Autoflame | BURNING WITH INTELLIGENCE

Autoflame

World leading combustion management systems

Presented by

Dennis Wood

North American Technical Sales Manager

May 2008

Autoflame

- Established in 1972
  - By Brendan Kemp, an experienced Combustion and electrical Engineer
  - Originally burner sales and service company
- Based in London
  - Offering boiler-house solutions Worldwide
  - European office (2004)
  - North American office (2005)
- Privately Owned
  - Family business
  - 50 employees

Worldwide Representation

Autoflame

OBJECTIVES

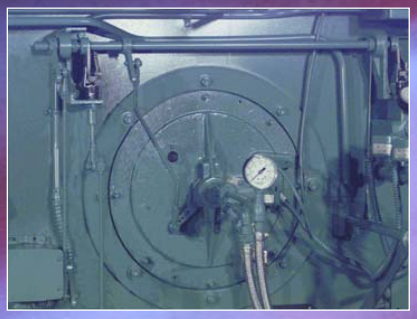
- Intelligent answers to burning questions….

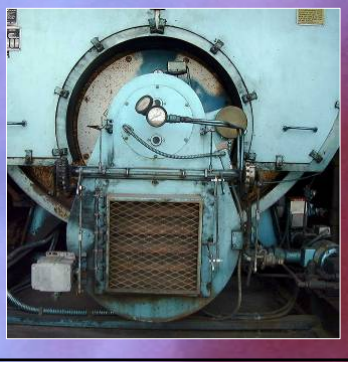
1. Safe and reliable operation
2. Repeatability
3. Increased boiler efficiency
4. Emissions reduction
5. Energy savings

