

Practical advanced control helps midstream operations

Although digital control systems—distributed control systems, programmable logic controller, and other automation equipment—are present in practically every process safety management (PSM) facility and in many non-PSM facilities in the midstream oil and gas industry, the use of the automatic control capability in those systems continues to be lower than it could be.

Many issues contribute to the large number of control loops that can be found in manual mode at most facilities, and most control strategies employed in today's midstream processes simply mimic designs developed for panel-board instruments decades ago. But gaining practical, sustained benefits from this process-control equipment is readily achievable: Typically, little capital investment is required other than initial engineering and commissioning labor.

With a reasonable investment in such basic support as maintenance and training to sustain performance, the effective use of automatic process control can deliver substantial operating benefits over the long term.

Control systems seem to be regarded in many operations as more a necessary evil than a benefit, and the choice of control equipment, the execution of the programming tasks, and the theoretical knowledge of many of the designers of complex controls reflect this attitude.

Even though control systems can have a major impact on operations for good or ill, much more time and energy are spent on the maintenance of rotating machinery and other process equipment run by the control system than on the most essential components of the control system—the engineering and design of the software included in the system that converts it from a collection of parts into a purpose-built system tailored to control a specific facility.

Yet control systems can play just as beneficial a role in successful processing operations as a well-maintained 6,000-hp compressor or a modern cryogenic demethanizer.

Where employed

Automatic control systems are employed in most areas of midstream, including:

- Field compression.
- Gas conditioning (sweetening and dehydration).
- NGL extraction.
- NGL fractionation.
- Heating systems.

Each of these operating areas holds opportunities for achieving benefits from either advance process control (APC) or from enhanced proportional-integral-derivative (PID) controller strategies typically referred to as advanced regulatory control (ARC).

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