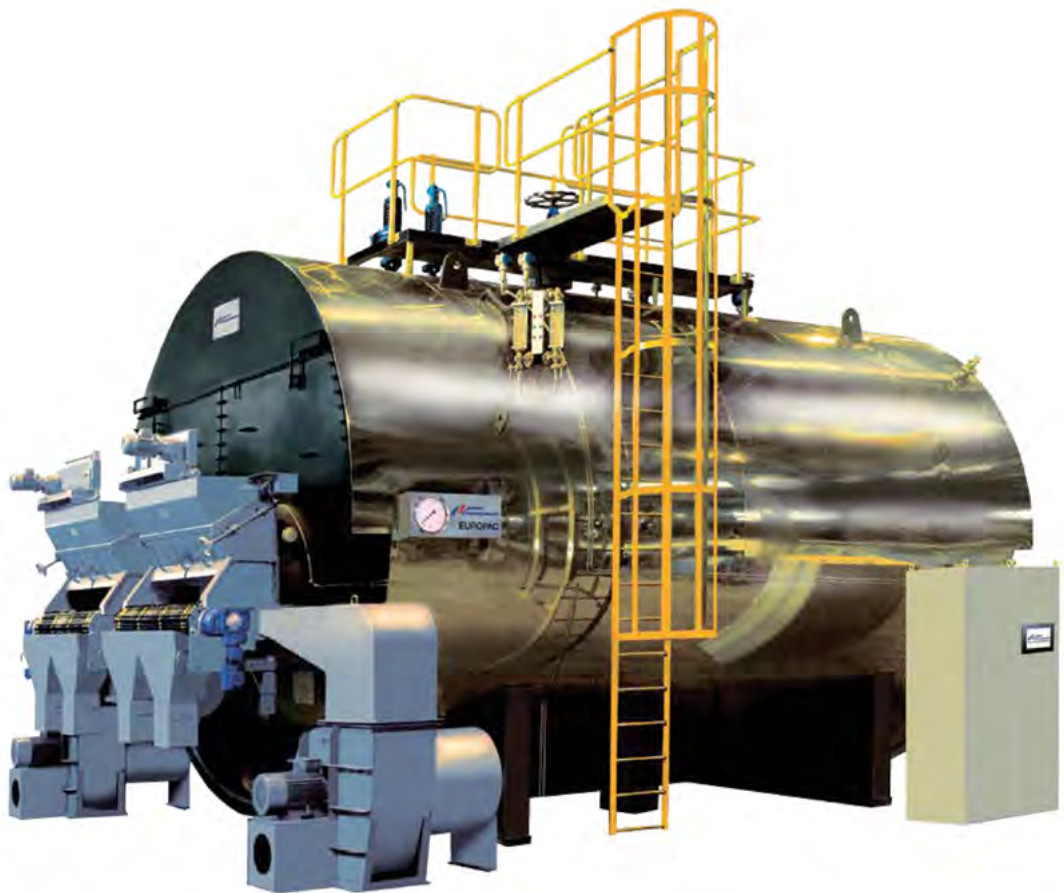
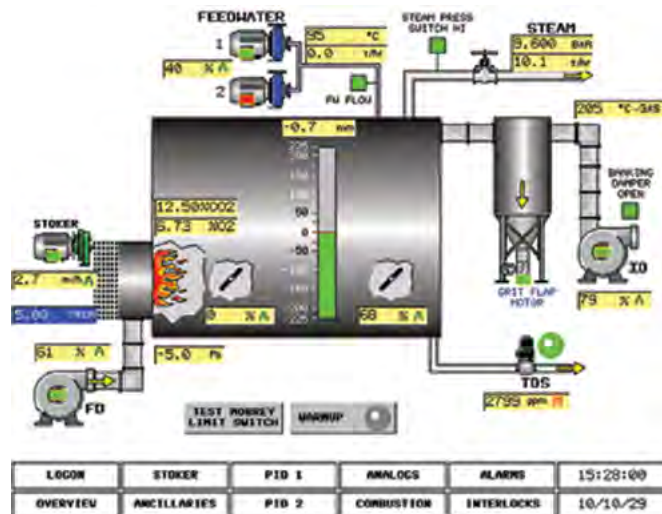
CFD graphic of an economiser bank