Autoflame

The Problem

- Jackshaft/linkage
  - Slop
  - Hysteresis losses



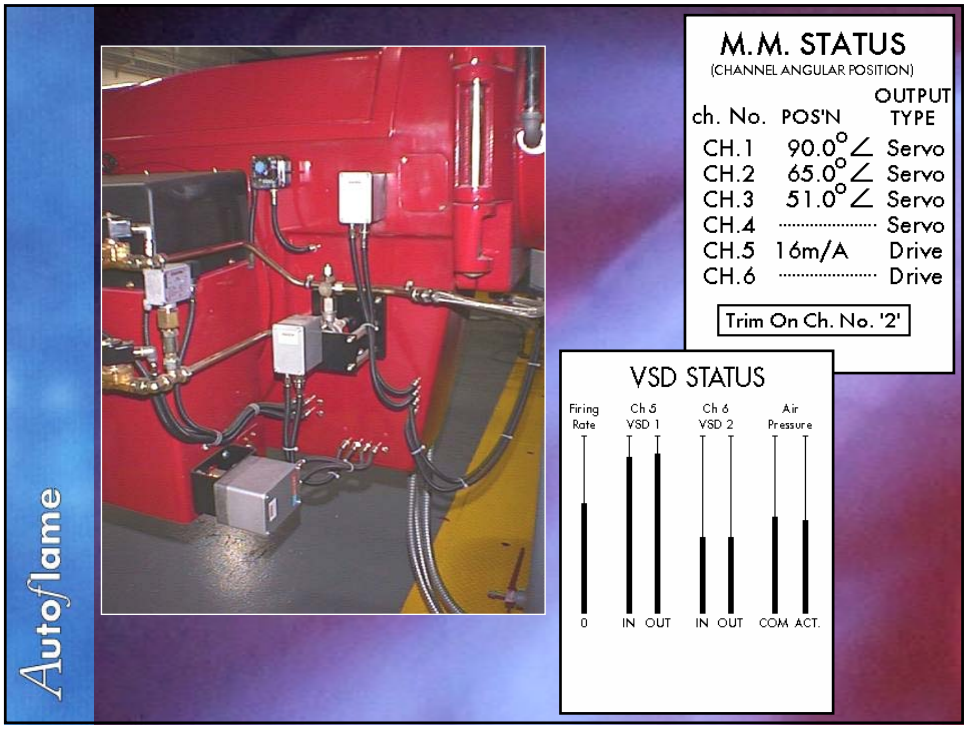


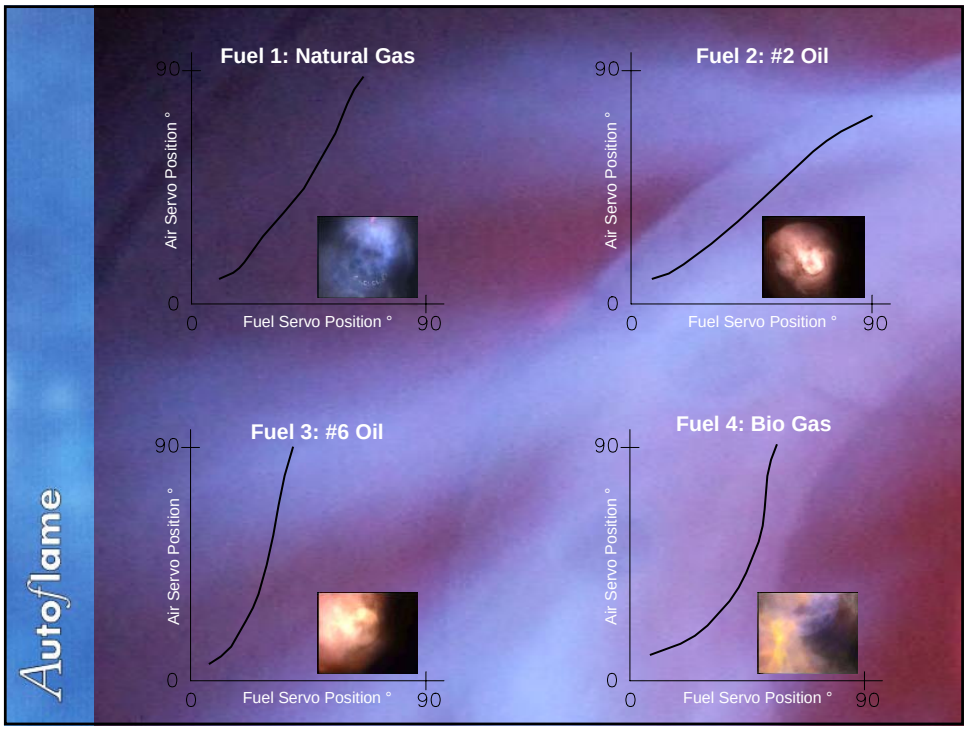
Autoflame

The Solution

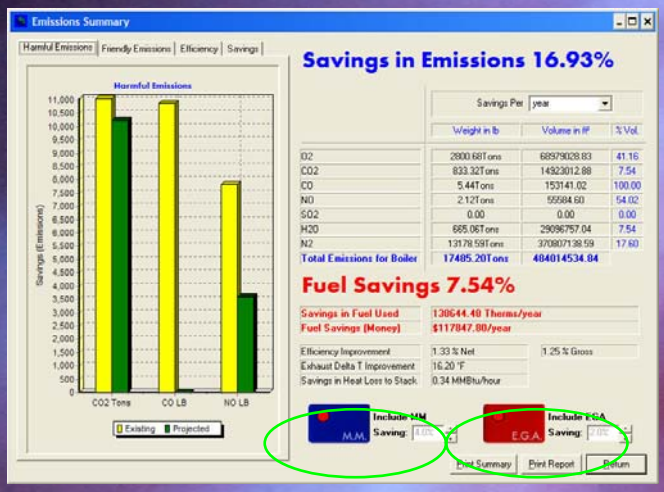
- Direct Drive
  - Repeatability
  - Less Maintenance

Autoflame


Autoflame
M.M. STATUS
(CHANNEL ANGULAR POSITION)
ch. No. POS'N OUTPUT TYPE
CH.1 90.0° ∠ Servo
CH.2 65.0° ∠ Servo
CH.3 51.0° ∠ Servo
CH.4 ..... Servo
CH.5 16m/A Drive
CH.6 ..... Drive
Trim On Ch. No. '2'
VSD STATUS
Firing Rate
Ch 5 VSD 1
Ch 6 VSD 2
Air Pressure
0
IN OUT
IN OUT
COM ACT.


