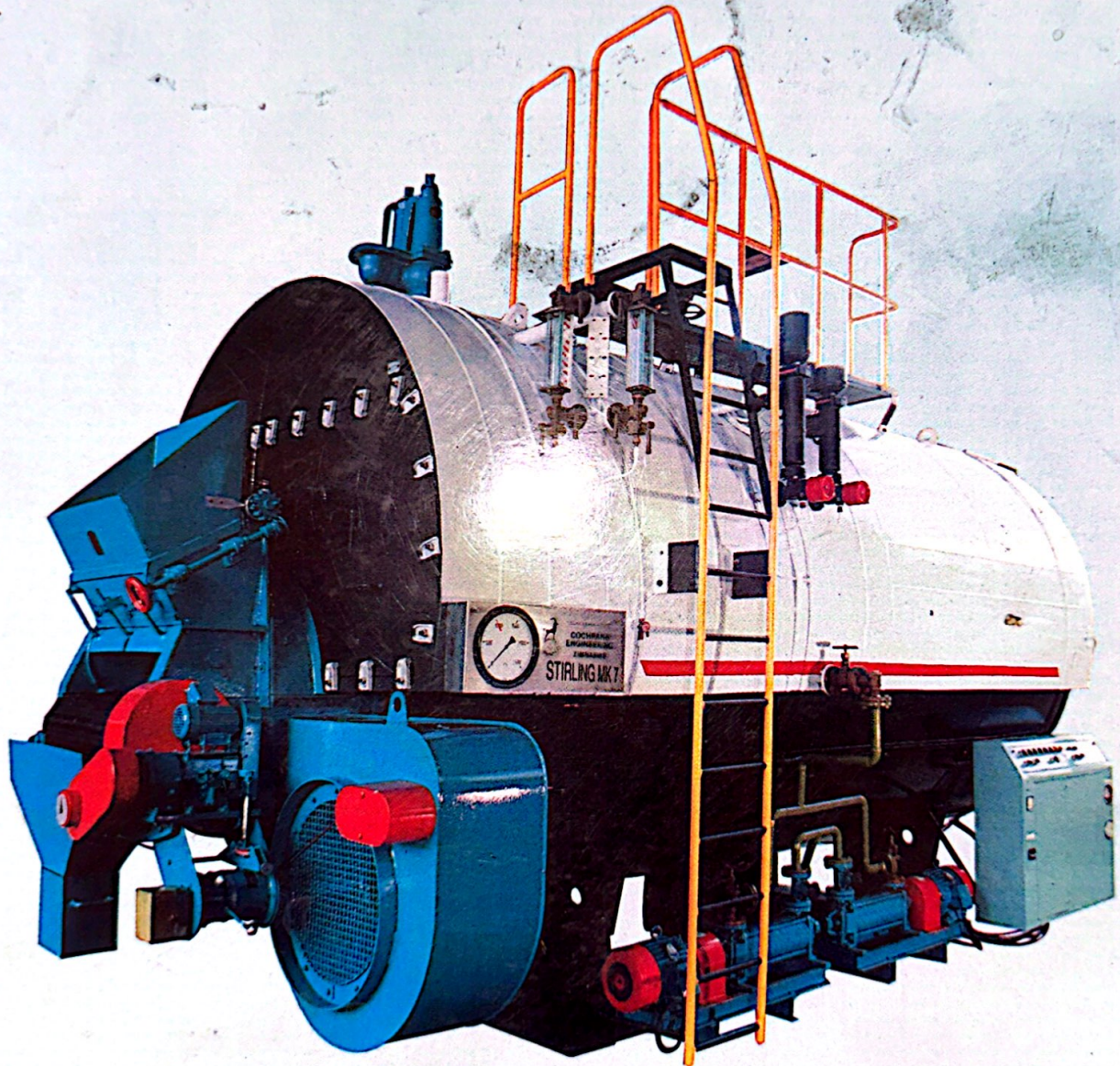




Cochrane Engineering (Pvt) Ltd



STIRLING MK7 BOILER



COCHRANE ENGINEERING (Pvt.) Ltd.

THE STIRLING BOILER

COCHRANE ENGINEERING (PVT) LTD proudly offer you their STIRLING MK7 range of boilers.

