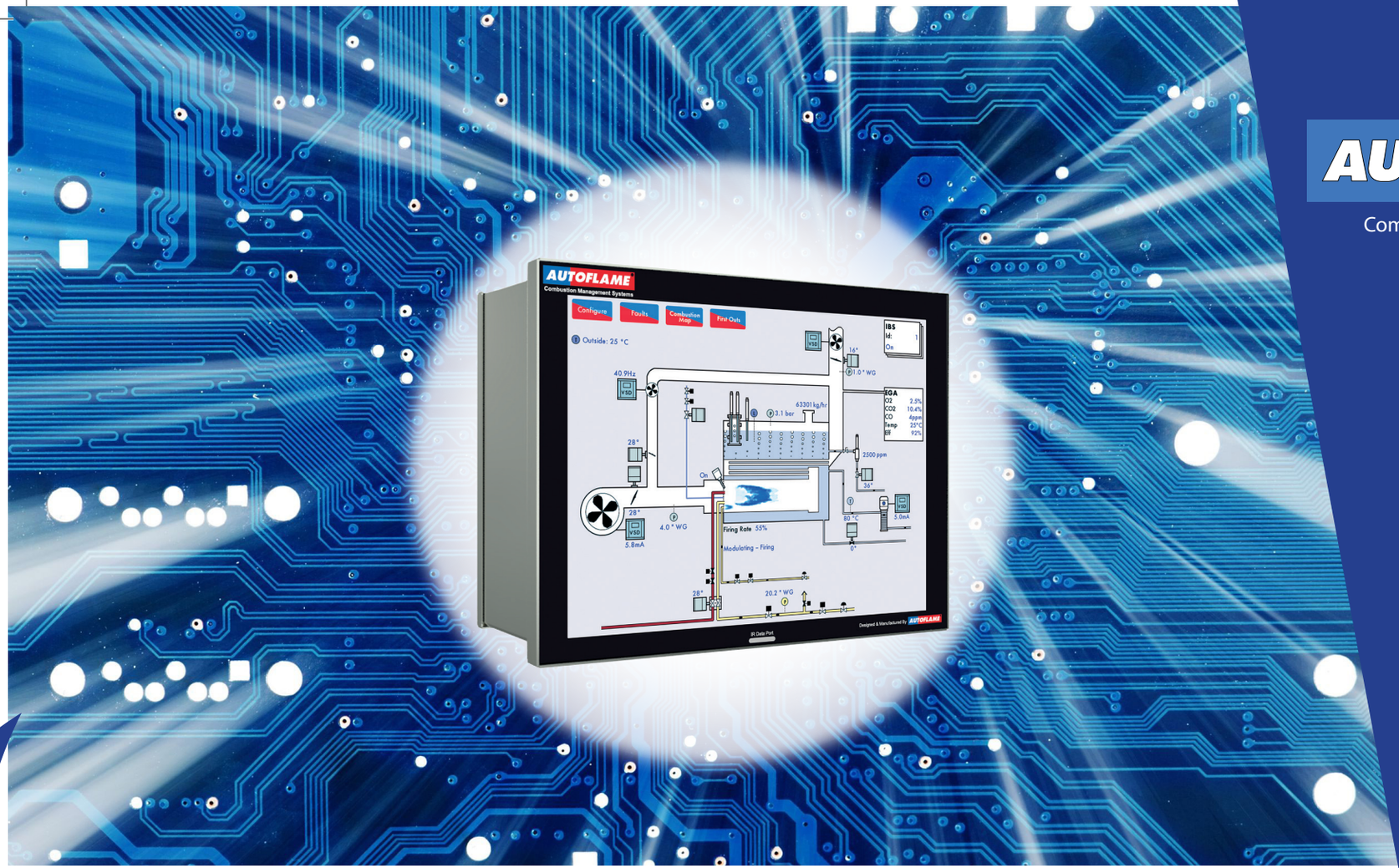


AUTOFLAME®

Combustion Management Systems

PRECISE, INTELLIGENT CONTROL

GUARANTEED

THE WORLD'S FIRST & MOST ADVANCED COMBUSTION CONTROL SYSTEM

MADE IN BRITAIN

www.autoflame.com

The World's First & Still Most Advanced Combustion Control Systems

Autoflame was established in London, UK, by innovative combustion engineering pioneer; Brendan Kemp.

