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Process skid standardization: What manufacturers want

Manufacturers want easy skid integration with their plant-wide control systems.

By Dan Hebert, PE, senior technical editor

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OEM skid builders keep costs down by using the same automation system time after time. But purchasers want every skid they buy, regardless of the supplier, to have an automation system compatible with their plant-wide control system. This conflict is not new, but open systems and standards often provide a solution.

The main components of a skid's automation system interfacing to a plant-wide control system are the HMI, the controller and the instruments. Let's first look at the case where the skid has its own HMI and controller.

In these cases, it's very expensive for the OEM to switch from one HMI and controller to another at the behest of the purchaser, and it will generally add to lead times. OEM support can also be compromised,

as it's naturally more difficult for the OEM to support an unfamiliar automation system.

For these reasons, many purchasers let OEMs use their preferred automation systems and only require a standard interface, notes Greg Turner, OEM segment business manager for process at Rockwell Automation. "Skid builders can develop automation solutions which connect disparate devices and instruments together on a high-bandwidth, high-performance, secure industrial network using a standard communications protocol," he explains. "The most common of these is Ethernet Industrial Protocol (E/IP), which allows for the use of off-the-shelf products adhering to standards such as IEEE 802.3 and TCP/UDP/IP."

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Siva Kanesvaran, senior application design engineer, Schneider Electric, agrees. "Ethernet-based communication protocols can support remote maintainability of a process skid controller," says Kanesvaran. "Also, many skid devices now have Web servers that provide a means to remotely troubleshoot and visualize device-level operations at a skid from a control room."

“What about those situations when a skid builder wants or needs to use analog instruments but is required by the purchaser to provide a digital interface protocol?”

But many would rather buy skids without an HMI or a controller, preferring to instead automate the skid from the existing plant-wide control system. In this case, the difficulty arises in interfacing to the skid's instruments.

"Profibus PA offers many choices of instrument brands, so a skid builder can vary the brand according to user requirements and still provide a consistent Profibus interface," says Carl Henning, deputy director of PI North America. "Since almost every DCS maker provides for a Profibus connection, the purchaser can easily integrate the skid."

A common protocol like Profibus PA helps but isn't the complete answer because smart instrument integration files must also align. "End users wanted only one integration file for all digital communication variants, which led to the development of the FDI specification in 2011," points out Bastian Engel, the team leader for technology marketing at Endress+Hauser Process Solutions. "The first official FDI specification release was in 2015, and it will be managed by FieldComm Group, which currently also oversees Foundation Fieldbus and HART. The primary objective is a single, unified information package for each intelligent device that can work with all host systems and tools. This

should reduce overall development costs, while preserving and expanding existing functionality. At this time only HART, Profibus PA and Foundation Fieldbus are covered."

But what about those situations when a skid builder wants or needs to use analog instruments but is required by the purchaser to provide a digital interface protocol? "Since almost all distributed control systems and PLCs support Modbus natively or offer third-party Modbus interface cards, a universal Modbus I/O interface solution such as our NCS NET Concentrator System eliminates the need for most process skid custom interfaces," explains Jim McConahay, PE, a senior applications engineer with Moore Industries.

"The NCS accepts temperature, analog and discrete inputs and offers two independent Modbus RTU outputs and one Modbus/TCP output," says McConahay. "We also offer HART-to-Modbus converters for

process skid builders using HART instruments on their skids.”

And finally, there’s the problem of interfacing to instruments on mobile process skids. “Our WirelessHART instruments can be easily interfaced to a plant’s existing WirelessHART infrastructure,” says Ravindra Agrawal, manager of projects at Emerson Process Management. “This allows the skid to be moved around as needed, without having to constantly disconnect and reconnect wiring.”

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