

Mk8 EXHAUST GAS ANALYSER (EGA) Continuous Emissions Monitoring System Monitor & Reduce Boiler Emissions

3 Years record of emission gases, fuel consumption, flue temperature, barometric pressure & plant efficiency stored on-board and can be downloaded to your PC as an Excel spreadsheet for analysis.

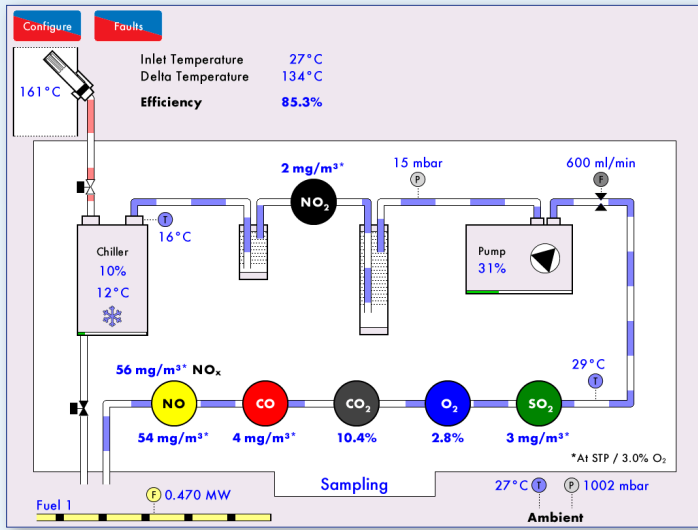
6 Emission exhaust gases analysed using extractive method and online data is displayed & stored on-board and can be downloaded. Emission limits can be set for enhanced, safer combustion.

3 Parameter Trim enabled (O_2 , CO_2 & CO) not just O_2 trim, unique to Autoflame's EGA and can reduce fuel consumption and increase boiler's efficiency. It can also operate as a standalone unit.



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.



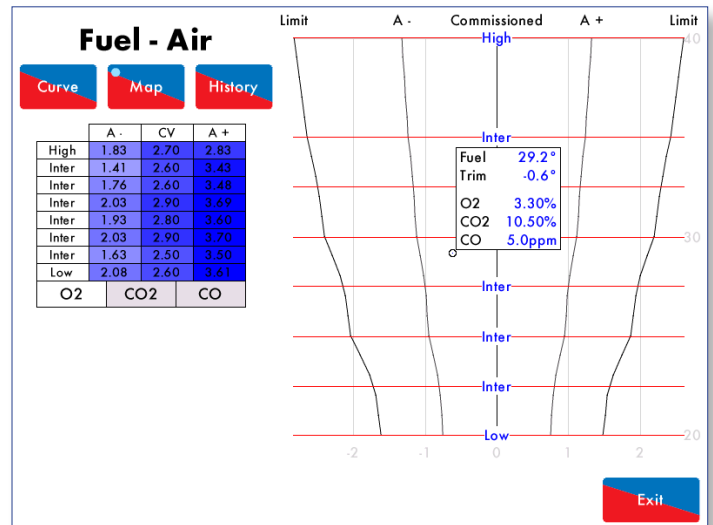
Features

- Simultaneous & Continuous Sampling Of Up To 6 Exhaust Gases (O₂, CO₂, CO, NO, NO₂ & SO₂) 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.
- Continuous Emissions Monitoring System (CEMS) for Display & Data Trending.
- Specifically designed for current regulations on emissions monitoring.
- 12.1" multi-touch full colour screen.
- Stored information is updated every minute.
- Online monitoring of cell status to identify cell replacement requirement.
- Quick & easy installation using plug-in connectors.
- Designed to minimize maintenance.
- Six 4-20mA analogue outputs of all combustion data for remote logging, printing or chart recording.
- Warnings for cell failure, probe blockage & analyser failure .
- EGA's instantaneous online data can be transferred to a Building Management System (BMS) directly using the integrated Direct Modbus feature or over Ethernet or RS422 via the Autoflame Mk8 Data Transfer Interface (DTI).
- Detailed on-board manual.
- Replacement cells contain calibration data and serial number for easier cell replacement during servicing.
- Diagnostics screen and system log for fault finding.
- Graphical calibration schedule.
- Multi language support.
- Full download and upload of settings using Autoflame Download Manager software. This allows for easier diagnostics as well as backing up settings and then installing the same settings on a new EGA.
- Download CEMS data to PC as an Excel spreadsheet, includes custom Excel-based application for easy analysis (requires Excel).

