RENTECH CASE STUDY: UNITED FISHING STEAM BOILERS

18 Ton Boiler with Limpsfield Burner.

UNITED FISHING ENTERPRISES

install

Limpsfield

Burners

and Standardise on

AUTOFLAME®

throughout their plant.

Mr Jurgen Berthold, Factory Engineer of United Fishing, Walvis Bay turned to ***Rentech*** to reduce fuel bill and improve the plants efficiency , this to ensure maximum savings and minimum downtime during 2005 fishing season.

Rentech came up with the perfect solution installing Limpsfield burners in boiler room and then converting existing Hamworthy Rotary Cup burners to AUTOFLAME for use in Fishmeal plant.

Up till now popular belief has been that pressure jet burners cannot fire in short combustion chambers , which are common with most boilers fitted with rotary cup burners , thereby limiting use of pressure jet burners. With the Limpsfield burner we have solved this problem and are able to easily fire high volumes of fuel into small/short combustion chambers.

Specification

AUTOFLAME
Combustion Management Systems

- Mk6 Evolution Burner Management System
- Air damper servomotor
- Autoflame 'V' slot oil valve and servomotor
- 1200 kg/h fuel into very short combustion chamber
- Variable speed drive control of combustion air fan
- Self adaptive UV amplification for flame safeguard
- Exhaust Gas Analysis trim, O_2, CO_2, CO & ΔT
- Modulating Boiler water level feedwater controls
- Data Transfer Interface and Data aquisition.

7.2 Ton Boiler with Limpsfield Burner

For Further Information, please contact:

RENTECH

Walvis Bay, Tel: +264 64 204327, Fax: +264 64 204328, email: info@rentech.bz

Walvis Bay, Namibia. Tel.: +264 64 204327, Fax: +264 64 204328, www.rentech.bz, info@rentech.bz

The ***Autoflame Combustion Management System*** uses a microprocessor to store paired values of fuel and air positions, and direct drive actuators to achieve an infinitly repeatable positioning accuracy of 0.1° angular.

The result is a massive fuel saving.

Being microprocessor based the Mk6 Evolution System incorporates a series of further ehancements; second setpoint control, optimum (choke) ignition position, intelligent boiler sequencing, fuel flow metering and boasts a total of 9 patents.

New to Namibia is the inclusion of steam / electric heater on fuel pump skid with ***Autoflame*** pre-heater electric control , which utilises thyristor (phase angle control type) solid state relay control.Phase angle control provides accuracy through cutting part of the sine semi wave to control the power supply to load , this largely solves overheating in heaters and thus eliminating cracking of oil.

Huge 38 kW fans supply combustion air to the burners. The fans are sized to provide sufficient air at high fire for safe, complete combustion. In reality a burner spends 80% of its life at less than 40% firing rate. At lower firing rates, the fan is pushing air against closed dampers, and in doing so consuming unnecessary electrical current. A variable speed drive allows the rpm of the fan motor to be reduced as the burners firing rate decreases. Electrical savings of 60 and 75% can be achieved. Additional benefits are reduced wear and tear on the motor, reduced electrical loading on the plant on start-up and a huge reduction in noise levels at low fire.

The existing boiler water level controls consisted of magnetic float switches set to switch the feed water pump on and off at pre-determined levels. This causes the boiler water level to fluctuate dramatically, affecting the plants ability to produce steam. Each time the feed water pump switches on; cold water is pumped into the boiler causing thermal shock. To compensate for the cool water, the burner must now ramp up to high fire, increasing the thermal loading on the boiler and forever chasing its tale as the cycle repeats itself. The***Autoflame*** system uses two separate capacitance probes to continually monitor the boiler water level to within 3 mm, and by means of a modulating feed water valve, introduces just enough water to make up for the steam requirement of the process. The intelligence of the microprocessor also monitors the wave signature of the boiler, recognises foaming at peak steam draw, monitors water temperature in, steam temperate and pressure out, and by means of calculation using the heat input of the burner also displays steam production. The result is a higher quality of constant steam as the process requires it.

The ***Autoflame*** Exhaust Gas Analyser uses three individual sensors to sample the O_2, CO and CO_2 contents of the exhaust gases. It continually monitors these gases with reference to the commissioned values and makes minute corrections to the air damper position to return combustion to optimum levels and thereby overcoming the everyday variations in atmospheric conditions and fuel quality.

Finally the ***Autoflame*** Data Transfer Interface collects up to 200 items of information from each boiler system and presents it locally on the operators PC, via the network to the Factory Engineers and remotely over the telephone line to ***Rentech's*** head office. Plant performance is monitored and trended to optimise maintenance, alarm conditions are logged with description, time and date stamp, plus reset time.