Autoflame
Fuel 1: Natural Gas
Fuel 2: #2 Oil
Fuel 3: #6 Oil
Fuel 4: Bio Gas
Air Servo Position °
Fuel Servo Position °
0
90

Savings!!



Savings through improvements in the control system

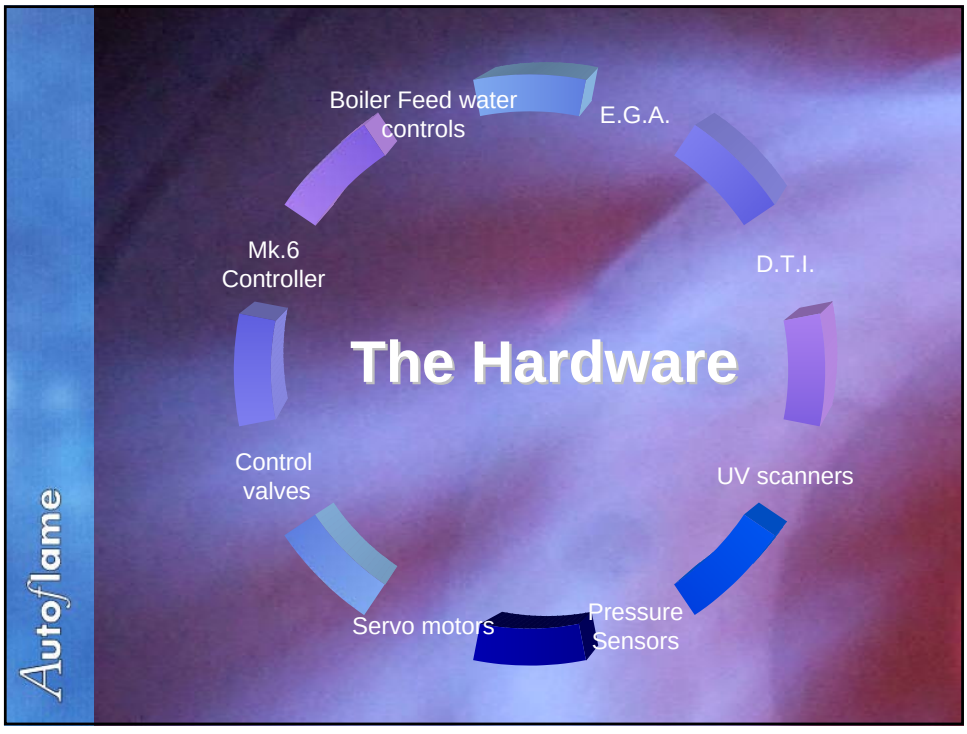
Emissions Calculator Savings

Boiler Size	100hp 4.2MMBtu	500hp 21MMBtu	1000hp 42MMBtu
Cost Savings ($)	**23530.74**	**117653.77**	**235307.54**
Fuel Savings (therms)	27171.76	135858.86	271717.73
Emissions Savings (%)	17.51	17.51	17.51
Fuel Savings (%)	7.39	7.39	7.39

Individual Systems

	Mk6 Evolution	Mini Mk6	Mini Mk5 Evolution
MM fuel-air ratio control	✓	✓	✓
3 parameter trim	✓	✓	✓
Precise boiler load control	✓	✓	✓
Flame safeguard control	✓	✓	✓
Flame switch	✓	✓	
UV Flame safeguard	✓	✓	✓
Flame rod (ionization)			✓
Gas, oil & air pressure supervisio	✓	✓	
Remote monitoring and control	✓	✓	✓
IR upload/ download	✓	✓	✓
User display	¼ VGA	LCD 4 line	LCD 4 line
Lead/ Lag Control	✓	✓	✓