As Zimbabwe's largest boiler and pressure vessel manufacturer, Cochrane Engineering has over 40 years of boiler manufacturing experience. We have supplied many hundreds of boilers to the local market and neighbouring countries over this period, which are giving excellent service in the field.

In keeping with our policy of ongoing technical improvement of our product, both thermally and mechanically, we are pleased to introduce our latest fully wet back boiler. The new boiler has been designed to compliment our popular efficient range of semi-wetback Greenock boilers which were introduced in 1982 to satisfy local demand.

The STIRLING MK7 boiler comes to you with all the Cochrane manufacturing experience and design expertise, and is built to British Standard 2790: 1992 with latest Amendments ensuring the quality and reliability you have come to expect from our range of boilers and associated equipment.

The STIRLING MK7 steam boiler is a modern efficient, packaged unit. It is a three pass shell boiler design, coal fired with a fully water cooled combustion chamber. The boiler, which has been developed over many years, comes in eight models ranging from 4500kg/hr to 20000kg/hr, with a standard working pressure of 1000kPa. Boilers of a higher working pressure can also be offered.

The boilers are manufactured in our Tilbury Road Works in Willowvale, Harare under the supervision of an international 3rd party Inspection Authority ensuring compliance to the latest British Standard code and the Factories & Works Boiler Regulations.

The boiler is fitted with a proven chaingrate stoker of rugged design. The stoker unit being one of the hardest worked components of any shell boiler, is fitted with wide links for improved combustion performance. Combustion air is provided by means of balanced draught equipment controlled by either a single lever control unit, or as an optional extra, a solid state type electronic controller.

These devices correctly adjust the induced draught dampers, forced draught damper and stoker motor speed for the most efficient combustion conditions. Efficiencies at full rated capacity of up to 79% are attainable with washed pea coal having a gross calorific value of 29000kJ/kg (29MJ/hg).

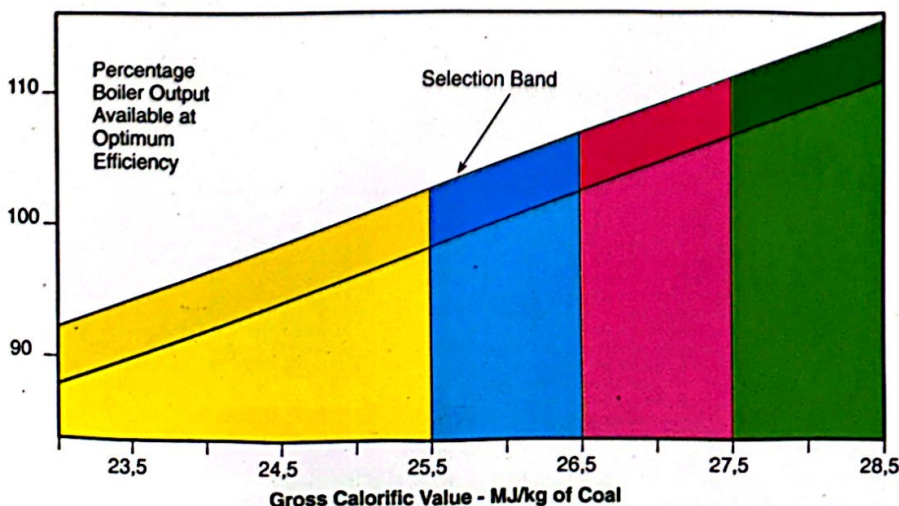
The graph indicates how the boiler output is affected by the change in the calorific value of the fuel. The burning of fibrous fuels can also be accommodated.

A specially developed high efficiency low power input Induced Draught Fan is fitted to the STIRLING MK7 range of boiler. It has curved radially tipped blades for minimum fly ash build up. The fan impellor is statically and dynamically balanced at the assembly stage for smooth operation in service, with low fan speeds ensuring longevity. The forced draught fans fitted to the stoker are of the motor mounted type and are fitted with silencers.

Direct coupled twin multistage boiler feed pumps are mounted on the boiler sub-frame, ensuring 100% standby for boiler feedwater.

The control Panel houses all the associated electrical equipment, and is mounted on the boiler sub-frame in accordance with the packaged boiler concept.

