

ENERAC™ 2000

A new generation
in combustion management





ENERAC 2000

The Enerac 2000 represents a new generation in integrated combustion management. Its unique modular design provides the flexibility to select the optimum combustion analyzer to meet every need. For the first time, the capabilities of a comprehensive combustion analyzer can be expanded with add-on communication, environmental (NOX-SO₂), and data modules.

All the modules can be purchased with the unit or quickly field installed when needed. Each is priced well within the budgetary authority of most combustion managers. Enerac 2000, an integrated combustion management tool that will:

- Improve Plant Performance
- Increase Safety
- Save Fuel



Interface Computers Direct or Via Telephone Modem

+ Communication Module: Meets the needs of a computerized world.

Computer Interface:

A unique feature of the Enerac 2000 is the ability to communicate with computers directly through an RS-232 port or remotely via an internal modem. The 2000 can be monitored and operated from across the room or across the country.

Remote operation gives the combustion manager instant access to data, integrated program management and improved productivity. When added to the 2000's comprehensive testing capabilities, the combustion manager has access to a level of information never before available.

Factory Testing:

Another key advantage of the Enerac 2000 is remote *factory testing*. With a simple phone call, the Enerac 2000 can be *factory tested* to insure it is working properly. The results of the *test* will be printed by the unit. In essence, the factory has come to the shop floor.

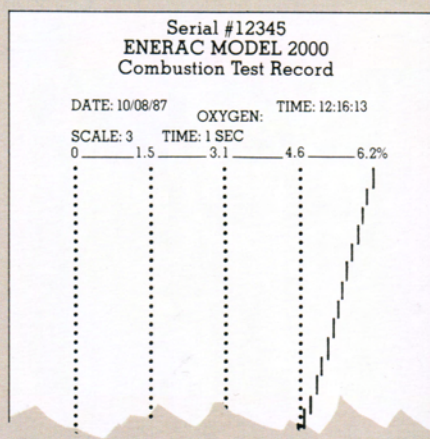
For the first time, a user can have the same reliability in a portable analyzer that one expects from expensive permanently installed equipment. The combustion manager can now be sure that routine testing programs will be carried out...accurately.

+ Data Modules Meet every data management need

Printer:

An easy to read 4 inch printer, allows all current and stored test data to be retrieved and documented instantly. A permanent record is always available.

Serial #12345 ENERAC MODEL 2000 Combustion Test Record	
FOR: YOUR COMPANY	
TIME:	12:41:35
DATE:	08/05/87
FUEL #6 OIL:	18660 BTU/LB
AMBIENT TEMPERATURE:	80°F
STACK TEMPERATURE:	590°F
OXYGEN:	10.0%
CARBON MONOXIDE:	20 PPM
CARBON DIOXIDE:	8.6%
COMBUSTIBLE GASES:	0.02%
COMBUSTION EFFICIENCY:	76.5%
STACK DRAFT (INCHES H ₂ O):	-01.2
EXCESS AIR:	86%
OXIDES of NITROGEN:	40 PPM
SULFUR DIOXIDE:	150 PPM
CARBON MONOXIDE ALARM:	50 PPM
TEST PERFORMED BY:	





+ NOX and SO2 Environmental Modules:

Meet the needs of a sensitive environment.

Environmental concerns are fast becoming an important factor in combustion management. New regulations are being added daily. Inexpensive and easy to install NOX and SO2 Modules can provide the combustion manager with reliable testing capability. Base line information of a plant's performance can be developed so there are no surprises. When the need arises, help is only a module away.



The Enerac 2000 is designed to be as advanced in the year 2000 as it is today. Let us show you how it will make a difference.

Contact us now for more information, and to arrange a demonstration. Call today at:

1-800-695-3637

Plotter:

With the press of a single button the combustion manager can capture a record of any parameter vs time (three scales & 59 time intervals). An unbelievably convenient tool for problem solving, making adjustments, or recording performance.

Data Storage:

This option allows the combustion manager to store the results of up to 99 complete tests; one a week for an entire year, or every service call for a month. A two digit boiler identification number is also provided. All stored data can be printed or sent to a computer—even over the telephone. Now test results can be easily saved and communicated.