Autoflame



Autoflame

The Software

Fuel/Air Ratio

Trim 0_2,$C0_2$,C0 & Alarm

Remote logging & control

Variable speed Drive control

Feed water control & Alarms

Flame safeguard Control & alarm history

Fuel & Air Pressure control

Lead/Lag User adjustable

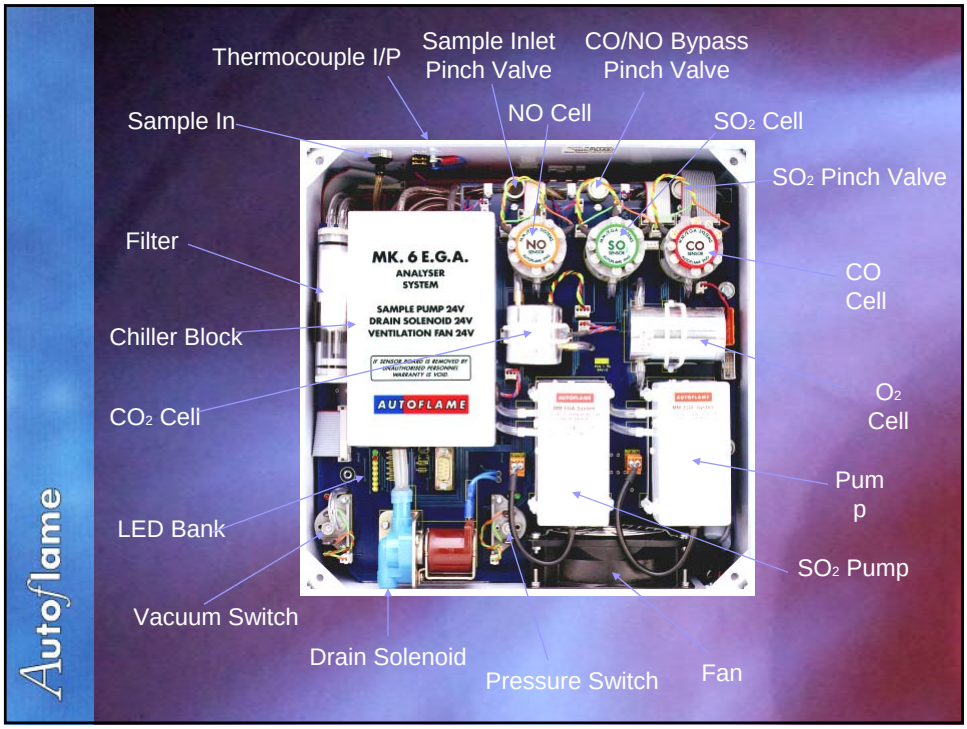
P.I.D. Load control

Autoflame

Exhaust Gas Analyser

- Sampling and display
  - O_2, CO_2, CO, NO & SO_2
  - Exhaust temperature
  - Combustion efficiency
- 3 parameter trim
  - O_2, CO_2, CO
- On-line supervision
  - O_2, CO_2, CO Alarms
- Local display (standard)
  - Calibration
  - Changing sensors
  - View error log
  - Hours run

