

# FLUE GAS ANALYSERS

## Green line 2000 Flue Gas Analyser

- Combustion Gas Analyser up to 2 Gases
- NO/NO Emission Analyser
- Draft & Differential Pressure Meter
- Differential Thermometer
- Ambient CO Monitor
- Gas Leak Detector
- Ionization Flame Tester

Built-in Impact Printer

Built-in Gas Sniffer

Rechargeable Battery

Stores upto 250 samples

Upgradable Flash Memory

Ambient CO  
Monitor

Efficiency

Excess Air

Differential  
pressure

Tair  
Tgas

Gas Leak  
Detection

O<sub>2</sub>

CO<sub>2</sub>

CO

NO<sub>x</sub>

Eurotron S.p.A.  
Tel. 022488201  
Fax 022440286

Oper. :

Signature: \_\_\_\_\_

Ecoline 2000  
Serial number 999999

Date: 03/01/2000..

NAT GAS   
O<sub>2</sub> 10.0 %  
CO 35 ppm  
CO<sub>2</sub> 6.3 %

MEMORIA STAMPA ON / OFF  
↑  
MENU  
← →  
CONFIRMA LAMP Ref. O<sub>2</sub>  
↓ ESC

 GreenLine 2000  
eurotron

# FLUE GAS ANALYSERS

## Introduction :

The handheld **GreenLine 2000** is the most comprehensive gas analyser available for:

- **boiler, burner, engine and furnace tuning and maintenance;**
- **draft, gauge and differential pressure measurements;**
- **search for presence and location of gas leaks;**
- **operator safety with ambient CO and O<sub>2</sub> continuous monitoring.**

## Easy replaceable gas sensors

GreenLine 2000 uses long life low maintenance sensors. Alarm levels with audible buzzer on gases measurement.

## Standard Report of Calibration

Each instrument is factory calibrated and certified against Eurotron Standard to ensure traceability, and shipped with a Report of Calibration.

## Rechargeable battery operations

Ni-MH rechargeable batteries provide longer field use.

Flue gas analyser and internal printer are powered by the same internal batteries.

## Keyboard & Display

Text, menu, and keyboard available in most common languages (not icons) for simple and intuitive operations. Engineering units are selectable by keyboard for US and European standard. The large multi-parameter LCD display is equipped with backlight.

## Multi Fuel selection

GreenLine 2000 provides up to 10 fuels for calculating combustion values. Most used fuels are pre-loaded from factory. Other fuels can be added using GasConfig PC software.

## Built-in impact printer

The instrument is available with an optional built-in rugged impact printer. It uses a low cost common roll of paper. Certainly more readable, long time and heat resistant than the thermal printout on chemical paper.

## External cordless HP printer

You can also print using built-in infrared interface for HP 82240B.

## Pressure/Draft input

Differential pressure input to measure draft, gas pipework leak with pressure decay programme, gas pressure, pressure in combustion chamber, and DP on filters and fan.

## Smoke index

Smoke index measurement is performed by using the optional external hand pump. The results can be stored in the internal memory and printed on the report.

## Gas sampling probe

Flue gas sampling probes, with different lengths and shapes, are available to match each specific requirement. The sampling probe is connected to the instrument with a single or dual hose through a water trap and a suspended particle line filter.

## Proprietary design trap

Patent pending to inhibit water into the instrument. External, to prevent risk of instrument damage. Large water tank capacity for condensation boiler. Small rubber cup for easy water purge. Long life paper filter.

## Combustion air temperature sensor

A remote Pt100 probe is available for remote combustion air temperature measurement. This probe is strongly recommended mainly in forced air boiler to obtain an accurate efficiency measurement.

## Ambient monitoring

The instrument can operate in two ways: A procedure can be selected to monitor the CO and the O in ambient air using the internal EC sensors. An internal program allows CO max measurement in ambient for spheric boiler check. An external optional probe is also available for continuous surveillance of the ambient and operator safety. Both acoustic and visual alarm are available.