Autoflame continues to be a family owned business with headquarters in Biggin Hill, Kent.

Brendan Kemp's professional life has been dedicated to the leading edge development of combustion control concepts.

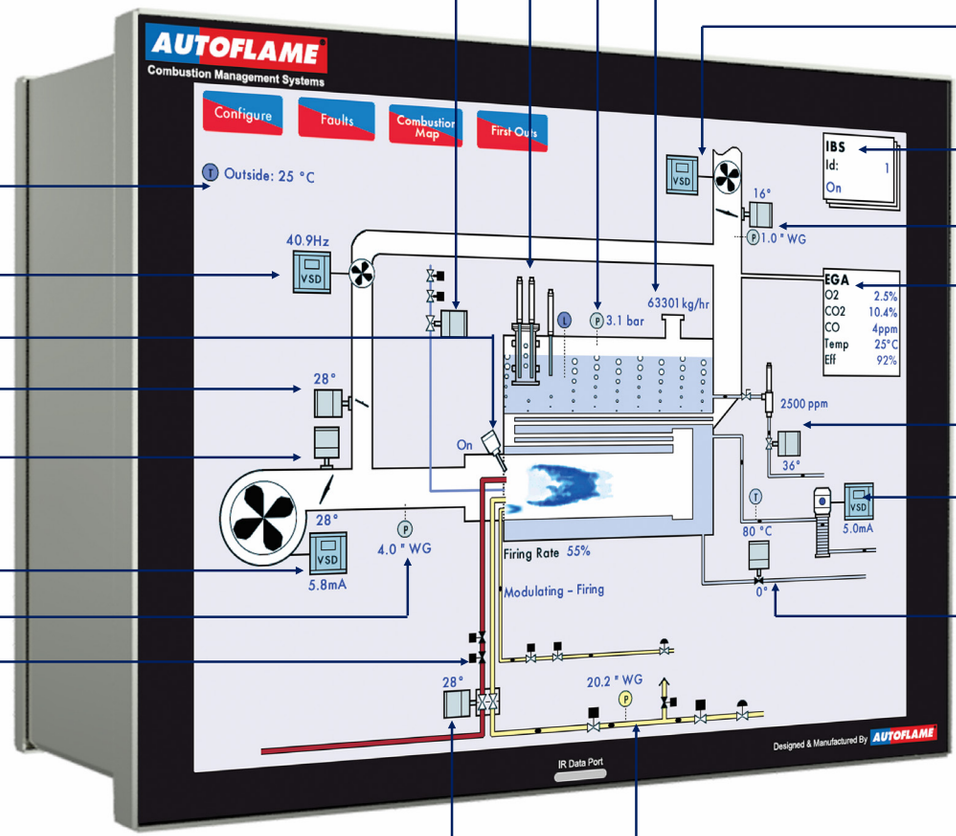
Autoflame holds 46 patents symbolises the development history of a system that started simply as an electronic modulation control which overcame the inaccuracy and repeatability problems inherent in existing electro-mechanical systems. The obsession with quality and engineering innovation drove the system through to its current state as the acknowledged world leader in managing the combustion process together with the boiler peripherals. Gas analysis and implementation of 3 parameter trim, utilising CO, CO_2, O_2 and gas temperature completes this world leading control environment.

Autoflame Systems brings the following:

- Totally Intuitive Commissioning and User Operation
- Highest Possible Combustion Efficiency
- Unsurpassed Accuracy & Repeatability
- Data Acquisition, 6 Channel Flue Gas Analysis with 3 Parameter Trim Function
- Totally Integrated Control of the Energy Process
- All System Components Designed & Manufactured In-House in the UK
- Inter-Connectivity Proven & Guaranteed Between All Components
- Touch Screen I/O
- Multi-Language Screen Graphics
- Worldwide Technical Support & Distribution
- All Major International Approvals
- 100+ Technology Centres Around the World

COMPLETE CONTROL

AUTOFLAME®



Water Level Control

Steam/Air Atomisation

Outside Temp. Comp.

