control design

Scaled-down DCS for process skids

THE EMERSON DELTAV PK Controller targets the OEM market, process skid builders and any smaller end-user plants or projects. This dual-functionality controller can start small as a stand-alone island of automation or go big with redundant capabilities and native integration into a DeltaV distributed control system (DCS).

"This is a fit-for-purpose DCS controller," says Bob Halgren, DeltaV product marketing director at Emerson. "The controller has the ability to scale down to the application for skid units that usually don't require all the bells and whistles of a traditional DCS and are often controlled by PLCs. It can also scale up to be part of a DCS in a larger plant."

The PK Controller was designed with OEMs and end users in mind for applications spanning onshore oil and gas wellpads to processing skids in life sciences, chemical and food and beverage, continues Halgren. "We wanted to make it simple for the end users to take what the OEM provides and pull it in to a DCS," he says. "We worked to make it a best-of-both-worlds approach."

Customer needs drove the development of this new controller. "It's common to see a variety of PLCs and other controllers installed in the plant, primarily as skid units. But customers experience pain when they need to connect and integrate these third-party systems into the DCS," says Halgren. "Typical methods include Modbus and EtherNet/IP, which usually require a painful data-mapping experience."

The PK Controller eliminates the data-mapping process. "The database of a stand-alone PK Controller can be effectively merged with a database of a DeltaV system," says Halgren. "A merging tool is used to easily make the PK Controller a native node on the DeltaV system."

The controller will be available in device-signal-tag (DST) capacities of 100, 300, 750 and 1,500.

The I/O cards used with a PK Controller utilize all the current DeltaV options, including traditional, CHARMs and wireless I/O cards and carriers. "We have also added a new M-Series four-wide carrier to reduce footprint in a control panel," says Halgren. "It also provides a safety instrumented system solution and can be used with our Safety Logic Solver or SIS with Electronic Marshalling."

Another feature is the built-in redundancy for controllers, communication and power supplies. "It's easy to add redundancy without adding footprint," says Halgren. "With the PK Controller, adding a redundant controller simply requires plugging it into the second CPU slot on the same backplane, providing easy, cost-effective redundancy."

The controller incorporates multiple Ethernet protocols, such as EtherNet/IP and Modbus TCP. It also includes an OPC UA server, an option for Internet-of-Things architectures.

Similar to the functions of a PLC or PAC, there are separate software and engineering tools that are installed on a PC for development. This is used to configure, program and troubleshoot the hardware. The program is then downloaded to the controller. This PK Controller engineering software will not require a software license for each piece of hardware.

"One of the operational benefits is reduced engineering costs; engineers only need to learn one system," says Halgren. "For a stand-alone PK Controller, we started with the same DeltaV engineering software and package it to edit only a single PK Controller at a time but use the same software, function block and graphics package as a DeltaV system."

A DeltaV Operator Panel will be available for panel HMI needs. It's the standard operator workstation software, so, if the PK Controller is merged with the DeltaV system, the graphics become portable and can be used elsewhere in the system. The licensed workstation will include the 250-tag DeltaV Continuous Historian. It will be easy to expand the number of tags and to add DeltaV Advanced Batch software.

Interested users can see the DeltaV PK Controller and its accompanying software on display at the 2017 Emerson Global Users Exchange in October in Minneapolis. CD

For more information
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