

PGC1000 Meeting the needs of NGL plants

ABB MEASUREMENT & ANALYTICS | ANALYTICAL MEASUREMENT



Measurement made easy

Why the PGC1000? The most efficient analysis

The PGC1000 is a revolutionary product designed to handle the challenge. ABB is proud to meet the demands of an ever-changing and ever-growing staple of the petrochemical market.

PGC1000 offers

- Low cost Cost effective (no shelter) and low maintenance
- Mounting options Online, wall-mounted or floor-mounted
- Carrier options Helium, hydrogen, or nitrogen
- Compact size 6.75" diameter x 16" length x 9" height, 28 lbs.
- Modular Modular hardware and software for greater ease of use
- GC valve No metal moving parts, offering millions of cycles between failures
- TCD Detector sensitivity unmatched in the industry
- Applications Ability to address a variety of petrochemical & refining applications
- Operational efficiency Low carrier usage rates, low power consumption, and no compressed air

NGL production is surging. The PGC1000 is a revolutionary product designed to meet the demand. ABB is proud to face the challenges of an important feeder for petrochemical and refining plants. PGC1000 provides the flexibility, reliability and performance for efficient, low maintenance and high throughput NGL production.

PGC1000 for Natural Gas Liquids (NGL) plants

Simple proven design, easy installation, low maintenance, and faster troubleshooting of the PGC1000 means greater process uptime.

> Natural gas liquids (NGL) production provides valuable by-products for refineries and petrochemical plants. By-products include ethane, propane, butane, isobutane, and natural gasoline. These gases are typically sold separately and vary in use, from providing raw materials as a chemical feedstock, to improving oil recovery with oil wells, and acting as an energy source.

NGL markets are surging. Demand is driven by high NGL prices relative to natural gas, growing production in gas shale plays, and the expanded use of cryogenic gas processing. This growth dictates the need for higher gas quality, production efficiency and plant cost-containment. ABB's PGC1000 is uniquely positioned to address NGL market requirements. The PGC1000 is a field-mounted process gas chromatograph (GC) measuring C1 - C9+, inert gases and H2S. PGC1000 is specifically designed for process and gas quality control. Simple proven design, easy installation, low maintenance and faster troubleshooting of the PGC1000, means greater process uptime and throughput.

Key objectives for NGL production are:

- Separating incoming gas into specified products with minimum energy consumption
- Maximizing throughput while making products to specifications
- Optimizing product specifications versus energy consumption to achieve optimum economic return

The PGC1000 achieves these objectives while maintaining superior performance. PGC1000 is the most accurate/cost-effective GC solution on the market, requiring no shelter and substantially lowering cost of ownership. The PGC1000 has a direct and quantifiable impact on a NGL plant's bottom line.







Stream	Components analyzed	Purpose	Code	Train	Cycle time	Measured components
Demethanizer bottoms	C1, C2 (%)	Maintain C1to C2 ratio	2.00	вст	1 min	C6+, C3, IC4, NC4, NeoC5, C5, IC5, NC5
Ethane product	C3 (ppm)	Product purity	2.00	вст	1 min	C6+, C3, IC4, NC4, NeoC5, C5, IC5, NC5
Deethanizer bottoms	C2, C3 (%)	Maintain C2 to C3 ratio	2.00	вст	1 min	C6+, C3, IC4, NC4, NeoC5, C5, IC5, NC5
Propane product	IC4 (%)	Product purity	2.00	вст	1 min	C6+, C3, IC4, NC4, NeoC5, C5, IC5, NC5
Depropanizer bottoms	C3, C4 (%)	Maintain C3 to C4 ratio	2.00	вст	1 min	C6+, C3, IC4, NC4, NeoC5, C5, IC5, NC5
Debutanizer overhead	NC4, C5+ (%)	Maintain C5 to NC4 ratio	2.00	вст	1 min	C6+, C3, IC4, NC4, NeoC5, C5, IC5, NC5
Isobutane (debutamer)	NC4 (ppm)	Product purity	3.00	BBJ	5 min	C5+, C3, IC4, NC4
Normal butane (debutamer)	IC4 (ppm)	Product purity	300%	BBJ	5 min	C5+, C3, IC4, NC4
Debutanizer bottoms	NC4 (ppm)	Product purity	200%	вст	1 min	C6+, C3, IC4, NC4, NeoC5, C5, IC5, NC5
Depentanizer overhead	NC5 (ppm)	Maintain IC5 to NC5 ratio	200%	вст	1 min	C6+, C3, IC4, NC4, NeoC5, C5, IC5, NC5

PGC1000 NGL fractionation

Once NGLs have been separated from the natural gas stream, they are further separated into component parts (fractions), using a distillation process known as fractionation.

NGL plants typically consist of a series of fractionators whose purpose is to separate a mixture of light hydrocarbons into product. NGL production sites can involve propylene fractionation units, butane isomerization facilities, octane enhancement processes and high purity isobutylene facilities.

The separation of methane, ethane, propane, isobutene and pentane are done for the purposes outlined:

- Methane from the demethanizer is used as fuel or feedstock to a methane reformer for the production of synthesis gas (CO & H2).
- The ethane stream supplies fuel or feedstock for chemical production of ethylene.
- The propane stream provides either fuel or feedstock for propylene production.
- A normal butane stream is typically used for feedstock to a butamer unit to make isobutane or fuel.
- The isobutane product is feedstock for an alkylation unit.
- Pentane-plus fractions are important in gasoline blending.

PGC1000 capabilities for NGL plants fall into two categories:

- Monitoring of overhead product purity
- Monitoring the efficiency of each gas fractionation tower

The NGL fractionation process diagram and chart below, details the various fractionation columns found in a typical NGL plant. It provides the corresponding PGC1000 applications (trains) used for sample point measurement. Application cycle times and measured components are supplied.



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