Forced FGR VSD

Flame Safeguard

FGR Damper

Air Damper Control

Fan Motor VSD

Air Pressure Sensor

Fuel Flow Metering

Fuel Valve Control

Load Detector

Steam Flow Metering

Forced Draft VSD

Lead/Lag Sequencing

Draught Pressure Control

EGA Emissions Monitoring & Trim

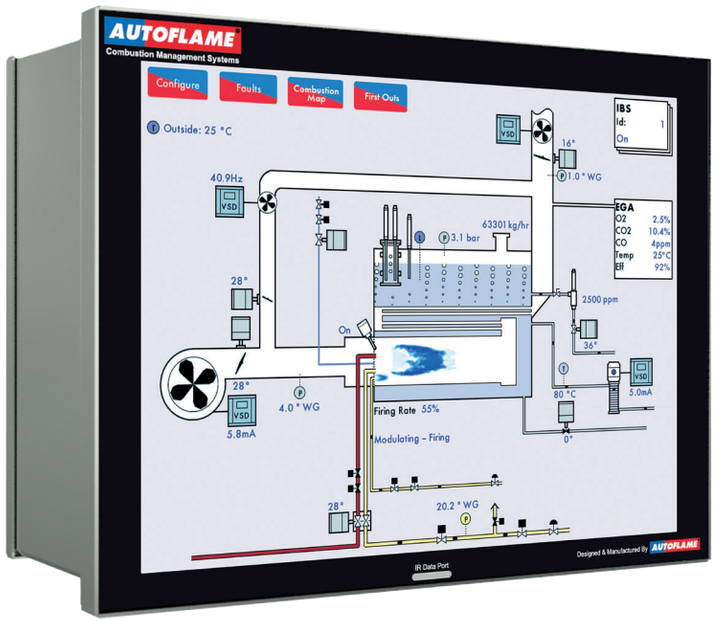
TDS / Top Blowdown

Feedwater Control

Bottom Blowdown

Gas Pressure Valve Proving System

THE FLAGSHIP MK8 MM



Screen size	12.1”	Backup commissioning data via IR	✓
Touch-Screen type	Capacitive Multi-Touch	Boiler log entries	1000
Flame safeguard	✓	Dual fuel support	✓
Air/fuel ratio control	✓	Air pressure monitoring & proving	✓
IBS/lead-lag sequencing	✓	Oil pressure monitoring	✓
Scheduling	✓	Fuel flow metering	✓
Commissioning	✓	Golden Start facility	✓
VSD management	✓	Commissioning points	20
Reporting/graphing	✓	Customisable graphics	✓
FGR (Flue Gas Recirculation)	✓	Flame detection options	UV, IR, Flame Switch
Channels	5 servos/2 VSDs	Multi-language support	✓
Lockout/ Error logging	128	Metric & Imperial units	✓
Number of fuel curves	4	UL, CE , AGA approvals	✓
VPS (Gas Valve Proving)	✓	Single fuel servo control	-
Outside temperature comp.	✓	On-board technical manual	✓
Login security	✓	Expansion Features	10

Mk8 MM
Totally Integrated, Multi-Function Burner & Boiler Control System

The Mk8 MM Controller is a Micro-Modulating system that offers comprehensive control over industrial and commercial boilers/ burners. It enables users to manage virtually all boiler processes from a single 12.1” multi-touch screen interface without any added modules. The Mk8 MM is ideal for steam and water boilers (watertube or firetube), kilns and steam generators. Designed for oil, natural gas or both fuels, the controller’s linkageless servomotor system and automated flame safeguard create conditions for unmanned boiler house control with remote monitoring and management with Modbus connectivity.