Autoflame



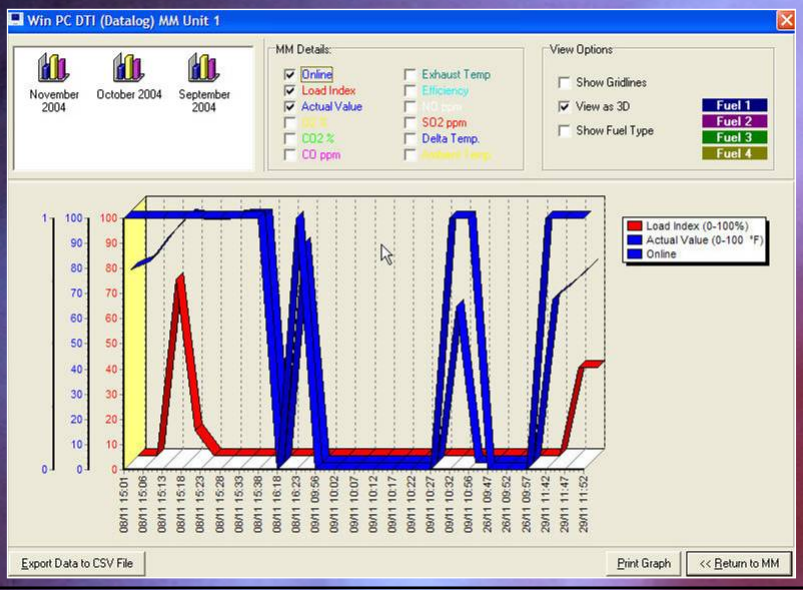
Data transfer interface

DTI Module

- Protocols
  - Modbus
  - Johnsons Metasys
- Ports
  - RS232 (10m)
  - RS422 (1km)
  - RS485 (Metasys)
  - Internal modem
- Operation
  - Supervisor
  - Manager (modem)

