

Model D86

Continuous Boiling Point Analyser

The ATAC Boiler continuously measures the percent recovered temperatures of petroleum products from 5% to 95% within the distillation temperature range 50°C to 400°C. The Boiler provides fast, continuous, reliable data and is simple to operate and easy to maintain.

- Fast, continuous boiling point analysis
- Correlates to ASTM D86 and ISO 3405-IP123 test methods
- Exceeds test method repeatability
- Accurate, reliable ultrasonic level detection
- Auto Calibration & Validation
- Local colour LCD display

TYPICAL APPLICATIONS

The ATAC Boiler is ideal for increasing yields, improving blending operations and controlling distillation columns to tight specifications in:

- Crude distillation units
- Blenders
- Towers
- Visbreakers
- Reformers

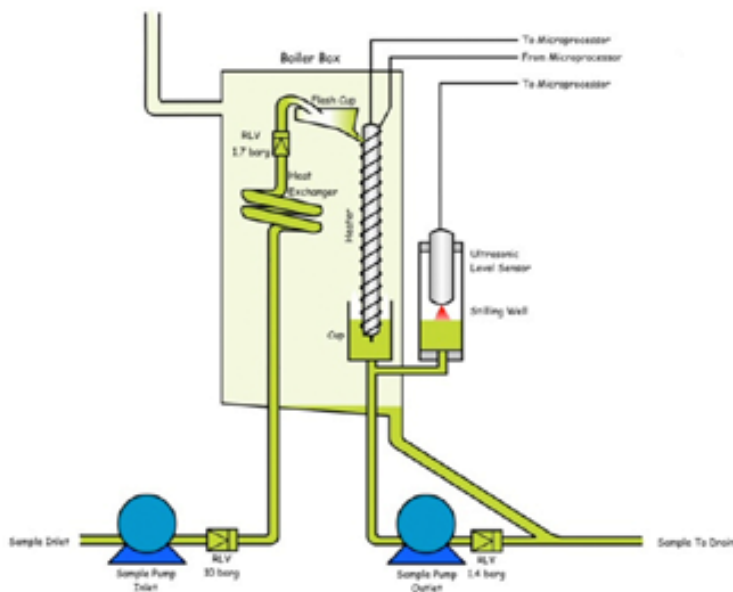
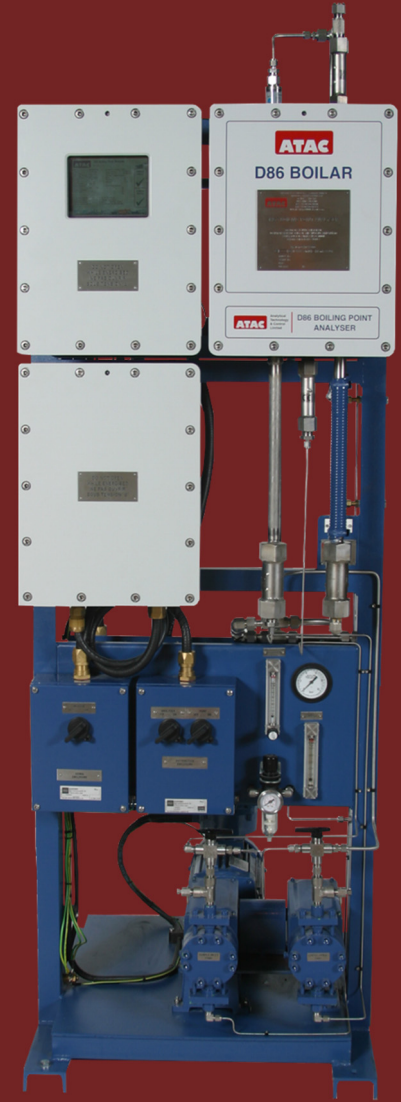


Figure 1: Model D86 schematic



PRINCIPLE OF OPERATION

The Boiler analyser schematic is shown in Figure 1. The sample is metered into a vaporiser assembly at a constant flowrate.

It then flows down a heater assembly maintained at a temperature dependent on the percentage of sample to be boiled off and the remaining sample is collected in a measuring device.

Boiler uses a two-term heater to provide precise temperature control and prolong heater life; it is also fitted with an ultrasonic level sensor for accurate, reliable data.

