

# New Emerson Gas Chromatograph Targets Natural Gas Applications



Emerson Process designed its new Rosemount Analytical 370XA GC to address key ease-of-use and lifecycle cost issues for natural gas custody transfer applications on pipelines, shale gas production sites, and other remote locations.

## *Emerson Process Management*

*By Paul Miller and Dick Hill*

Executives from Emerson Process Management's Rosemount Analytical business unit recently briefed ARC Advisory Group on the company's new Rosemount Analytical 370XA Gas Chromatograph. The company appears to have put quite a bit of thought and effort into ensuring that this compact GC addresses some key issues faced in upstream and midstream applications. These applications include monitoring and custo-

dy transfer in both natural gas pipelines and shale gas production, where the production sites are often geographically dispersed in remote locations where skilled operators and technicians are in particularly short supply.

With multiple units installed and performing well on natural gas pipelines (often in parallel with the company's venerable model 500 GCs), Emerson plans to formally introduce the



## Rosemount Analytical 370XA Gas Chromatograph

370XA at the OTC Conference in Houston in May.

Key takeaways from this briefing include that the 370XA is:

- Targeted at upstream and midstream natural gas custody transfer metering applications in remote locations (not a full process GC)
- Designed so that no special skills are required to install, configure, maintain, or calibrate the device
- Designed to reduce lifecycle costs, particularly those associated with power and carrier gas consumption and GC module replacement

## Addressing the Skills Shortage

In recent years, ARC has written extensively about the challenge presented by the increasing shortage of experienced and skilled technical personnel to operate and maintain industrial facilities. Several sessions at our recent Industry Forum in Orlando, Florida also addressed this issue and included calls for automation suppliers to make automation technology less complex and thus less dependent on technology specialists to implement and maintain. Emerson Process Management's new Rosemount Analytical 370XA gas chromatograph appears to "hit this nail right on the head." According to product marketing manager, Shane Hale, "We've seen a shift toward lower skill levels in the field plus increased time constraints across the board and designed our new GC to address both points." Traditionally, gas chromatographs have been notoriously complex systems that required highly specialized skills to configure, calibrate, operate, and maintain.

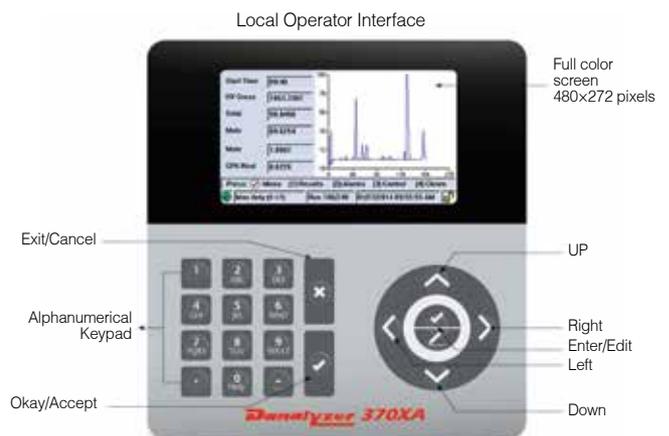
Ease-of-use features built into the new GC include a fullcolor, menu-driven local operator interface (LOI) with built in soft-

ware assistants that guide the user through device configuration and other common tasks. This replaces the often-confusing PC software traditionally used to interface with GCs and means that pretty much anyone in the field who can read English and follow simple directions can operate the device and perform routine maintenance tasks. These include changing the calibration gas, recalibrating the unit, initiating auto valve timing, and replacing the analytical module in the field. The unit also automates many common tasks, including validating calibrations and valve timing and purging, configuring, and calibrating a new analytical module.