Autoflame

Data-Logging



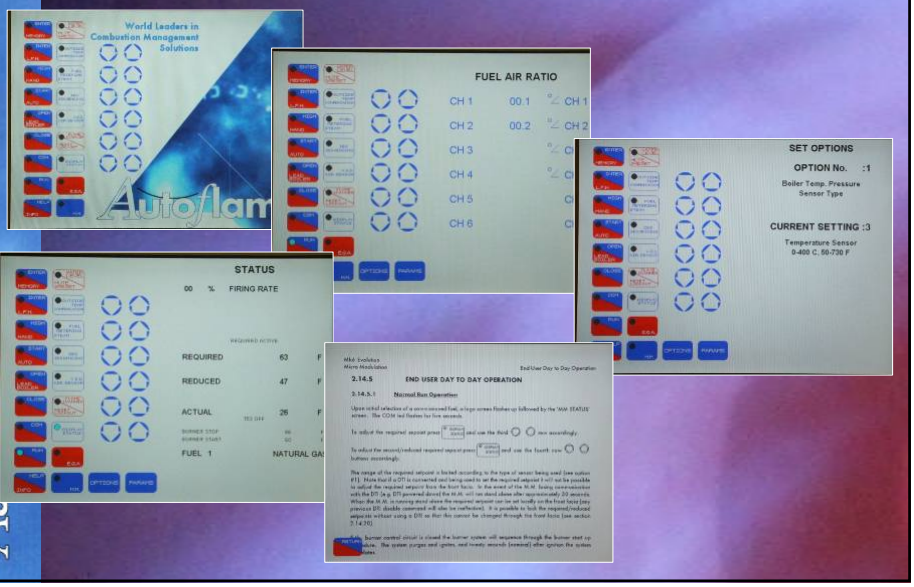
Autoflame

NEW PRODUCTS

- **MK7**
- **EPA approved EGA**

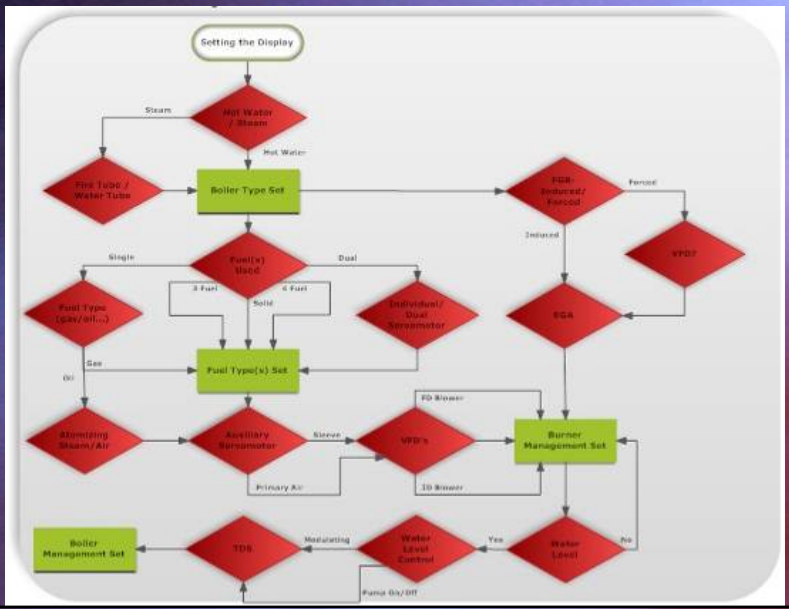
Autoflame

Mk7 Evolution

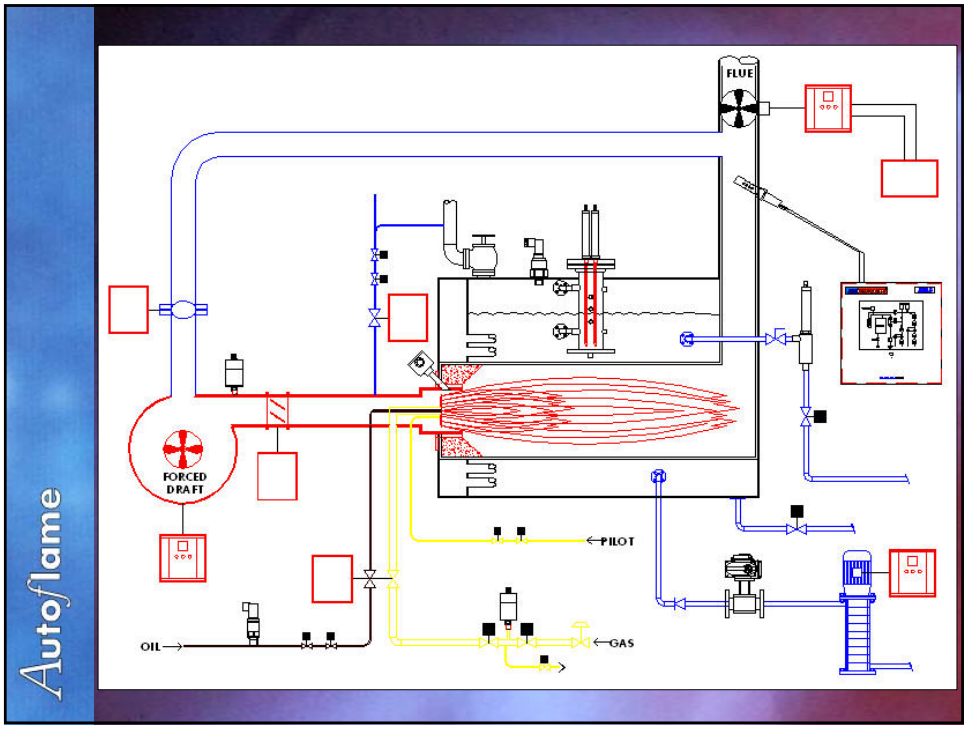


Autoflame

Making it System Specific



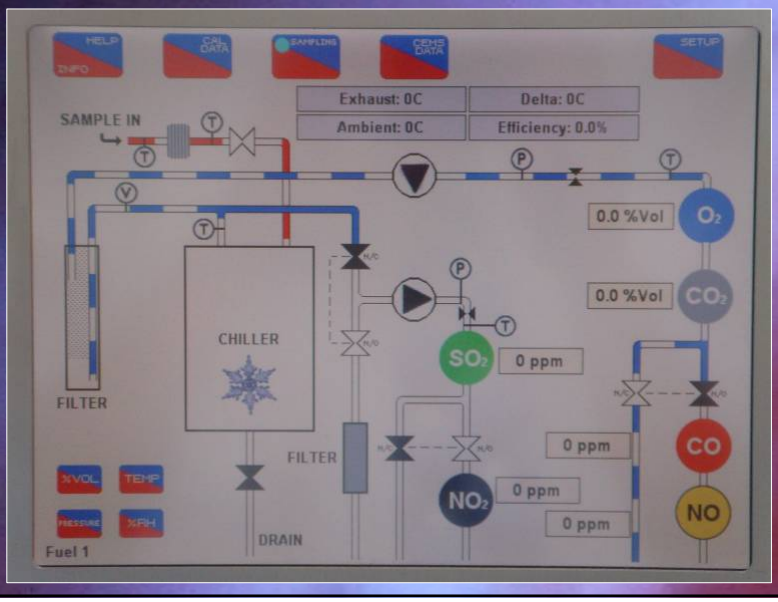
Autoflame



NEW PRODUCTS

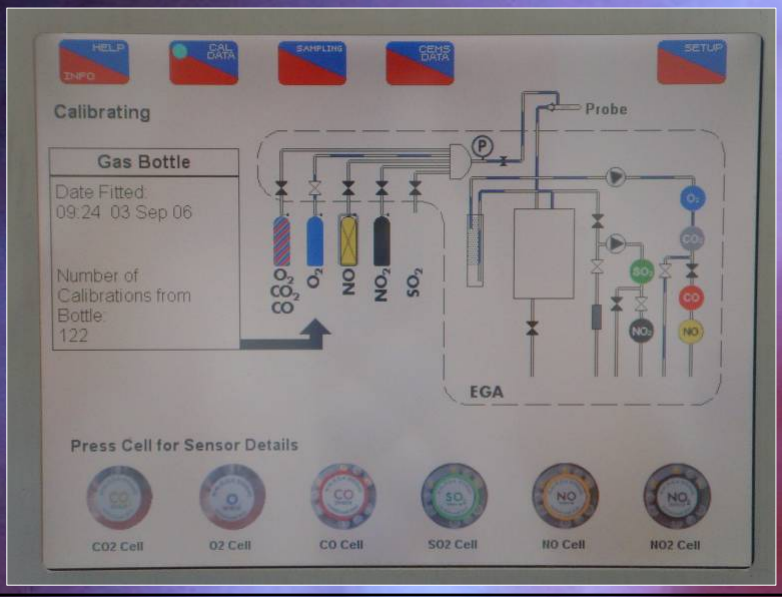
- **MK7**
- **EPA approved EGA**