Operation with Autoflame MM Controller

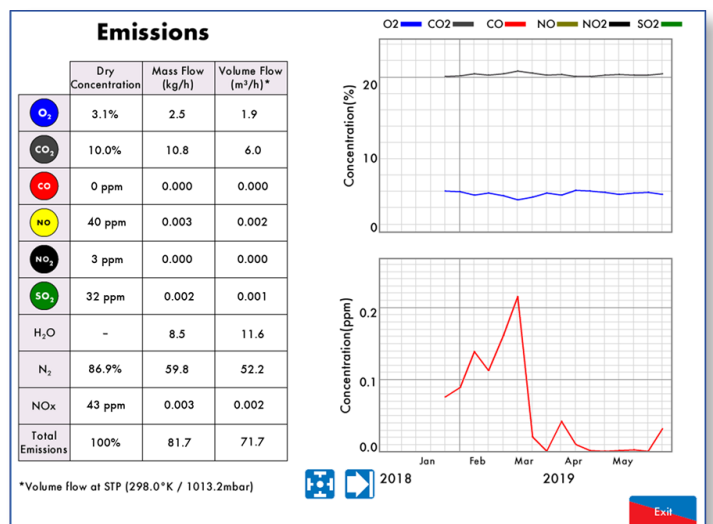
By connecting the Mk8 EGA EVO to an Autoflame MM Controller, all of the following functionality can be activated for improving combustion performance, reducing energy costs & improving safety:

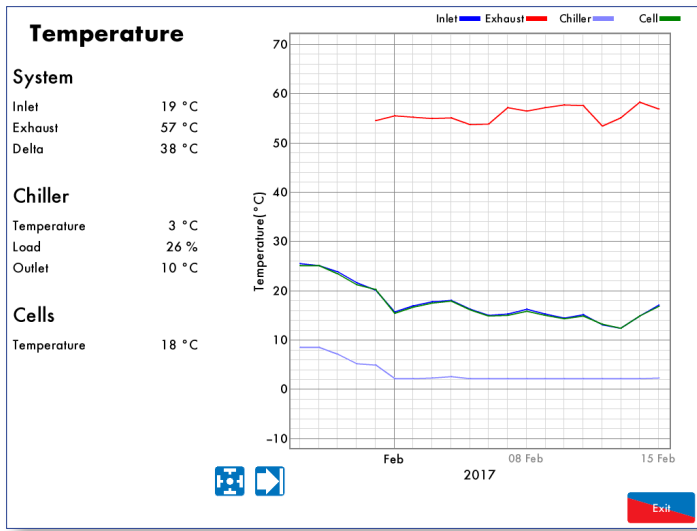
- The EGA enables Autoflame's unique 3 parameter trim. The system sends output signals based on three exhaust gases (O₂, CO₂ & CO) to enable the MM Controller to perform trim. The controller will impose corrections to the air damper (all MM Controllers) or Variable Speed Drive (Mk8 MM only) in order to maintain optimum combustion performance for the system. These changes ensure that the original commissioned combustion data is maintained irrespective of changes to stack pressure, barometric pressure & temperature.
- The MM Controller may be set with upper & lower limits on O₂, CO₂, CO, NO & exhaust gas temperature. The system can be optioned so that the burner locks out or a warning is triggered when limits are exceeded.



Online Data Logging & Historical Trending

- Online trending & logging of all combustion parameters, including totalised values.
- Historical data is updated every minute & hourly averages are calculated.
- Data graphs scalable from very narrow range (for example, the last 10 minutes) to extended periods (over the course of several days, weeks, months or up to three years.)
- Three years of data stored within the EGA including emission gases, pressures, atmospheric pressure, temperatures, efficiency, & fuel usage.