Micro-Computer:

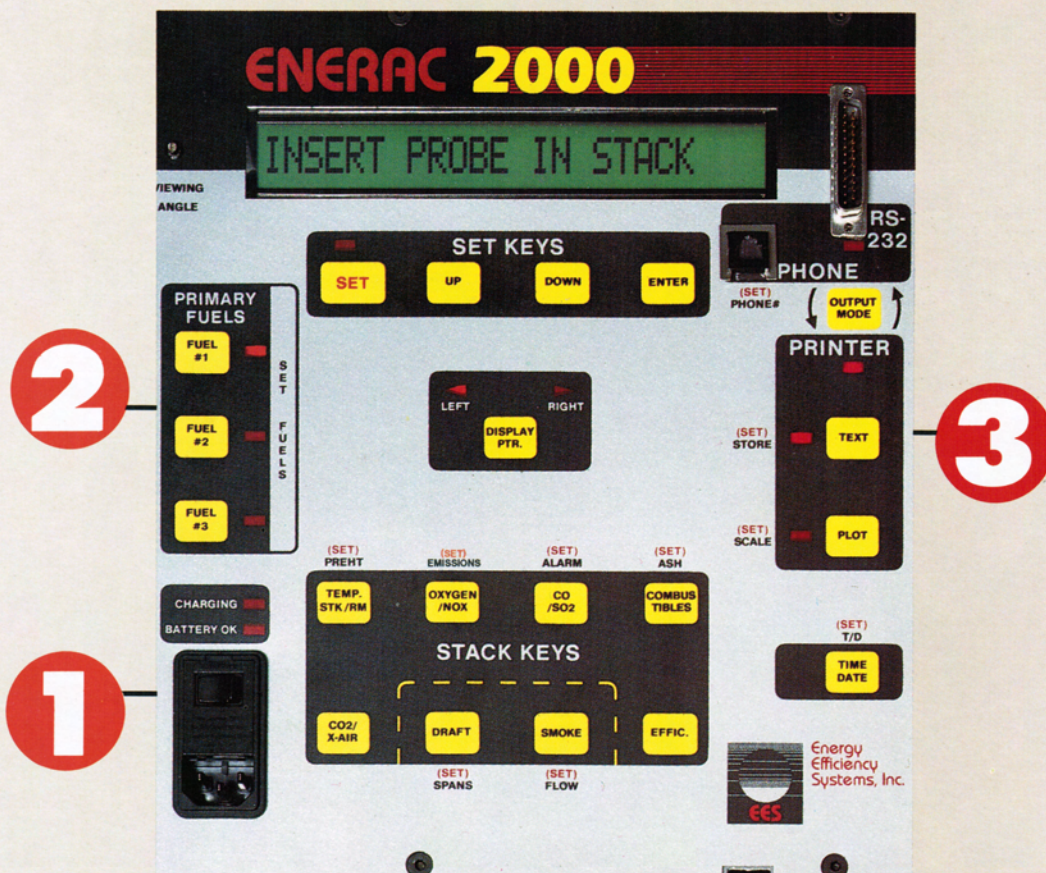
An optional pocket computer which fits into the unit's cover brings additional capabilities to the field. Data can be stored, logged, analyzed and integrated. Custom software is available.



Comprehensive Combustion Analyzer

Oxygen, carbon monoxide, combustibles, three factor efficiency calculation, RS-232 port, backlit display, calculated excess air, calculated CO₂, stack and ambient temperatures, pre-heat compensation, adjustable CO alarm, 15 fuels, time & date, combustibles in ash, inconel probe, up to 2000°F (1093°C) readings, high capacity water trap, draft test, smoke test, auto-calibration, anti-theft software, etc.