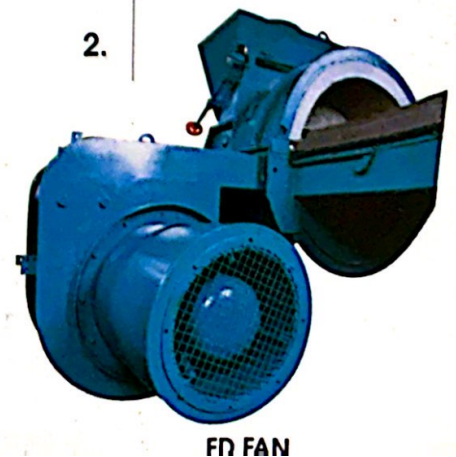
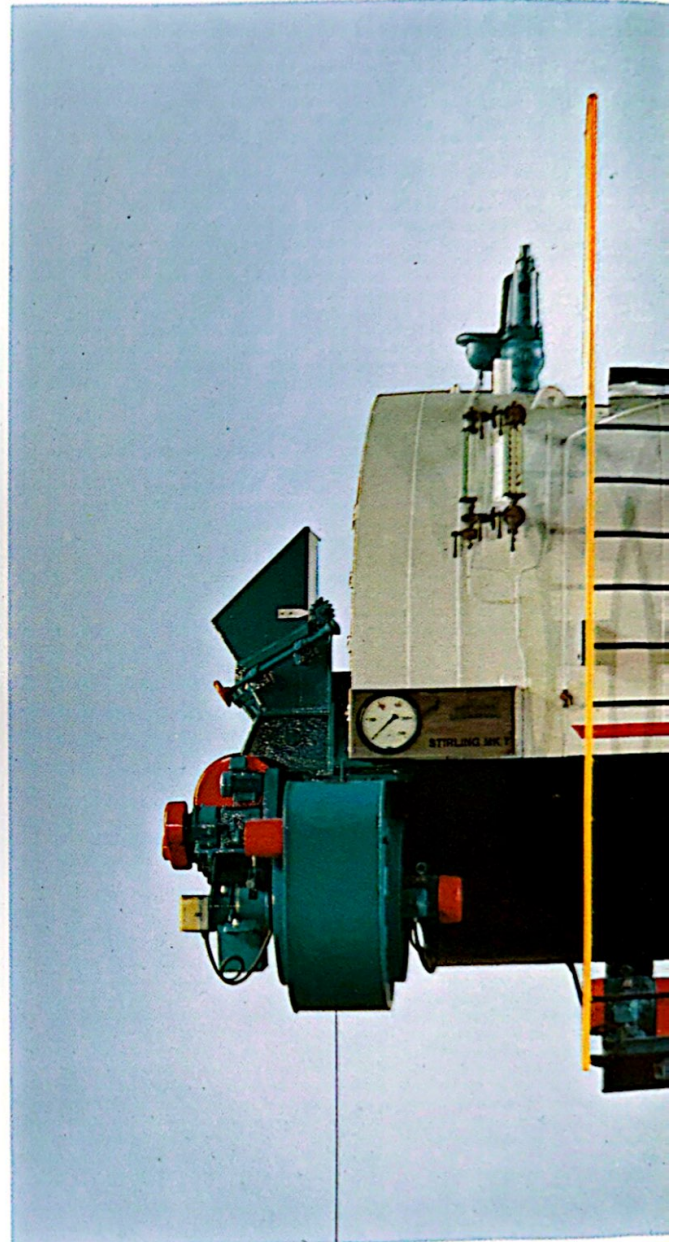
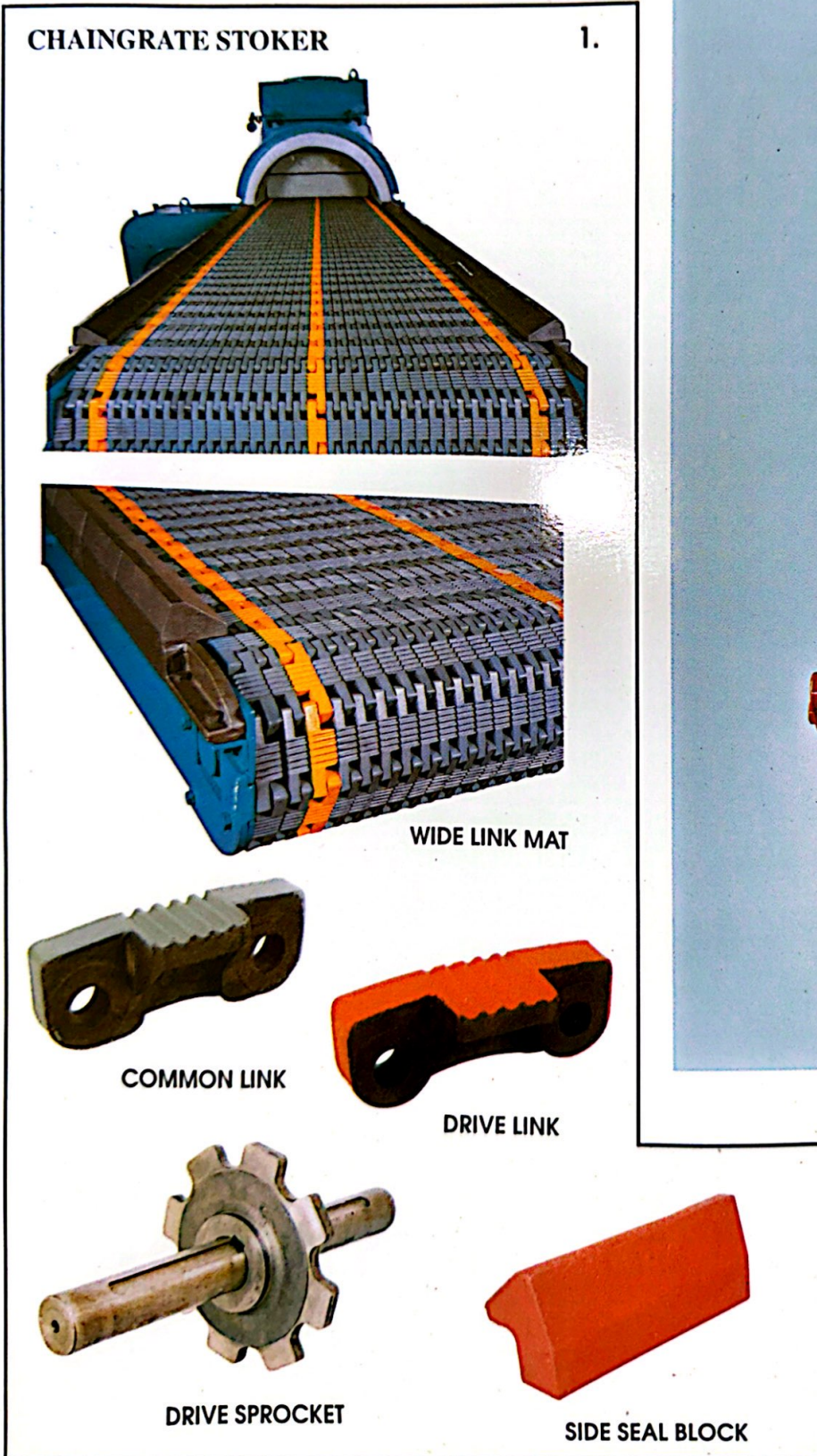
The Mountings and Level Control equipment fitted are of the highest quality supplied by reputable manufacturers. Sootblowing equipment is fitted as a standard feature to lengthen the intervals between tube cleaning, thus extending the boiler availability in service.



