

## THOMPSON TRIUMPH®

Chainrate Stoker



# ACTOM

An ALSTOM technology partner

# JOHN THOMPSON TRIUMPH® Chaingrate Stoker

## Design Concept

- Cross-feed firing, inherently smokeless
- Robust design and construction for long life
- Total package incorporates a chain-grate stoker with AC variable speed drive, FD fan, combustion controls and control panel

## Combustion Efficiencies

- Typical 93% for Smalls size coal
  - Typical 97% for Peas size coal
- Efficiencies based upon:  
Smalls coal GCV 26 MJ/kg  
Peas coal GCV 28 MJ/kg
- Suitable for boiler ratings from 1 800 kg/h to 10 500 kg/h
  - Suitable for furnace ratings from 1 000 kW to 6 000 kW

## Quality

- Quality system is accredited to SANS 9001: 2000
- All cast iron components are produced at the JT foundry under the Meehanite process – the international benchmark for guaranteed quality
- Full range of support services available.

### Combustion on the John Thompson Triumph Chaingrate Stoker takes place in three stages:

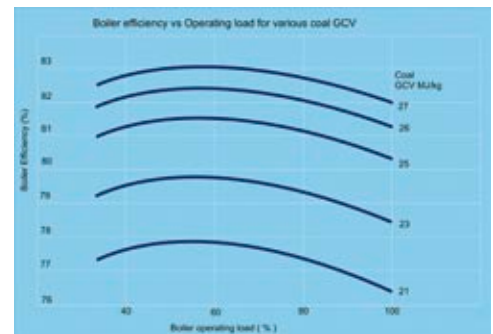
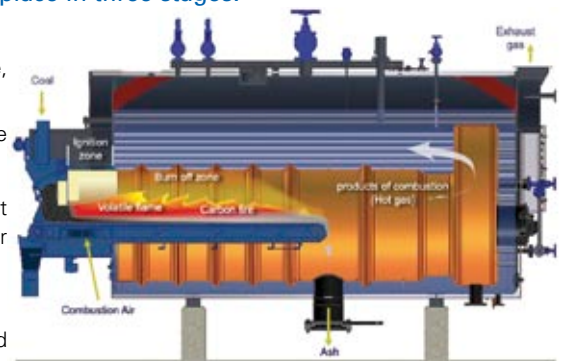
- Firstly, the volatiles or tarry fraction is distilled off and the coal ignited, then
- the coke formed during the first stage is burned leaving a layer of ash on the grate, and finally
- the ash is transported to the ash port through a high temperature oxidizing atmosphere to burn off most of the remaining carbon.

For efficient combustion to take place the air provided by the forced draught fan must be evenly distributed across the fuel bed. There are three devices inside the stoker for controlling air distribution. These are:

- Fixed inlet guide vanes to distribute the air evenly across its width
- Controllable undergrate dampers to regulate the amount of air which is allowed to flow to the tail end of the stoker
- Fixed vanes located at the end of the stoker to distribute the air through the carbon lean ash layer which has a low resistance to air flow.

From a fundamental analysis of combustion on the stoker it follows that there are three coal characteristics which affect performance:

- The rate at which the coal can be ignited. This is measured to a certain extent by the volatile content but because volatiles can contain inert gases, samples are best tested in a combustion pot which is designed to measure the rate of ignition of a particular sample
- The particle size distribution which dictates the resistance to air flow through the fuel bed, and
- The ash fusion temperature. Low ash fusion temperature coals cannot be burnt at high combustion intensities without fear of slag formation on the grate.



Stoker Model Number	TT	180	320	500	675	800	1050
Nominal Grate Area	m <sup>2</sup>	1.4	2.3	3.1	4.3	5.0	6.6
Overall Length	mm	2 661	3 891	3 660	4 120	4 270	4 955
Minimum Inside Diameter of Furnace	mm	925	925	1 240	1 420	1 610	1 778
Length in Furnace	mm	1 536	2 766	2 385	2 844	2 915	3 525
Approximate Mass of Complete Stoker	kg	1 944	2 466	3 250	4 358	4 459	5 908
Stoker Drive Motor	kW	0.18	0.18	0.18	0.18	0.18	0.18
FD Fan Motor	kW	1.1	2.2	4.0	7.5	11	11

Note: All dimensions and masses are approximate only. Whilst all information is given in good faith, it should be confirmed before establishing any contractual commitment.