+ PLUS



Easy to Use

Simple three button operation

- 1 On
- 2 Fuel
- 3 Text

Reliable

- Self diagnostics
- Help messages
- Auto-calibration
- Auto-notice of routine maintenance
- Auto-span gas & draft calibration

Expandable

- Add-on modules
- Programmable fuels
- Computer ready

MEASURED PARAMETERS

	Range	Resolution	Accuracy
1. AMBIENT TEMPERATURE IC sensor	0-150° F	1° F or C	3° F
2. STACK TEMPERATURE Type K thermocouple	0-2000° F (- 1000° C)	2° F (1° C)	5° F
3. OXYGEN Electrochemical cell Life 1 year	0-25%	0.1%	0.2%
4. OXIDES OF NITROGEN (NOX) (Environmental option) Electrochemical cell Life 2 years	0-2000 PPM	1 PPM	5% of reading
5. CARBON MONOXIDE Electrochemical cell Life 2 years	0-2000 PPM	1 PPM	5% of reading
6. SULFUR DIOXIDE (Environmental option) Electrochemical cell Life 2 years	0-2000 PPM	1 PPM	5% of reading
7. COMBUSTIBLES (GASEOUS) Semiconductor sensor Life indefinite	0-2.50%	0.01%	10% of reading in CH4 gas
8. DRAFT Piezoresistive sensor	+ 10.0 to - 40.0" water	0.1" water	5% of reading
9. SMOKE	Smoke spot method, 0-9 smoke numbers in unit increments. Automatic timing		
10. TIME/DATE	Time in hours, minutes, seconds. Date in month, day, year format		

COMPUTED PARAMETERS

	Range	Resolution	Accuracy
1. COMBUSTION EFFICIENCY Heat loss method. Unique four loss factors computation. (dry gas, water vapor, gaseous combustibles, combustibles in ash)	1-100%	0.1%	(4 loss): 1% (above condensation) 2% (below condensation)
2. CARBON DIOXIDE	0-40%	0.1%	5% of reading
3. EXCESS AIR	0-1000%	1%	10% of reading
4. EMISSIONS UNITS	0-2000 MG/M3 0-10#/MBTU	1% 0.001%	5% of reading

MODEL 2000 SPECIFICATIONS

PHYSICAL:

- Case: 18" x 13" x 6" Aluminum case with lock. Weight: 15 lbs.
- Probe: 13"L. x 3/8"OD. Inconel probe with aluminum handle and 10' hose std. (Other sizes optional).

ELECTRICAL:

- Battery: 6V. rechargeable cell. 4 hour continuous operation on batteries. Quick 4 hour recharge.
- AC: 120V. 60 Hz. std. (220V. 50 Hz. optional) 1A.

DISPLAY:

0.5" High by 24 Character single line LCD with backlight illumination and adjustable viewing angle.

PRINTER:

4" wide, 40 char. per line thermal printer with form feed and line feed buttons and end of paper override. Operates in any of three modes:

- Text Mode: 25 line printout of current values of all measured parameters (time req. 20 sec.)

- Plot Mode: Any one parameter vs. time plotted, 3 ordinate scales: full, half, quarter. Time scale: Selectable, 1 sec/dot-1 min/dot in 1 sec/dot intervals.
- External Print Mode: Prints messages sent via RS-232 port.

STORAGE:

Internal: 99 individually selectable buffers hold one complete set of measurements each, including boiler identification number, in non volatile memory. Buffer contents can be sent to printer, RS-232 port or modem.

MICRO-COMPUTER:

Accessory micro-computer can store up to 300 measurements in non volatile memory.

COMMUNICATIONS:

- RS-232 Port. 1200 baud, 1 start bit, 8 bits, 1 stop bit, no parity.
- Modem: Internal 1200 baud auto-answer modem connects to any modular phone line for remote communication.
(A 50 word command set sends instructions

to the unit for remote control and troubleshooting).

MISCELLANEOUS:

- Fuels: 15 fuels, 3 in foreground, 12 in background standard. Custom fuels available on request.
- CO Alarm. Selectable 0-2000 PPM in 10 PPM steps.
- Combustibles in ash. Presettable 0-100% in 5% steps.
- Messages. One hundred diagnostic and help messages.
- Calibration. Autozero on start up. Software span calibration CO, NOX, SO2, combustibles and draft.

*Factory Testing—Available Spring 1988



**Energy
Efficiency
Systems, Inc.**

1300 Shames Drive
Westbury, New York 11590
(516) 997-2100 • Toll Free: 1-800-695-3637
FAX: 516-997-2129