1. **Chainrate Stoker** - has been developed to efficiently burn a wide range of fuel available in Southern Africa. It is built on a rugged fabricated steel frame, which houses the undergrate air distribution system. The links are of the wide design for maximum strength and service life and are made up of only two types, a drive link and a common link. Link rods are of the fully floating type and do not require belling or fitting of washers and split pins but are retained by guide strips and can be easily changed.

The drive links engage with solid high grade cast iron drive sprockets keyed to the drive shaft. Side seals are in heat resisting cast iron or carbofrax as preferred.

2. **FD Fan** - this is flanged mounted off the stoker frame and is fitted with a direct mounted impellor onto a flanged motor, with a silencer unit attached to the inlet duct to reduce noise and improved operational environment.

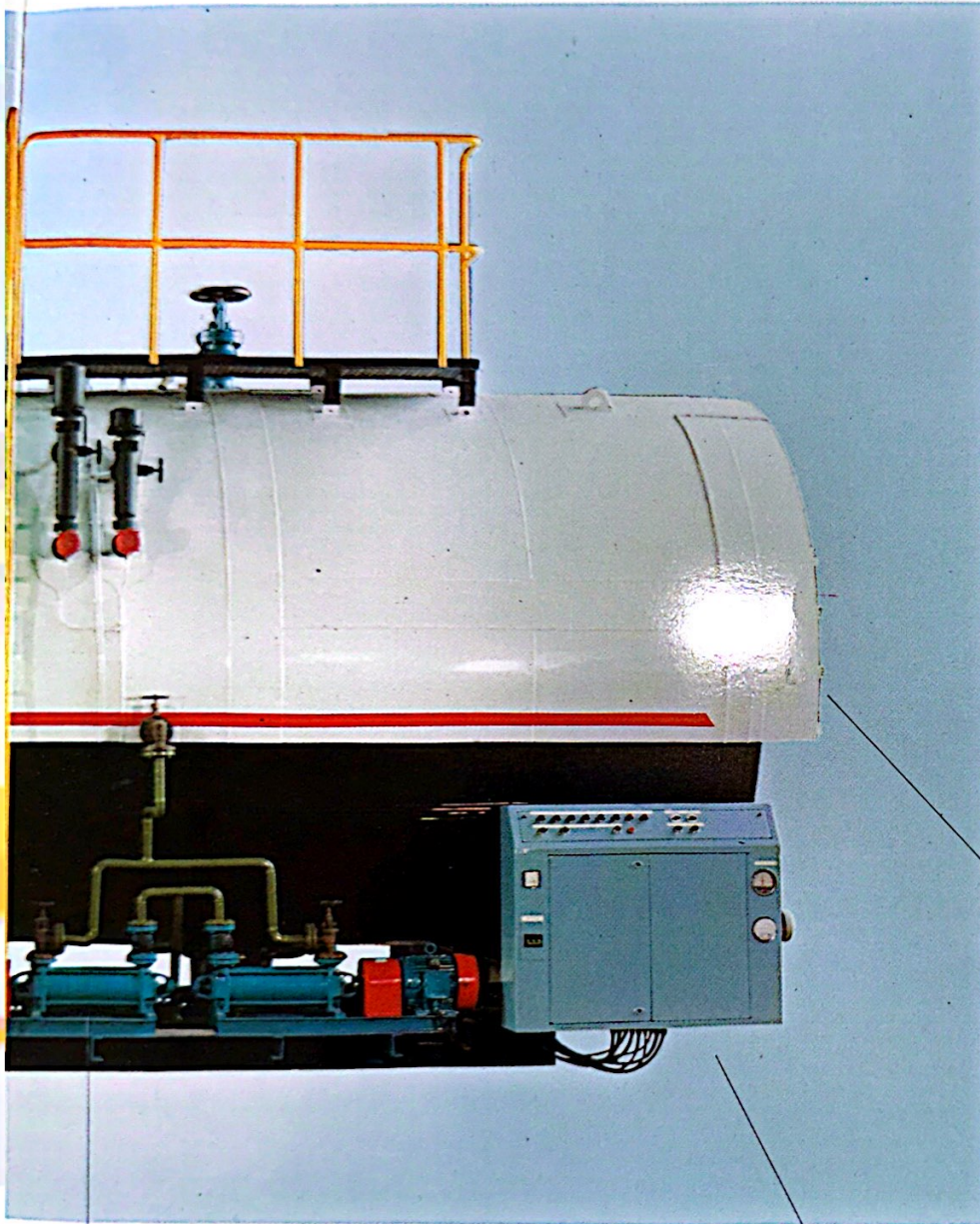


3. **Boiler Feedpumps** - twin boiler feed pumps of the Stork horizontal multistage type directly coupled to the drive motor. The pumps are mounted off the boiler frame.

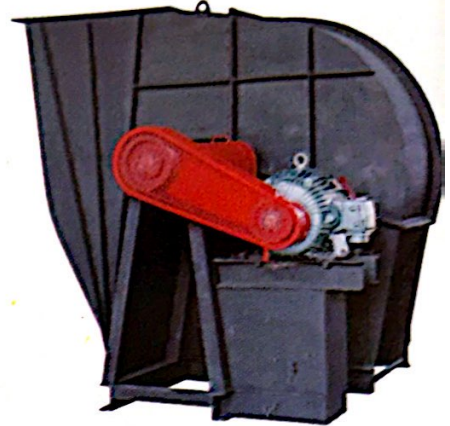
4. **Control Panel** - housing all the electrical equipment, indicator lamps, gauges and meters is mounted off the boiler frame in accordance with the packaged boiler concept.