Boiler plant 3D model

# Thompson Europac

## Coal /Biomass-fired Boiler with Euro-BMS PLC-controlled Boiler Management System



## Features & Benefits

- Thermal efficiency of 84% with GCV 27 500 kJ/kg provides 10 kg steam per kg coal
- Three-pass conventional firetube wet-back design with spiral-tubes in both tube passes
- Flanged end-plates in place of flat end-plates on selected boilers to eliminate tee-butt weld joints
- This reduces susceptibility to corrosion fatigue and extends boiler life
- Euro-BMS PLC-controlled boiler management system to increase efficiency and reduce operating and maintenance costs
- Variable-speed drives for FD fan, ID fan, feedpumps and stoker to reduce power consumption
- Total package incorporates swinging chute, chaingrate stoker, feedwater pumps, control panel, grit collector, fans and all necessary valves and fittings

# Thompson Triumph

## Chaingrate Stoker



**Biomass Fuels** burnt on our Chaingrate Stoker include wood pucks, wood chips, wood pellets, grape pomace pellets, nut shells, torrefied biomass and sunflower husks.

### Features & Benefits

- Swinging chute for uniform fuel distribution
- Robust design and construction for long life
- Planetary gearbox with electronic shearpin protection
- Motorised undergrate dampers for optimal air zoning
- Combustion efficiency 97% for Peas size coal GCV 27 500 kJ/kg
- Combustion efficiency 93% for Smalls size coal GCV 25 500 kJ/kg
- Total package incorporates a chaingrate stoker with variable-speed drive, FD fan, combustion controls and control panel
- All cast iron components are produced at the John Thompson foundry under the Meehanite process – the international benchmark for guaranteed quality