The sample is then discharged at a rate proportional to the sample input rate. The temperature of the vaporiser at equilibrium is the percent recovered boiling point.

This temperature is measured and transmitted. For example, if the 40% boiling point is required, the discharge rate is 60% of the input rate. If the vaporiser temperature is higher than the percent distillation temperature, more than 40% is evaporated and the level in the measuring device falls.

This causes an automatic reduction of vaporiser temperature until equilibrium between input and discharge is reached. The sample metering arrangements are infinitely variable between 5% and 95% and the percent-recovered boiling point can range from 50°C to 400°C.

The Boiler is microprocessor controlled with a local 6.4 inch (16.3cm) LCD colour display, shown in Figure 2.

One 4-20mA output for boiling point temperature is provided as standard, along with contacts for fatal and warning alarms, data valid and calibration or validation in progress.

Other communication options are available, including auto calibration or validation, up to 3 digital inputs for external signals, up to 4 external alarm inputs and TCP/IP and Modbus serial communications via RS485. Also as an option, the Boiler can calculate Cetane Index according to ASTM D976; this requires an input for stream density.

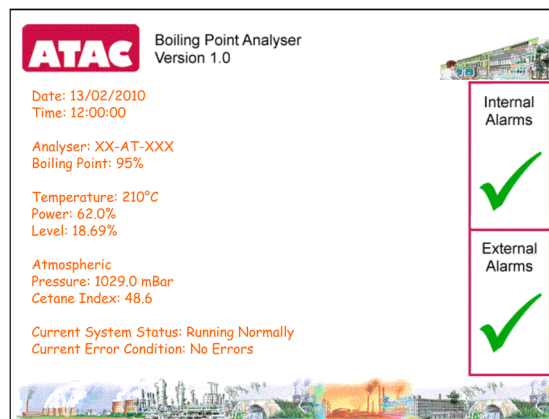


Figure 2: Boilar LCD display

SPECIFICATIONS

Type of Analyser	Continuous Single Point Distillation	
Application	Boiling Point Calculated Cetane Index (Optional, requires density input)	
Analyser Range	Temperature 50°C to 400°C for 5% to 95% distilled	
Output Scale	Minimum span 50°C within the above range	
Repeatability	Better than ASTM / ISO test methods	
Certification	ATEX certified to EN60079-0, 60079-1 and 60079-11 - II 2G EEx d IIB T4 (IIB+H ₂ option available) EMC EN1326 LDV EN6101-1	
Response Time	Approximately 2 minutes	
Local Display	Colour LCD Display	
Communications	4-20mA, RS232	
Power Supply	100 to 120 or 200 to 240Vac ±10% 50/60Hz 1200VA Maximum	
Relays	NC contacts, each rated at 0.5A, for Fatal Alarm, Warning Alarm, Data Valid, Heater/Pump, Cal/Val in progress and External Alarms	
Ambient Temperature	5°C to 55°C (A weatherproof shelter with good illumination is strongly recommended. In cold climates, background heating may be necessary to avoid plugging of sample lines by heavier products)	
Sample Temperature	65°C maximum (must be at least 20°C below the initial boiling point)	
Sample Pressure	1 barg minimum, 7 barg maximum. Sample drain must be to atmospheric pressure	
Dimensions	700mm (w) x 700mm (d) x 1800mm (h)	
Utilities	Coolant — clean water at 0.5 litre/min is required at 25°C maximum and inlet pressure of 5 barg maximum, depending on application. On more volatile products, cooling water between 5°C and 10°C will be required.	
	Air — plant instrument air is required at 3 barg, 0.5 litre/min for high temperature analyser (diesel or heavy gas oil applications) measuring temperatures above 300°C	
	Nitrogen — plant or bottle at 150/250 ml/min; 95% pure (optional)	
Connections	Water: 1/4" OD (inlet & Outlet)	Sample: 1/8" OD
	Nitrogen: 1/8" O/D	Auto Cal/Validate: 1/4" O/D
	Stream Switching: two 1/4" OD	Electrical: 1 x M20 x 1.5mm (Power In)
	Alarm & Signal: 2 x M20 x 1.5mm	