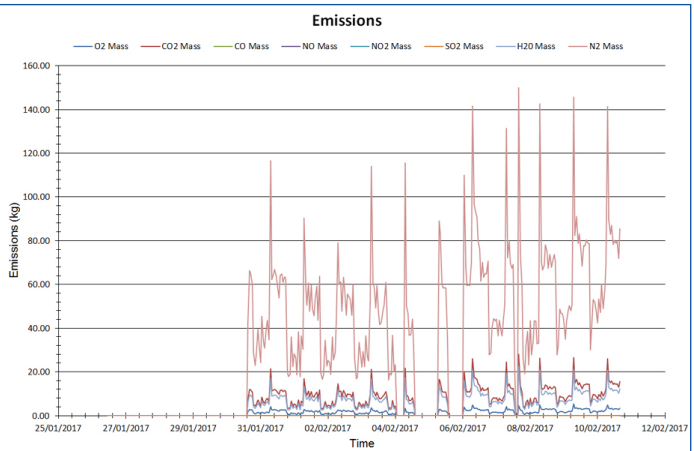
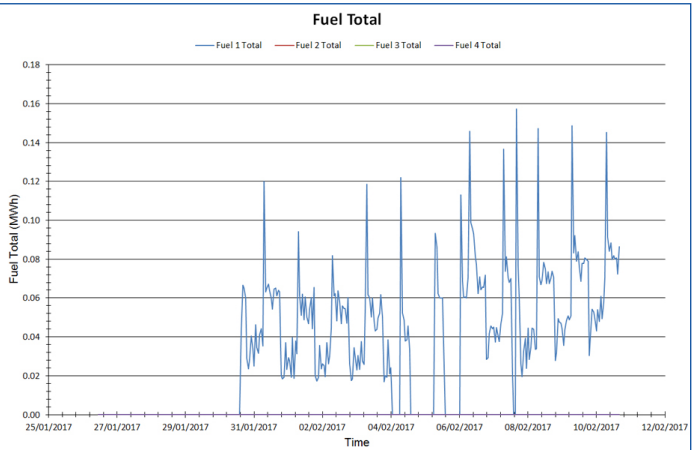
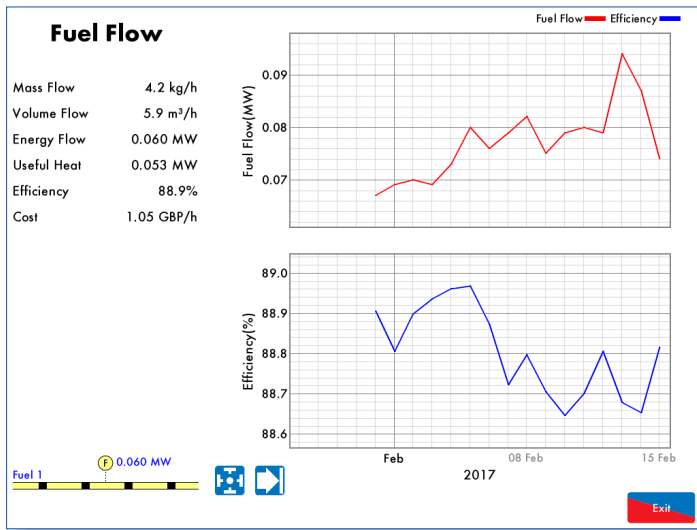




CEMS Auditing

- Ability to input accurate fuel composition data from the MM to improve CEMS analysis.
- 4-20mA input from a fuel flow meter for accurate fuel usage in CEMS calculation.
- View reports in Excel by user-definable time periods (one day, four weeks, 16 months, etc) based on:
 - Total weight & volumetric emissions.
 - Total cost of fuel (calculated by current cost per tonne of fuel).
 - Weight & volumetric emissions per exhaust gas (O₂, CO₂, CO, NO, NO₂, SO₂) & per fuel.

Output up to 3 years of raw data via IR port to PC for viewing and manipulation in Excel with Custom-designed emissions graphing spreadsheets to simplify analysis.



Maintenance

It is recommended that the EGA is sent back to an Autoflame service centre for full service & recalibration every 12-18 months. System includes reusable packaging to simplify shipping.

Technical Specification

Dimensions (LxWxH): 408x335x150mm (16"x14"x6")
 Power Supply: 110- 240V, 50- 60Hz
 Ambient Temperature Limits: 5°C (41°F) to 40°C (104°F)
 Environmental Rating: IP20 (NEMA1)

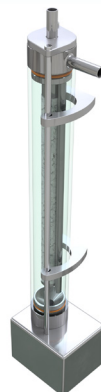
Components Ordering Guide

Mk8 EGA sampling unit, pre-fitted with O₂, CO₂, CO & NO cells.
 Part#. MM8004/E

Optional exhaust gas sampling probe complete with internal filter, thermocouple & sampling tube.
 Part#. MM10033

Optional external particulate filter for high condensate fuels or humid environments.
 Part#. EGA80103/D

Optional chilled enclosure for non-standard conditions; high temperature or harsh environments.
 Part#. EGAENC



Special Version EGAs

MCERTS Approved EGA - Conforms to the UK Environment Agency's Monitoring Certification Scheme for stack emission monitoring

EPA Approved EGA - Conforms to EPA Emissions Guidelines - Meets all requirements set by the US Environmental Protection Agency



The US Environmental Protection Agency (EPA) and the UK Environment Agency's Monitoring Certification Scheme have certain requirements for monitoring flue emissions. The Mk8 EGA EPA Conformance model has been specifically designed to conform to these requirements.