## Thompson Enviropac

### Oil / Gas-fired Boiler

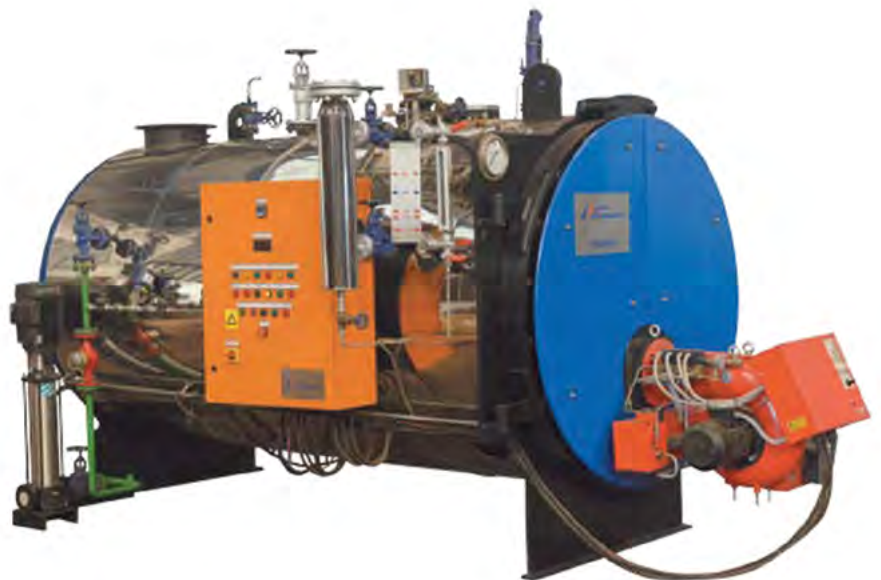


#### Features & Benefits

- High thermal efficiency of up to 91.5% at rated output to reduce fuel consumption and CO2 emission (An economiser can be provided for ultra-high efficiency)
- Three-pass conventional firetube wet-back design with spiral-tubes in both tube passes
- Flanged end-plates in place of flat end-plates on selected boilers to eliminate tee-butt weld joints. This reduces susceptibility to corrosion fatigue and extends boiler life
- Combustion equipment to suit a wide range of oil viscosities and gas compositions
- Total package incorporates burner, fan, feedwater pump, control panel and all necessary valves and fittings
- PLC- / Microprocessor-based combustion control system for optimum combustion efficiency
- Twin burner boilers are available for boiler ratings above 26 000 kg/h

## Thompson Redipac

### Oil / Gas-fired Boiler



#### Features & Benefits

- High thermal efficiency of up to 90% when oil-fired and 88% when gas-fired
- Three-pass reverse-flame, spiral-tube, wet-back design with a low furnace rating
- Combustion equipment to suit a wide range of oil viscosities and gas compositions
- PLC- / Microprocessor-based combustion control system for optimum combustion efficiency
- Total package incorporates burner, fan, feedwater pump, control panel and all necessary valves and fittings

## Thompson Simpac

### Wood-fired Boiler with Fixed-grate

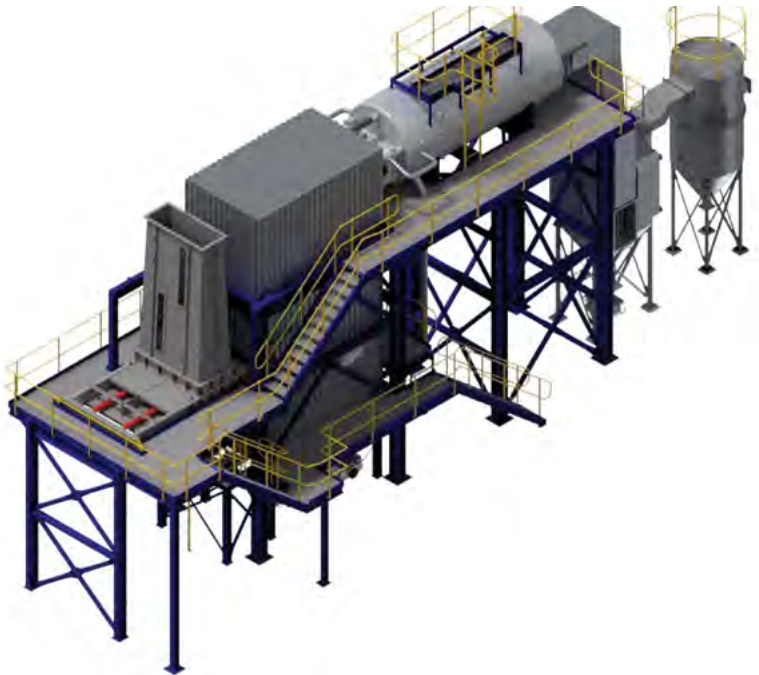


#### Features & Benefits

- High thermal efficiency of 85%
- Full boiler rating can be achieved with wood moisture content up to 25%
- Three-pass conventional wet-back design with spiral-tubes in both tube passes
- Fixed-grate of robust construction with high quality Meehanite cast iron grate bars for long life
- Total package incorporates a fixed-grate, feedwater pumps, control panel, ID fan with variable-speed control, and all necessary valves and fittings

## Thompson Torripac

### Biomass-fired Hybrid Steam Boiler



#### Features & Benefits

- High thermal efficiency
- Water-cooled furnace to achieve a low excess air ratio and low radiation loss
- Air preheat to  $>190^{\circ}\text{C}$  for effective high moisture content fuel combustion
- Cooled robust vibrating grate, spreading and agitating the fuel
- Large range of biomass fuels with moisture content up to 50%
- Added superheater for power generation up to 4.3MWp

# John Thompson

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