Tubing Schematic



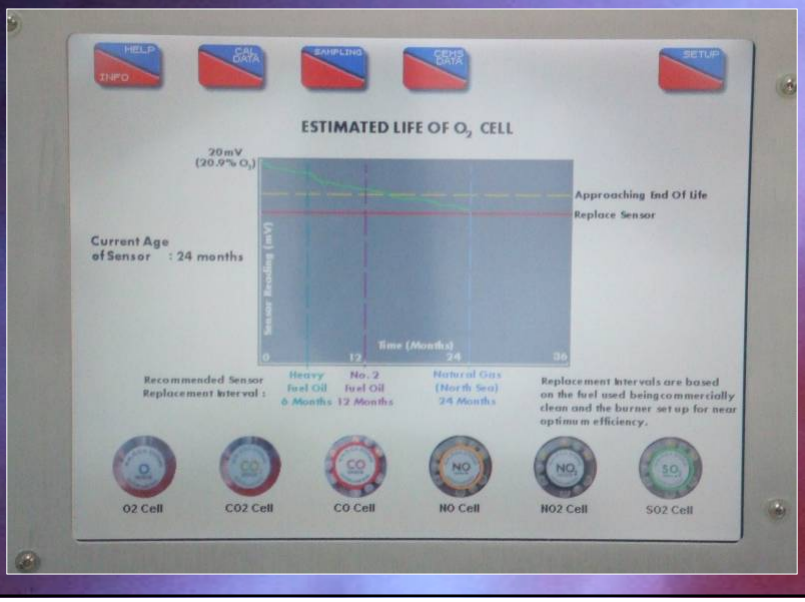
Autoflame

Self-calibration



Autoflame

Cell Life



Autoflame

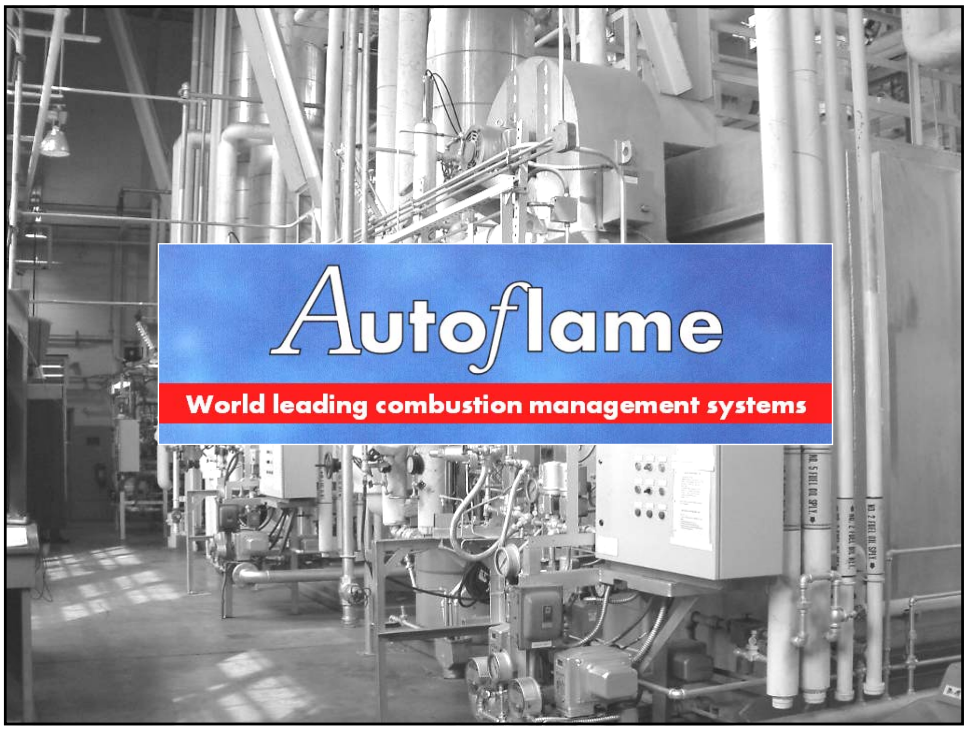
World Wide Patents:

02138610	Micro Modulation	U.K., Australia
1317356	Micro Modulation	Canada
02169726	Exhaust Gas Analysis	U.K.
00195866 Europe	Exhaust Gas Analysis	U.K.,
GB9715894	Mk.6 M.M. System	Worldwide
PCT/GB9702010	Mk.6 M.M. System	Worldwide
GB9715899	Mk.6 M.M. System	U.K.
GB9715900	Mk.6 M.M. System	U.K.
09/828581	Water Level Control	U.K., USA, Europe
0108229.6	Water Level Control	U.K., USA, Europe
PCT/GB02/01547	Water Level Control	U.K., USA, Europe
US 6,520,122,B2 U.S.A	Steam Flow Metering	

- All patents listed are applied and granted.

Autoflame

Autoflame

For further detailed information

Contact
Dennis W. Wood
620-229-8048
dwood@autoflame.com