The Mk8 MM Expansion Features include:

- Autoflame Water Level Control
- Analogue Water Level Control
- TDS/Top Blowdown
- Bottom Blowdown
- Draught Control
- Direct Modbus Connectivity
- First Outs Annunciation
- Fully Metered Combustion, cross-limited control
- Steam Flow & Water Flow Metering
- Fuel Change On-the-Fly (COF)

Equipment detailed below is specifically designed to integrate with the Mk8 MM


Positioning Servo Motors


Gas, Oil & FGR Valves


UV & IR Flame Scanners


Gas & Air Pressure Sensors


Load Sensors


Feedwater & Blowdown Control

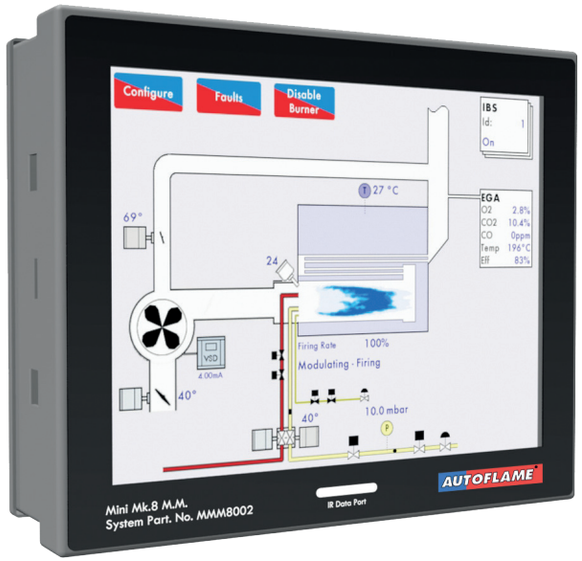

Water Level Probes


TDS Top Blowdown


Outside Temp. Compensation


Draught Control

THE MINI MK8 MM



Screen size	7”	Backup commissioning data via IR	✓
Touch-Screen type	Resistive	Boiler log entries	1000
Flame safeguard	✓	Dual fuel support	✓
Air/fuel ratio control	✓	Air pressure monitoring & proving	✓
IBS/lead-lag sequencing	✓	Oil pressure monitoring	-
Scheduling	✓	Fuel flow metering	✓
Commissioning	✓	Golden Start facility	✓
VSD management	✓	Commissioning points	20
Reporting/graphing	✓	Customisable graphics	✓
FGR (Flue Gas Recirculation)	✓	Flame detection options	UV, IR, Ionisation
Channels	3 servos/1 VSD	Multi-language support	✓
Lockout/ Error logging	64	Metric & Imperial units	✓
Number of fuel curves	2	UL, CE , AGA approvals	✓
VPS (Gas Valve Proving)	✓	Single fuel servo control	✓
Outside temperature comp.	✓	On-board technical manual	✓
Login security	✓	Expansion Features	-

Fully Integrated Burner Management System for the Smaller and Potentially Less Complex Applications

The Mini Mk8 is a cutting-edge Micro-Modulation system that provides easily programmable and flexible means of optimising combustion throughout the load requirement range of the boiler/burner. This control module encompasses all the functions required for reliable burner management. Built-in to this system is a fully automated flame safeguard and valves proving system, direct Modbus connectivity and touchscreen interface.

This system ensures the burner temperature is accurate to within 1° C and pressure to within 1 PSI. The positioning accuracy of the direct drive motors controlling the air damper and fuel valve is 0.1° angular degree throughout the load range, this accuracy ensures repeatable fuel-to-air ratio that leads to improved fuel economy and reduced carbon footprint.

Equipment detailed below is specifically designed to integrate with the Mini Mk8 MM

Positioning
Servo Motors

Gas, Oil & FGR
Valves

UV & IR
Flame Scanners

Gas & Air
Pressure Sensors

Load
Sensors

Outside Temp.
Compensation

EXHAUST GAS ANALYSER

Mk8 EGA EVO (Exhaust Gas Analyser)

- Online Multi-Channel Continuous Emissions Monitoring System (CEMS)
- Measure and store emissions data for 3 years for up to 6 exhaust gases:

O_2 CO_2 CO NO NO_2 SO_2

- 3 Parameter Trim (O_2, CO_2 & CO), not just O_2 trim
- Exhaust Gas Combustion Limits
- Standalone or MM Operation for Optimum Combustion

For decades, boiler houses, manufacturing plants and other industrial environments have relied on our EGA systems to monitor flue gas emissions for the purpose of compliance with environmental regulations and to reduce fuel usage & emissions.