These versions enable automated cell calibrations on bottled calibration gas (4 bottles). Self calibration process occurs once every 24 hours. During this process, the cells are each recalibrated using a zero value and a span value. The following configuration options are available:

- User-defined span gas configuration.
- Customisable timings for sample and purge of each span gas.
- E.G.A. can perform up to two automated cell calibrations per day. User configurable to sample to certain times of day (eg, 9am & 9pm) or after a prescribed interval of hours.
- Ranging of 4-20mA signal from fuel flow meter to maximise accuracy.

Additionally, the EPA & MCERTS EGAs present the following information:

- Graph indicating remaining life and accuracy of each cell.
- On-screen indication of self-calibration stage and which bottle is used.
- Logging of cell calibration, readings, and drift over time.
- Calibration drift measured over the space of 5 calibrations. If excessive calibration drift is measured, the last valid calibration data is used.

Heated Sample Line (HSL)

- Ensures sample gas is not diluted by water (condensate).
- Maintains the exhaust gas temperature until the gases enter the EGA.
- HSL temperature can be controlled to user-defined setting. The temperature is monitored to provide warning when not at the prescribed setting.
- Operates using a PI loop to maintain the set temperature.



Cells	#	Description	Value	Air	Bottle 1	Bottle 2	Bottle 3	Bottle 4
O ₂	1	O ₂ : Zero Calibration Source	Bottle 1	Span 21.0%	Zero 2.0%			
	2	O ₂ : Zero Calibration Gas Concentration	2.00%					
	3	O ₂ : Span Calibration Source	Air					
	4	O ₂ : Span Calibration Gas Concentration	20.95%					
5 Unused: Unused								
CO ₂	6	CO ₂ : Zero Calibration Source	Bottle 2	Span 12.0%	Zero 0.0%			
	7	CO ₂ : Zero Calibration Gas Concentration	0.00%					
	8	CO ₂ : Span Calibration Source	Bottle 1					
	9	CO ₂ : Span Calibration Gas Concentration	12.00%					
10 Unused: Unused								
All								

	Air	Bottle 1	Bottle 2	Bottle 3 (Disabled)	Bottle 4 (Disabled)
O ₂	Span 20.95%	Zero 2.00%	-	-	-
CO ₂	-	Span 12.00%	Zero 0.00%	-	-
CO	-	Span 50.0 ppm	Zero 0.0 ppm	-	-
NO	-	Zero 0.0 ppm	Span 200.0 ppm	-	-
Date of First Use	-	-	-	-	-
Calibrations Performed	-	0	0	0	0

EGA State	Calibrating
Source Pressure	50 inWG
Inlet Pressure	0 inWG
Flow Rate	36 in ³ /min
Tuesday, 20 June 2017 08:08:51	

0
7 8 9 ←
4 5 6
1 2 3 ←
C 0 .
Calibration Count Reset
Test Source
Exit

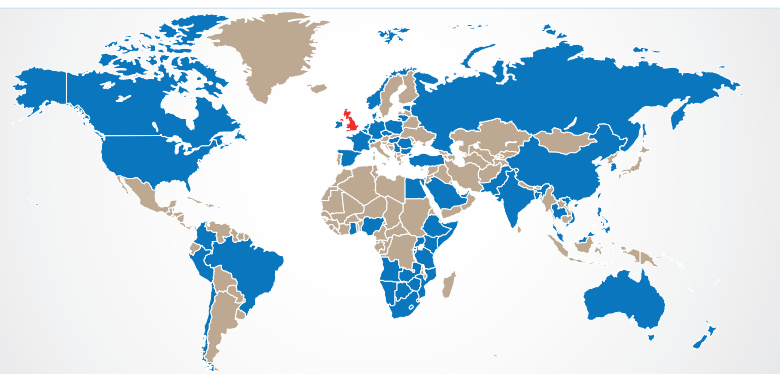
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ExxonMobil



Nestlé



UK BASED WITH OVER 100 TECHNOLOGY CENTRES WORLDWIDE

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