Mk6 Evolution Module


Variable Speed Drive

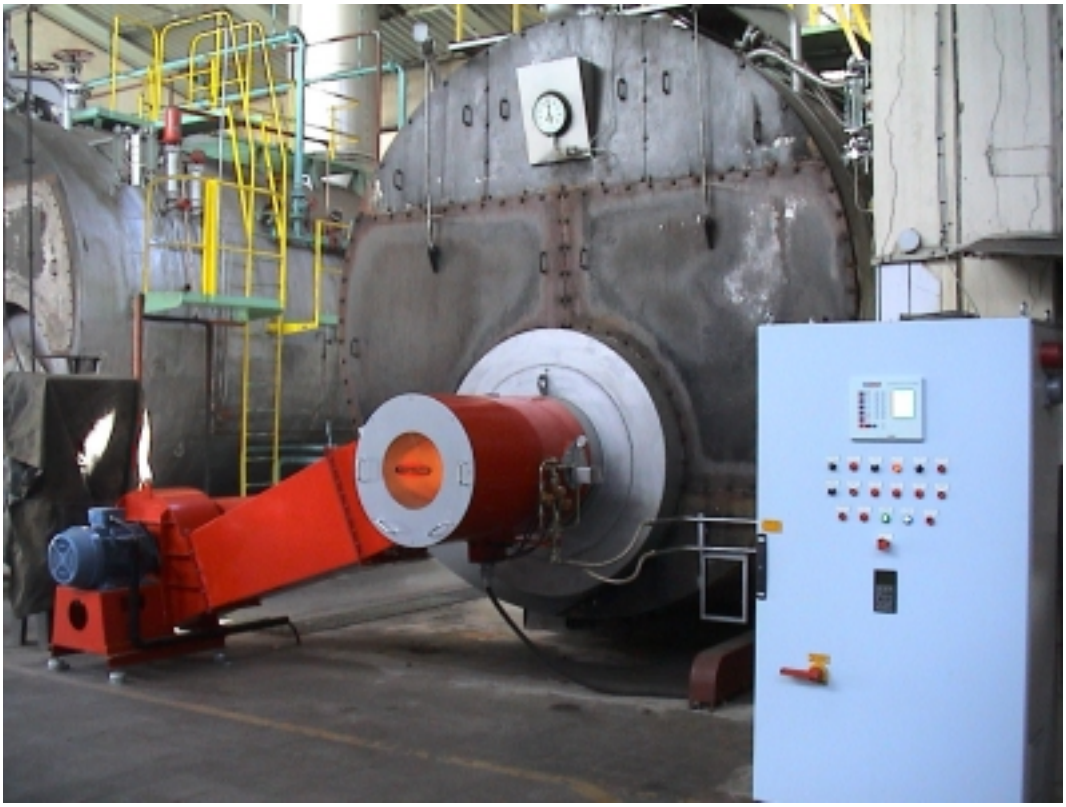

38kW Motor and Fan


Burner and Electric Panel


Steam Electric Heater

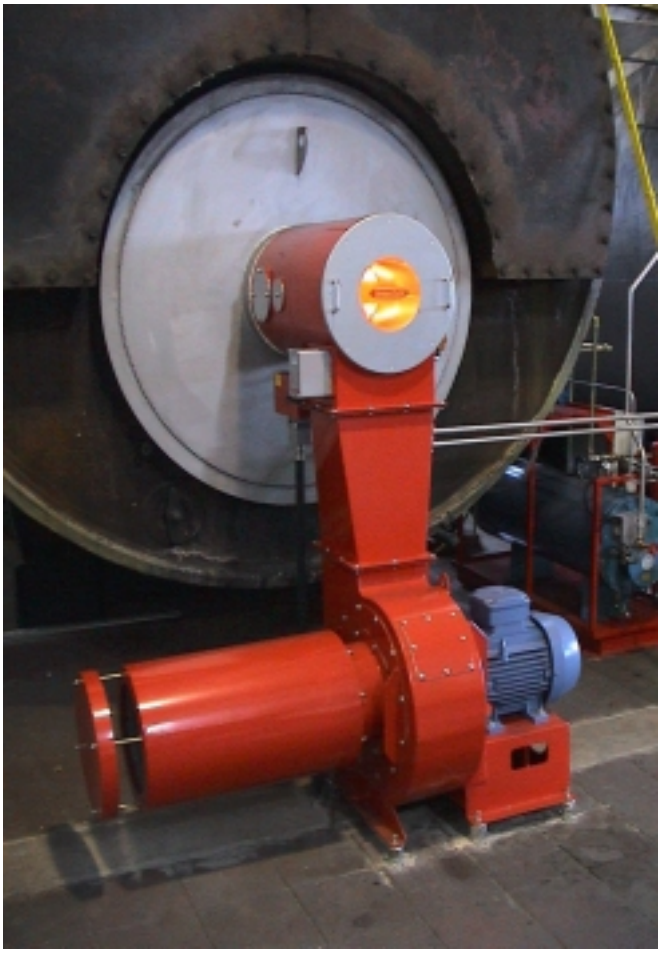

Exhaust Gas Analyser

18 Ton boiler burner and pump skid ready to be delivered to site



Front view of 18 Ton boiler and Electric Panel

View through burner glass



Front view of 7.2 Ton Boiler

Pump skid incorporating Steam Electric heater and Autoflame controls