5. **Sootblowers** - are fitted as standard to our Stirling MK7 boiler for in-service sootblowing of the tubes.

6. **Induced Draught Fan** - this is generally mounted off the boiler and has a curved radially tipped blades and has been developed for high efficiency with low power inputs.

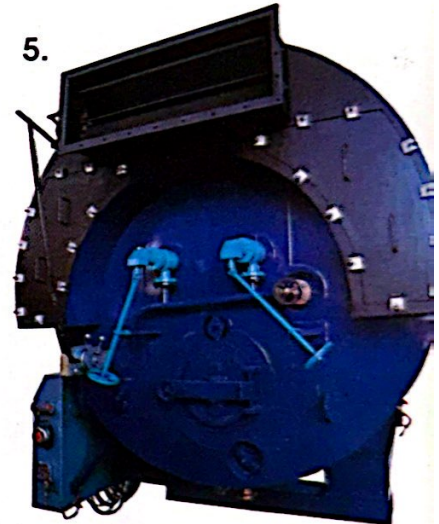


6.



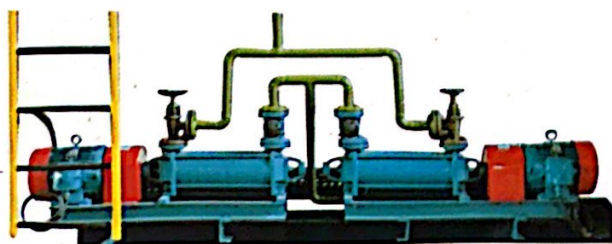
INDUCED DRAUGHT FAN

5.



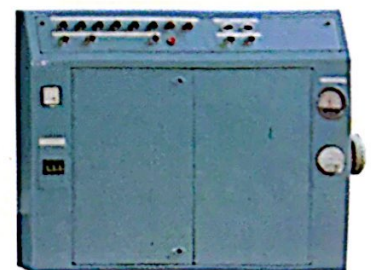
SOOT BLOWERS

3.

