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A purpose-built controller

Woodward's Vertex control line suited for axial or centrifugal compressors

By **Jack Burke**

The new Vertex control product line from Woodward is the extension of two products that have longevity in the field, said Rich Kamphaus, the company's global sales director for steam turbine and compressor markets.

The Vertex line is designed to control and protect industrial-sized axial or centrifugal compressors driven by stationary speed motors, variable frequency drive motors or turbines. It's an extension of Woodward's 505 steam turbine control, which has several thousand units in the field, Kamphaus said. The Vertex software control algorithm is the extension of Woodward compressor control and protection algorithms used globally by compressor OEMs on large, critical compressor packages and multiple control and protection algorithms.

Set for configuration

The Vertex line is a purpose-built controller that has the control, protection and decoupling logic required for one or two recycle loop compressor applications. Algorithms are used to ensure that proper start sequences are followed, proper and accurate compressor load calculations are used, and proper protection and recovery actions are performed, the company said.

Designed to function as a plant DCS node, the Vertex controller can be configured to interface with the plant DCS via hardwired inputs/output signals or serial or Ethernet communications. With the capability to monitor and control all compressor-based functions, the Vertex controller is a compressor control/protection device, as well as a plant DCS monitoring node, the company said.



Woodward's new Vertex control product line is designed to control and protect industrial-sized axial or centrifugal compressors driven by stationary speed motors, variable frequency drive motors or turbines.

The creation of the Vertex was the result of requests from multiple end users and compressor OEMs who asked Woodward to create a low-cost user configurable compressor controller that could be standardized throughout a refinery or petrochemical plant, Kamphaus said. In the past, Woodward only provided such controllers for steam turbine applications.

"Vertex is truly a transformative solution to absolute compressor control," Kamphaus said. "Many of the past compressor controllers were considered 'black boxes', which were not truly understood and could only be configured by the control manufacturer. Those days are gone."

Kamphaus said that end users are often forced to use multiple devices from several vendors that required substantial and continuous integration efforts. The Vertex offers one integrated, purpose-built device for complete compressor control and protection, he said. In addition to surge prevention, surge recovery, process bias logic and compressor process limiting, Vertex also performs auxiliary functions.

Kamphaus said a big benefit of Vertex is

cost savings. For example, because end users know their plant processes best, they are best suited to configure the Vertex and related compressor to best match their own plant process, instrumentation and startup and shutdown routines.

All about control

Once familiar with the Vertex, plant engineers and technicians can perform

their own compressor commissioning tasks, Kamphaus said.

The Vertex controller is field configurable, allowing users to configure/select the specific control algorithm required for the specific compressor loop and application. The control's special stage-to-stage and performance controller decoupling logic allows stable control during normal compressor operation, as well as during plant upsets, minimizing process over- or undershoot conditions.

"The Vertex advantage can be summed up by better software and better anti-surge algorithms," says Kamphaus. "The Vertex controller includes Woodward's patented Rate Limiter PID control function."

Vertex, designed for upstream and downstream processes, features an integrated graphical control panel, which includes many interface screens including a real-time graphical compressor map, Kamphaus said.

Vertex anti-surge controllers are designed for industrial-sized axial or centrifugal compressors with 1 or 2 recycle loops. Custom Vertex-Pro models are available for larger 3 and 4 recycle loop applications.

Designed to replace CCC Series-3 and Series 3++ anti-surge controllers, Vertex can be configured to function like those controllers, but with faster scan rates and improved surge anticipation logic.

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