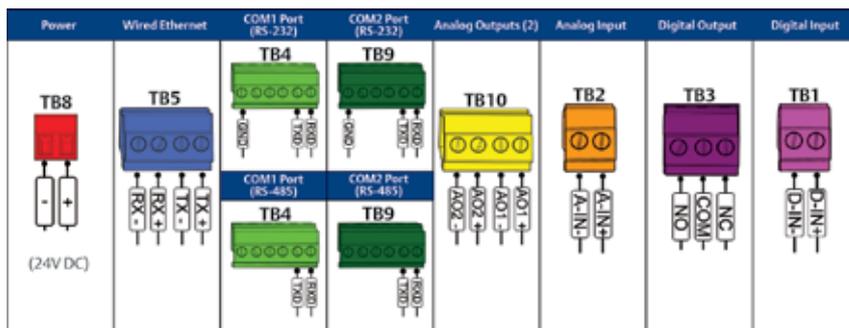
## Reducing Lifecycle Costs

Unlike typical "inside the fence" operations in gas plants, petrochemical plants, and large storage terminals; natural gas pipeline monitoring stations and shale gas and other production sites are often widely dispersed across broad geographic areas and situated in remote locations. Nevertheless, accurate analytical product composition and, specifically, "energy content" measurements are still required at these locations (which are typically minimally instrumented) to support custody transfer from one product owner to another. The need to install individual GCs at each site not only multiplies the upfront investment required to purchase and install all those GCs, but also the significant ongoing lifecycle costs for power, calibration gases, and maintenance and repair.

With this in mind, Emerson has incorporated many features into its new GC to reduce both installation and lifecycle costs. The 370XA is designed to be floor-, wall-, or pole-mounted. Optional gas bottle cradle assemblies can provide a particularly neat



Menu-Driven Local Operator Interface Features Menu-Driven Operation with "Intelligent Assistant"



Terminal Board Map Key

installation that requires minimal footprint on site. Since the unit is agency-rated to IP65/NEMA 4X and Class 1 Div 1 environmental and safety classifications and tested for -20 °C to 60 °C (-4 °F to 140 °F) environments, it can be mounted right out in the field with no special enclosures or shelters required in most cases.

The unit requires only 50 watts of 24V DC line power at startup and 20 watts in the steady-state mode. According to the company, special features help reduce both ongoing carrier gas consumption through more efficient design and consumption of expensive calibration gases by minimizing calibration gas flows during the purge cycle.

Also, according to the company, the 370XA's replaceable "Maintainable Module" is unique. Unlike competitors' replaceable (but usually throwaway) analytical modules, Emerson's maintainable modules can be repaired in the field or, if necessary, sent to a shop for repair and eventually returned to service. This can include replacing the GC detector, analytical columns, analyzer valves, and other internal components. ARC has to agree that this appears to be a much more cost-effective approach, since it avoids having to discard an expensive module that - in some cases - might just need an inexpensive valve overhaul.

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### Four-Minute C6+ Analysis

In natural gas custody transfer applications, the GC serves as the "cash register" that enables transactions to take place. To this end, the 370XA is designed to provide continuous online analysis of natural gas in four-minute intervals over common C6+ gas (Methane, Ethane, Propane, etc.) measurement

ranges. According to the company, in field trials on pipelines in which the new analyzer has been installed in parallel with the company's well-field-proven model 500 GCs, the compact new 370XA's have proven to perform as well as if not better.

### Communications

In today's "connected" industrial environment, it's important for field devices and systems to communicate with other devices

and systems, ideally, using secure, industry-standard communications. To support this, the 370XA has two Ethernet ports, a digital input and output, two analog outputs, and two serial outputs that can be used to connect to a DCS via Modbus.

While it would have been easy enough to do so, due to the sensitive nature of these custody transfer measurements, the company has intentionally not included on-board WiFi communications. This helps ensure data security and prevent unauthorized tampering with the device.

### Conclusion

As automation technology becomes increasingly more sophisticated, it also often tends to become more complex. This, at a time when a shortage of skilled personnel is one of the greatest impediments to continued growth and profitability in the upstream oil & gas and other process industries. ARC is pleased to observe that several leading automation suppliers appear to be taking note of this, driven – no doubt – largely by pressure from their customers, most who would like to see automation move off "the critical path" in capital projects. (Readers may want to refer to this YouTube video of a related end user presentation at the recent ARC Industry Forum.)

Emerson's new 370XA Gas Chromatograph addresses this challenge with increased automation and intelligent menu-driven operation that virtually eliminates the need for highly skilled personnel to install, configure, calibrate, operate, and maintain the device. 

### Reference

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