## Gas leak sniffer

An **external** optional probe is available to locate the position of a gas leak. This probe has a flexible stainless steel shaft to reach difficult locations.

An **internal** optional sensor can be installed inside the analyser to locate

the position of a gas leak into the pipe network. The internal pump draws the air from ambient and makes the instrument more sensitive to microleaks.

## Ionization flame tester

Checks the ionization current in flame control sensor

## Flash memory

The flash memory allows the instrument to be configured by updating the GreenLine 2000 firmware for any future legislation requirement or product performance upgrading.

## Industrial probe & Compact cooler unit

A special sampling probe is available for industrial high temperature applications. This probe can be used connected to an external gas conditioning unit (see related bulletins). This compact unit cools and dries the gas sample.

## Report of Calibration

Each instrument is factory calibrated and certified against Eurotron GreenLine Standard, that is periodically certified by Internationally recognized Laboratory to ensure traceability, and shipped with a Report of Calibration stating the nominal and actual values, the acceptable error and the deviation error.

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## APPLICATIONS

Chaudières Industrielles,  
usines d'incinération  
Dessiccateurs pour  
industries peintures,  
textiles, alimentaire,  
papier, caoutchouc,  
Fours pour Ciments,  
verre, céramique, chaux,  
Compresseurs à gaz,  
unités de cogénération

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## SPECIFICATIONS

Parameter	Sensor	Range	Resol.	Accuracy
O <sub>2</sub>	Electrochemical	0 - 25%	0.1%	±0.1% vol
CO <i>H<sub>2</sub> &lt;2000ppm comp</i>	Electrochemical	0 - 8000 ppm	1 ppm	±10 ppm <300 ppm ±4% upto 2000 ppm 10% >2000 ppm
NO <sub>x</sub>	Calculated	0 - 5000 ppm	1 ppm	
CO <sub>2</sub>	Calculated	0 - 99.9%	0.1%	
T air	Pt100	-10 - 99.9°C	0.1°C	±(0.2% Rdg + 0.15°C)
T gas	Tc K	0 - 999.9°C	0.1°C	±(0.3% Rdg + 0.3°C)
Δ T	Calculated	0 - 999.9°C	0.1°C	
Pressure/Draft	Pont	±100.00hPa	1hPa	±3Pa < 300Pa ±1% Rdg. >300Pa
Excess Air	Calculated	1.00 - infinity	0.01	
Efficiency	Calculated	1 - 99.9%	0.1%	
Smoke Index	Paper Filter method	0 - 9 Bacharach		

! All emissions measurements are available also with a programmable O<sub>2</sub> reference value.

! NO<sub>x</sub> concentration can be shown in terms of stack equivalent NO<sub>2</sub>

! Accuracy limits are stated as % of reading. Additional ±1 digit error has to be considered.

! The pressure accuracy shown is valid only after zero procedure.

! Measuring readings can be directly converted from ppm to mg/Nm<sup>3</sup>, from hPa to mbar, mmHg, O<sub>2</sub> inH<sub>2</sub>O and from °C to °F