The EGA can operate as a standalone, independent continuous monitoring system, or it can be setup to feed back its readings to an Autoflame MM Controller, allowing the MM to trim the combustion; optimising the system's efficiency & performance.

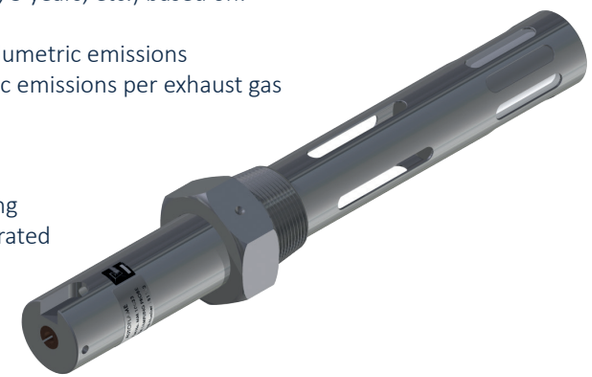
The EGA is capable of:

- Simultaneous & continuous sampling of up to 6 exhaust gases (O_2, CO_2, CO, NO, NO_2 & SO_2) at a fraction of the price of alternative systems.
- Operating as a Standalone unit or with Autoflame Mk8 or Mini Mk8 MM.
- Enabling 3 parameter trim control on a Mk8 or Mini Mk8 MM to improve fuel efficiency and reduce emissions.

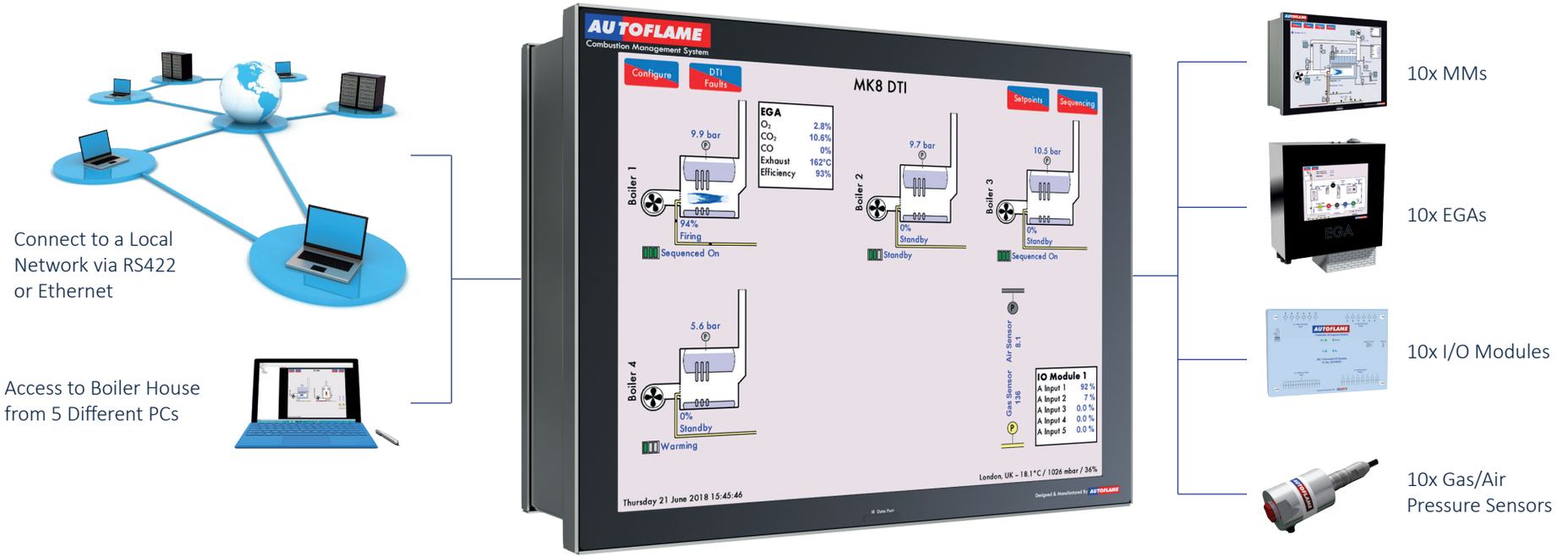
With built-in CEMS Auditing software, view reports by user-definable time periods (24 hours, 2 weeks, 1 month, 3 years, etc.) based on:

- Total weight & volumetric emissions
- Weight/volumetric emissions per exhaust gas
- Total cost of fuel

EGA Exhaust Gas Sampling Probe with Filter & Integrated Thermocouple



DATA TRANSFER INTERFACE



Mk8 DTI (Data Transfer Interface)

The Mk8 DTI lets users know in real time how the boilers are performing, either on-site through its built-in touch screen, via local PC, or remotely via a BMS system. It stores MM and EGA systems data for a rolling 3 year period.

The DTI is a gateway for communication with the Autoflame MM Controller and EGA range of products. It is capable of collecting and storing information from a maximum of 10 Autoflame Systems in one location, the information gathered is instantly available for transmission to an external source such as a BMS via RS422 or Ethernet link.

The DTI also includes Autoflame DTI Manager software as standard, allowing data collection over local network or over the internet. It also supports Modbus protocol over Ethernet and RS422 as standard. The DTI can be setup so that Network Emails are generated and sent in the case of a fault or an alarm.

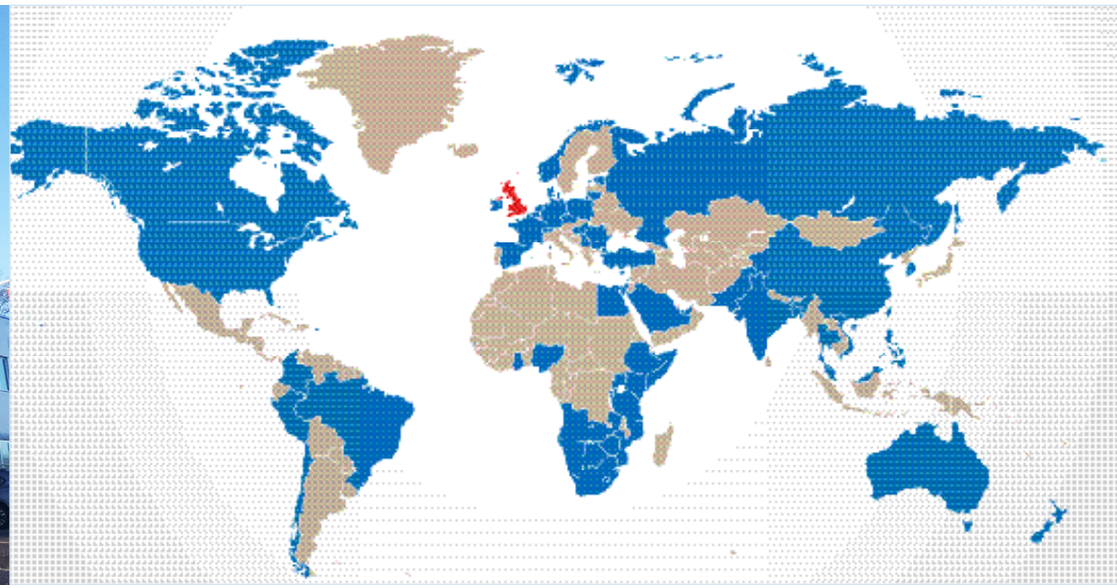
The DTI can collect and store information from up to 10 of each of the following Autoflame products:

- Mk8 MM and/or Mini Mk8 MM Controllers in any combination.
- Autoflame Mk8 Exhaust Gas Analyser (EGA) linked directly to the DTI.
- Pressure sensors network, Autoflame Mk8 digital Gas or Air Pressure Sensors can be connected and monitored.
- Mk8 Input/Output modules with both analogue and digital connections.

AUTOFLAME®

COMBUSTION MANAGEMENT SYSTEMS

Trusted By



UK BASED WITH OVER 100 TECHNOLOGY CENTRES WORLDWIDE

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