

ATAC DISTILLAR



ON-LINE DISTILLATION ANALYSER

The ATAC Distillar is a completely automatic, on-line process analyser that measures any distillation point or points which can be determined by the laboratory methods, ASTM D86 and IP123.

- Correlates to ASTM D86 and ISO 3405-IP123 test methods
- Exceeds test method repeatability
- Accurate, reliable optical condensate level detection
- Fast analysis enables process optimisation



TYPICAL APPLICATIONS

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

- Product blending
- Middle distillate monitoring

The unit offers a nitrogen purge option to reduce coking (and associated maintenance) on high-coking streams such as diesel and gasoils. It can measure single or multiple points, offering crude column control or multiple point finished product specifications.

PRINCIPLE OF OPERATION

The analyser copies the standard laboratory test, ASTM D86/IP123, as closely as possible. This close similarity between the analyser operation and the laboratory test ensures excellent agreement at all points for all products.

Fresh sample is flushed through the analyser to cool all wetted parts to at least 20°C below the IBP of the product being analysed. The Distillar burette is then allowed to fill with sample and settle at a volume of 100ml. This 100ml sample is drained into a pre-cooled flask which is then heated electrically until the analysis is complete. Figure 1 shows a schematic of the Distillar in the 'Heat' phase.

During the heating period, the power to the flask heater is controlled to ensure optimum rate of recovery for the product sampled, as defined by ASTM. The vapour travels up the neck of the flask and flows into a water cooled condenser. The vapour temperature is measured by a temperature sensor in the neck of the flask.

The distillate is collected in a receiver after passing through the water cooled condenser. Percentage recovered is measured by means of an optical detector and the recovery level and vapour temperature are monitored and compared with pre-set analysis points. The test cycle ends when all the nominated analysis points have been found. Results are output as 4-20mA process signals.

Distillar is certified to ATEX standards and provides extensive facilities for user configuration via the RS232 input and remote standard PC.

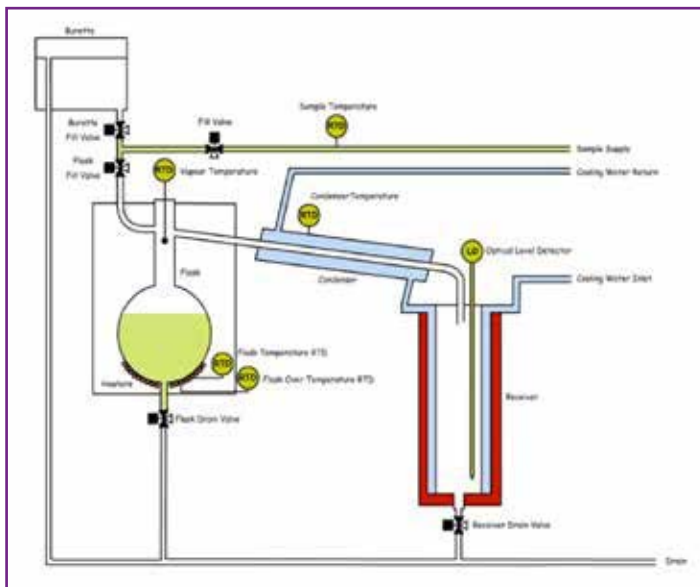


Figure 1: Distillar schematic

MEASUREMENT OUTPUTS

The ATAC Distillar can measure the following properties of the sample being analysed:-

- Initial Boiling Point (IBP)
- Final Boiling Point (End Point) (FBP)
- Recovery Point
- Distillation Point
- Total Recovery
- Continuous Recovery
- Continuous Temperature

These are available as up to seven, self powered, 4-20mA fully isolated i.s. trend outputs. Distillar also provides five digital outputs; four digital inputs (via intrinsically safe circuits) are available for external control. Analyser parameters can be changed remotely by means of the serial RS232 link and Distillar informs the operator of analyser status by an in-built 28 digit alphanumeric display.

SPECIFICATIONS

| | | | |
|--|--|---|---------------------------|
| Analyser performance | Range 0-400°C maximum; span 50-400°C, 10-100% | | |
| Repeatability | Equal to or better than the laboratory test for any particular operating point | | |
| Reproducibility | Within the limits as defined by the laboratory test for any particular operating point | | |
| Cycle time | 10-30 minutes typical | | |
| Output signal | Intrinsically safe 4-20mA fully isolated Load impedance: self powered 350Ω maximum Span: 50°C or 10% recovery minimum | | |
| Sample conditions required at inlet | Pressure: 0.5 to 1 barg Temperature: 20°C below expected IBP of the product being analysed; 45°C max. Flow: 20 to 30 litres/hour free of water and entrained solids | | |
| Sample conditioning | Complete sample systems can be supplied to condition the sample as required at the analyser inlet. | | |
| Sample disposal | The analyser sample outlet must be connected to a system which is at atmospheric pressure. Sample recovery systems can be supplied. | | |
| Analyser vent | The analyser must be vented to atmosphere. | | |
| Utility requirements | Power supply: | Voltage 110/120 or 220/240Vac ±10% Frequency 50 or 60Hz Consumption 600VA maximum | |
| | Instrument air supply: | Pressure 3-7 barg (dry) at 50 litres/hour <3 micron filtration | |
| | Cooling water: | Temperature: at least 25°C below the initial boiling point Pressure : <7 barg Consumption: 26 litres/hour | |
| Local display | A 28 digit alphanumeric LED display provides signal and diagnostic information. Standard display is in the English language. | | |
| Standard connections | Sample in: | ¼" o.d. | Drain and vent: ½" o.d. |
| | Cooling water: | ¼" o.d. | Air: ¼" o.d. |
| | Nitrogen (option): | ⅛" o.d. | Power and signals: ISO 20 |
| Explosion protection | The analyser is ATEX certified II 2(1) G Exd px [ia] IIC T3 for use in zone 1 hazardous areas. Certificate no. Epsilon 06 ATEX 2118 | | |
| Environmental protection | Whilst the analyser is weatherproof to IP55 and will operate in ambient temperatures within the range +5°C to +40°C, use of a weatherproof shelter is strongly recommended. | | |
| Weight and dimensions | 160kg Height 2200mm Width 900mm Depth 600mm | | |
| Options | <ul style="list-style-type: none"> • Multi-stream applications (up to 4) • Voltage free contacts for external alarms • RS232/485 adaptor allowing remote MODBUS communications for parameter setup • RS485 simplex MODBUS communication • Nitrogen blanket/purge for flask • Local standby switch • Local air purge override • Metric adaptor kit for connection • Tropicalisation of circuit boards • Up to 7 measuring points with loop powered I.S. outputs | | |

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