**Type:** palm-top combustion gas analyser with 1 or 2 gas sensors.

**Calibration:** automatic calibration procedure at instrument switch-On.

**Self-diagnosis:** Sensors efficiency test with display diagnostic messages.

**Fuel types:** Up to 10 selectable from keyboard.

**Power supply:** High capacity Ni-MH rechargeable battery pack / external battery charger.

**Charging time:** 8h at 90% with instrument Off.

**Battery life:** 6 hours (typical) continuous use (without printing and backlight).

**Memory:** up to 250 full analysis data structured by boilers (Tags).

**Printer:** Internal impact type 24 columns with 58 mm paper roll (8 meters long).

**Printer power supply:** from the analyser battery pack.

**Print autonomy:** up to 40 reports with full battery (typical).

**Service and user information:** 3 programmable lines.

**Printed report header:** 4 programmable lines.

**Display:** 40x58 mm alpha-numeric LCD with backlight device.

**Gas Pump:** 1.4 l/m @ 100 mbar

**Flue gas probes:** stainless steel shaft with incorporated temperature sensor.

**Serial communication:** RS232 serial interface.

**Infrared port:** compatible with HP82240B cordless printer.

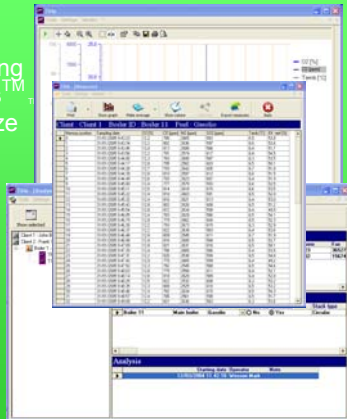
**Operating temperature:** from -5°C to +45°C

**Storage temperature:** from -20°C to +60°C

(3 months maximum at temperatures exceeding the operational limits).

## DBGas 2004 - Gas Analysis Database Manager

GreenLine 2000 can store 250 readings structured by boilers. Using the optional **DBGas2004** Windows™ software package, you can organize and manage your inspection and maintenance activity. Select your boiler details from PC and download to your GreenLine. **DBGas 2004** software package includes **GasConfig** Windows™ software. With this software you can modify the configuration of the instrument.



## Consumable Parts

EE650011	Filter paper set for smoke index measurements (40 pcs)
EE340005	Paper Roll
EE490002	Printer ribbon cartridge
EE650074	Spare line filter cartridge



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## Greenline 2000-A-B-C-D-E-F

### **A** Sensor N°1

- 0 None
- 1 O2 (0-25%)

### **B** Sensor N°2

- 0 none
- 2 CO(0-8000ppm)
- 2H NO(0-4000ppm)

### **C** Sampling Probe (including water trap and line filter)

- 0 None
- 2 300mm flue gas probe + draft (dual hose) max 500°C)
- 5D 750mm flue gas probe + draft (dual hose) (max 500°C)
- 5X 750mm flue gas probe (single hose) (max 1000°C)
- 8 750mm flue gas probe (single hose) (max 1200°C) without thermocouple
- F Sintered filter mounted on top (max. 800°C)

### **D** Options

- 0 None
- 1H Draft/differential pressure input with n.2 EE300088 hoses
- 2 Internal sensor for gas leak detector
- 3 External probe for gas leak detector
- 4 External probe for CO operator safety
- 6 Software DBGAZ
- 7 External probe for boiler ionization current
- 8 Remote combustion air temperature sensor with 2m cable and positioning cone
- P Built-in impact printer

### **E** Mains adapter / charger

- 1 Prise us 115V
- 2 Prise Schuko 230V
- 3 Prise UK 230V
- 4 Prise Europe 230V
- 5 Prise US/ japon 100 V

### **F** Accessories

- 0 None
- 1 Magnetic plate
- 2 Rubber protective holster with magnetic support
- 3 Vinyl case with shoulder strap
- 4 ABS carrying case
- 5 Aluminium carrying case
- 6 Manual pump for smoke index measurement with filters and comparison table
- 7 DC Auto battery charger

## ACCESSORIES



**BB880028** : ABS carrying case  
**BB880033** : Aluminum Carrying Case  
**BB880043** : Compact rigid carrying case with shoulder strap. GreenLine 2000, probes, and accessories need 1/3 of the classic carrying case space.



**BB610046**  
 Ø8 mm - 300mm (TGD - Temperature, Gas, Draft) sampling probe with 500°C maximum operating temperature.



**EE300088**  
 Single hose burner pressure probe



**F7828000** :  
 Manual pump for smoke index measurements



**BB830010**  
 Gas sniffer probe



**F2132100**  
 130mm air K-Type Thermocouple

**F2137100**  
 130mm contact K-Type Thermocouple



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The above mentioned characteristics are subject to change without prior notice

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\*Ranges available on www.cofrac.fr