

AUTOFLAME

Combustion Management Systems

Nick Green, Engineering Manager of Sondor Industries, Cape Town is always looking for ways to improve his production plant. In 2002 it was the turn of the boilers. The plant utilises steam from 2.5 ton and 4.7 ton John Thompson steam boilers fitted with Weishaupt progressive two stage burners. The two boilers each cycled on and off, nearly 6 times per hour to satisfy the huge peaks and troughs of the plant steam demand.

Sondor received two proposals. The first was for a simple Oxygen trim system, which utilised the existing controls but targeted a level of 2% oxygen in the flue to reduce excess air levels. The second proposal was for the **Autoflame Combustion Management System**.

Although the initial capital outlay for the **Autoflame** System was almost double that of the alternative, the projected savings were more than triple. What sealed the contract for Nick Green were the guaranteed savings offered by **Combustion Technology** and the reputation of **Autoflame** Worldwide. This showed absolute professionalism and confidence in the **Autoflame** System.

The **Autoflame** Combustion Management System targeted all the short falls in the existing burner controls, using cost effective and proven technology:

- Precise, independent fuel and air positioning to 0.1 of an angular degree.
- Microprocessor based memory for infinite repeatability of fuel/air positions.
- Fully modulating burner control.
- Full 3 term PID control.
- Optimum ignition position.
- Stand-by warming facility.
- Intelligent boiler sequencing.
- Full flame supervision using patented self-adaptive UV amplification.
- Lockout history and Error codes.
- Fuel flow metering software.
- Fully tested and certified by CE – Europe, TUV - Germany, AFAQ - France, UL - America, ULC - Canada and FM – World-wide.

The Contract to convert both boilers in two stages was awarded in April 2002 with the first installation programmed over the long weekend in June. The second installation was completed in July. **Combustion Technology** worked closely with **Sondor** Industries, to understand the demand by their process on the boilers. The result is a **huge 13% fuel saving** measured consistently over the past 2 months. This couldn't have come at a better time as **Sondor** are having to run their production at ever increasing levels to meet growing demands. Since the proposal was put forward in 2001, fuel prices have increased by 24%. **The projected saving over a year ago has nearly doubled in Rand terms at today's fuel prices and increased production levels.**

Southern Africa Case Study:

sondor[®]

INDUSTRIES (PTY) LTD

Cuts fuel consumption by 13%.



Boiler no. 2, JTA TC470 rated at 4.7 tons

'The result is a huge 13% fuel saving.'



Boiler no. 1

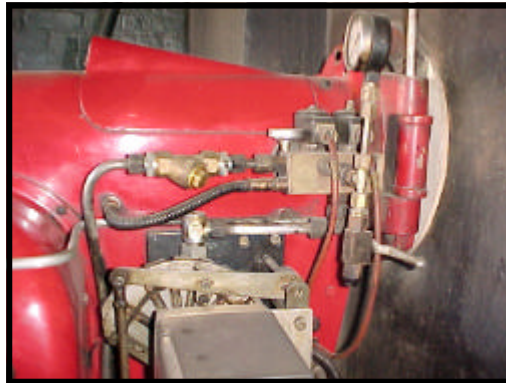
The **Autoflame** 'optimum ignition position' ensures reliable burner start-ups from cold. Once the boiler has reached thermal equilibrium the burner can be turned down to a much lower firing rate. This facility combined with full 3 term PID control, ensures the boiler runs for a full week's production without once cycling off, compared to the previous system where the boilers cycled up to 6 times per hour.

The PID control ensures an accurate target setpoint is achieved and the minimum amount of fuel is burnt. The process steam pressure must not drop below 6 bar and the previous system had a safety margin of 3.5 bar, trying to maintain a setpoint of 9.5 bar with conventional stage pressure switches. The **Autoflame** System enables the operator to reduce the setpoint until a happy compromise has been reached within the limitations of the boiler/ burner performance characteristics.

Each facility within the Autoflame Combustion Management System has contributed to a total saving of 13%.



Autoflame fuel and air servos.



Original Weishaupt single servo, mechanical cam and oil valve



Autoflame oil valve

Site Overview:

Existing Equipment

Boiler 1: JTA SHF 2500 with Weishaupt RMS 8/2 (2.5 tons)

Boiler 2: JTA TC470 with Weishaupt RMS10 ZMD (4.7 tons)

Combustion measured before and After Autoflame installation:

	Before		After	
	O ₂ High Fire	O ₂ Low Fire	O ₂ High Fire	O ₂ Low Fire
Boiler 1	4.5%	7.9% 40% of HF	2.8%	5.2% 25% of HF
Boiler 2	3.7%	7.8% 40% of HF	3%	6.9% 25% of HF



Autoflame air servo.