PGC5009
Fast process gas chromatograph
Measurement made easy

The challenge
A relatively small shift in the cut point for any refinery product can cost refiners millions in profits. In the absence of fast, accurate and reproducible boiling point data, refinery product yields are not optimized and more importantly, profits are lost.

The solution
The PGC5009 represents the best in process analytics for simulated distillation analysis using fast temperature programmed process chromatography. With a patented resistively heated column design and rapid cooling system, the PGC5009 provides superior chromatography. The results are proven: accurate and reproducible retention times and weight percentage measurements required for boiling point curve calculation enabling optimized refinery process control.
Product features

- ASTM D3710 (Gasoline) in less than 4 minutes
- ASTM D2887 (Diesel) in less than 5 minutes
- Patented resistively heated micro packed column design for fast C1-C36 separation
- 7 days of chromatogram and report storage comes standard on the PGC5000A Master controller with a removable SD card
- Integrated sample system communication for remote health monitoring
- Connectivity to the STAR Data Management System
- Open accessible oven and electronics enclosure

Stakeholder benefits

- Tight cut point control for product yield optimization can save millions in refinery profits
- Blending to pipeline versus costly storage
- Significant savings in analyzer technician time through remote system diagnostics capability and an analyzer designed for ease of maintenance

Specifications

Physical

Oven
- Environmental (enclosure) Protected from weather: IP 54, (NEMA 12) equivalent
- Ambient temperature range 0 to +50° C (32 to 122° F)
- Humidity 95% relative humidity, non-condensing
- Dimensions (W x D x H) 753 mm x 290 mm x 1283 mm
  29.7 in. x 11.4 in. x 50.50 in.
  (with X-purge assembly) 38.6 in. x 11.4 in. x 50.50 in.
- Weight 73 kg (160 lb.) (minimum)

Mounting
- Wall 41.3 mm (1.6 in.) from wall with brackets
- Floor Optional wheeled dolly

EMI/RFI considerations
- Conforms to Class A industrial environment

Electrical entries
- Top and right side

Pneumatic entries
- Right side

Sample entries
- Liquid Bottom, 1 each special version Model 791 LSV
- Vents Left side and Bottom

Safety area classification

NEC, CSA/NRTL, ATEX/IEC
- Class I, Divisions 1 Group B, C, D (T3 or T2)
- Conforms to IECEx/ATEX Directive 2014/34/EU and EMC Directive 2014/30/EU
  Zone 1: CE II 2G, Ex db eb ib pxb IIIB+H2(T3 or T2) Gb
  (T-code and protection method are dependent upon application.)

Safety Purge Control
- X-purge required for all area classifications

Purge Timeout
- 18.2 minutes

Power (Hot, Neutral, Ground)

- Voltage 100 VAC (+15, -6 VAC)
  120 VAC ± 10%
  230 VAC ± 10%
- Frequency 50/60 Hz ± 10%
- Power consumption 1200 VA Maximum, 240 VA Typical

Instrument air

- Supply connection 3/8 inch tube, minimum
- Supply pressure
  Low Pressure: 414–690 kPa (60-100 psig) with 15 scfm vortex cooler
  High Pressure: 586 - 690 kPa (85-100 psig) with 10 scfm vortex cooler
  (Note: Not all applications can be performed with the low pressure version)
- Quality Instrument grade: Clean, Oil Free and -34° C, (-30° F) dewpoint
- Flow rates
  Maximum l/min (12.0 ft³ /min)
  Steady state 278 l/min (9.8 ft³ /min)
Analytical detectors

- Standard detectors
  - Flame Ionization, Independently heated

Temperature programmed column section

- Column section cabinet

Configuration

- Painted steel housing independent of the Electronic Control section. Insulated for temperature stability. The LSV is attached through the bottom of the cabinet and connected on the inside to the micro-packed, electrically heated stainless column assembly. The heated FID is mounted at the top of the cabinet and connected to the effluent end of the measurement column.

Internal dimensions (W x D x H)

- 228 mm x 1165 mm x 199 mm
  - (9.00 in. x 45.85 in. x 7.85 in.)

Heat

- Direct electrical connection to the measurement column

Temperature control method

- Closed loop PID

Column temperature

- +10° to 300° C (Settings and display in °C only),
  - T3 or T2 Rating

Setpoint resolution

- 1° C

Analytical columns

- Micro Packed Stainless Steel

Column cooling

- At the end of the analysis cycle, the controller directs vortex cooled air into the column assembly to rapidly return this oven zone to the initial temperature, allowing the next measurement cycle to begin.

(When required by application)

Gas control – Electronic pressure control

Electronic pressure control

- Control method
  - Closed loop PID, temperature stabilized

Number of zones

- 1-5, Typically 4 used (carrier, makeup, H2 fuel, Burner Air)

Filtration

- 2mm at inlet, provided

Inlet pressure

- Minimum: Setpoint + 69 kPa (10 psig)
  - Maximum: 1034 kPa (150 psig)

Range

- 0-100 psig, bubble tight, non-venting

Gauges

- Electronic readout: 0.01 psig resolution
  - Setpoint resolution: 0.01 psig

Accuracy

- 0-50 psig: 1.7%
  - 50-100 psig: 2.7%

Repeatability

- +0.1 psig

Allowable gasses

- H₂, He, N₂, Air

Quality

- GC Grade

Flow adjustment

- Needle valves, Split Flow only; EPC used for Column Flow

Tube fittings

- 316 SS Gyrolok (standard); 316 SS Swagelok (optional)
  - 1/16, 1/8, 1/4 inch connections
External Dimensions

PGC5009
External Dimensions

PGC5000A

1. DIMENSIONS SHOWN IN PARENTHESES [ ] ARE IN MILLIMETERS.
Notes