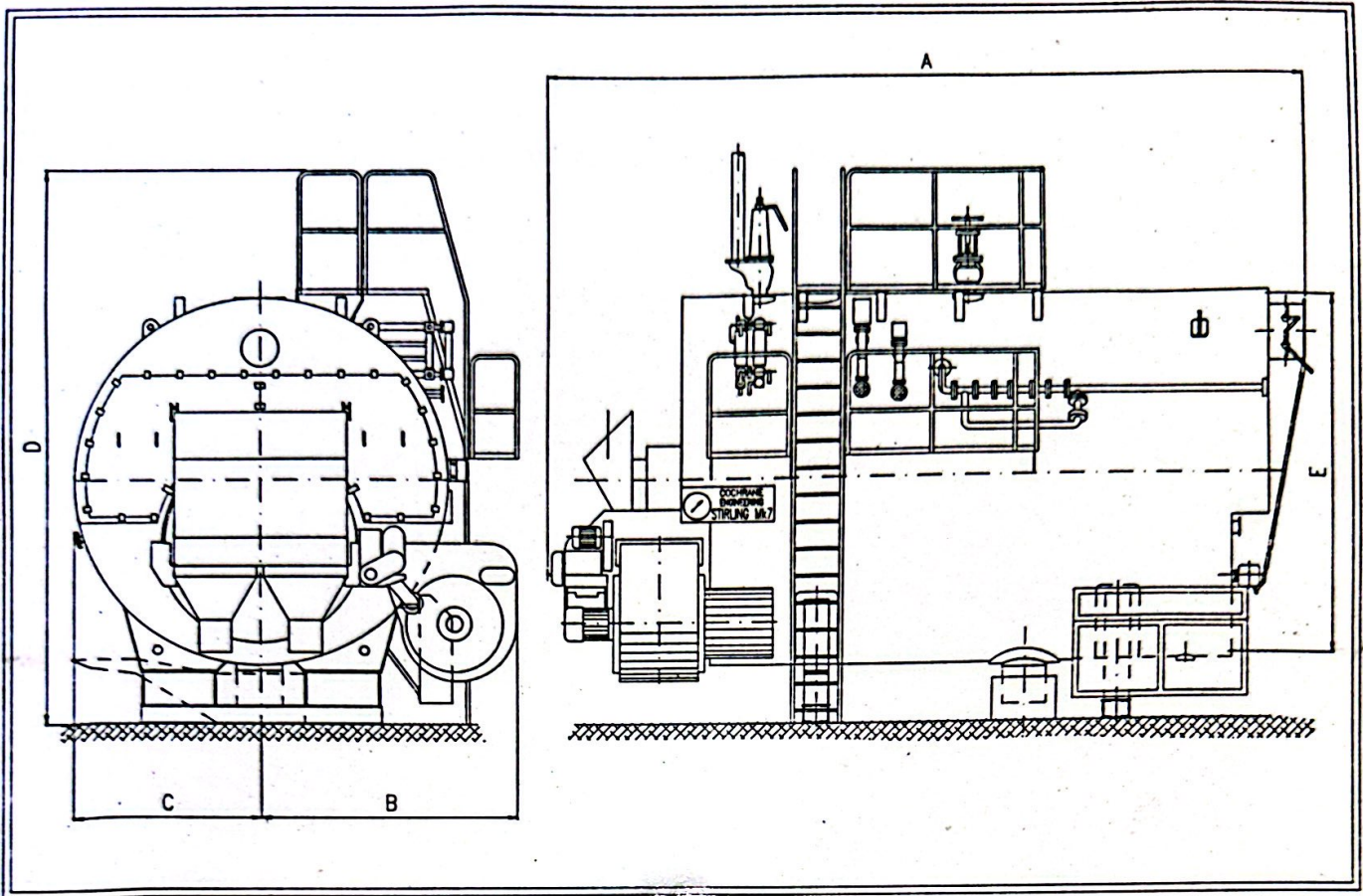


BOILER FEEDPUMPS

4.



CONTROL PANEL



**STIRLING - Mk7
FULLY WET BACK BOILER GENERAL DATA**

| Model | | 4500 | 6000 | 8000 | 10000 | 12000 | 14000 | 17000 | 20000 |
|---|--------|------|------|------|-------|-------|-------|-------|-------|
| Evaporation Rate F & At 100°C | kg/hr | 4700 | 6250 | 8450 | 10500 | 12450 | 14300 | 17500 | 21000 |
| Design Pressure | kPa | 1100 | 1100 | 1100 | 1100 | 1100 | 1100 | 1100 | 1100 |
| Working Pressure | kPa | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 | 1000 |
| BOILER DIMENSIONS in mm | | | | | | | | | |
| Overall Length of Boiler | A | 6750 | 6900 | 7000 | 7100 | 6900 | 6900 | 7700 | 7800 |
| Max. WIDTH on Right from Boiler centre | B | 1900 | 2050 | 2275 | 2375 | 2500 | 2625 | 2850 | 3400 |
| Max. WIDTH on Left from Boiler centre | C | 1750 | 1750 | 1750 | 1875 | 2500 | 2625 | 2850 | 3400 |
| Max. HEIGHT from Floor to Handrails Top | D | 4225 | 4525 | 4975 | 5250 | 5500 | 5750 | 6100 | 6600 |
| Boiler Shell Diameter | E | 2400 | 2700 | 3150 | 3350 | 3600 | 3850 | 4200 | 4700 |
| Number of fuels | | 1 | 1 | 1 | 1 | 2 | 2 | 2 | 2 |
| Boiler Weight EMPTY (Dry) | Tonnes | 25 | 30 | 35 | 45 | 55 | 65 | 75 | 90 |
| Boiler Weight upto AWL (Wet) | Tonnes | 36 | 45 | 55 | 65 | 75 | 90 | 110 | 130 |
| Coal Consumption | kg/hr | 480 | 640 | 865 | 1060 | 1280 | 1460 | 1740 | 2150 |
| Total Power Required | KW | 33 | 43 | 62 | 70 | 84 | 87 | 91 | 99 |

NOTE: ALL DIMENSIONS AND WEIGHTS ARE APPROXIMATE ONLY. PLEASE REFER TO ENGINEERING DRAWINGS FOR DETAILED INFORMATION

STANDARD OPERATING PRESSURE RANGES ARE 1000, 1380 AND 1650 kPa ONLY

AN OIL FIRED OPTION CAN BE OFFERED FOR THE ABOVE RANGE