Wanted: intelligence

Interview: Control systems have to be designed with the long term in mind.

Process control systems have been providing dependable service at chemical plants for many years. However, new challenges often put these systems into the background. Nevertheless, or perhaps precisely for this reason, attention will be focused on process control systems at the NAMUR annual meeting this year. Hellmut Kopec from Bayer Technology Services is a member of NAMUR working group PLC and PCS. PROCESS asked about the strengths and weaknesses of today's systems.

PROCESS: Mr Kopec, are users satisfied with their current control systems?

Kopec: In general, I think that we have reason to be satisfied with today's process control systems, especially during the operational phase. They offer the functionality users need, and because they are relatively stable they do not have a negative impact on production system availability. Down time caused by software upgrades is, however, an annoyance.

PROCESS: Only a few years ago, process automation and production automation were two different worlds. Today, the major system suppliers are now concentrating on a single system that can be customized to meet the needs in various industries. Do you agree with this approach?

Kopec: The important thing is that the systems meet the requirements in a given application. It is undoubtedly beneficial if customization can be used to adapt a multipurpose system to the needs of the process industry, as higher unit volumes will drive down manufacturing costs. However, it would be unwise to underestimate the complexity of customization, as this involves changes to the system architecture. Continuous operation over long periods is characteristic of the process industry. As a result, software modifications or even upgrades need to be made online. Systems designed for the petrochemical industry are more likely to fulfill this requirement.

PROCESS: While we are on the subject of software upgrades, how can the conflict between innovation and long term use of a control system be resolved?

Kopec: Any innovation which delivers clear customer benefits is always welcome. However, a new operating system is not an innovative feature of a control system. The systems are part of a production line which runs for many years. Today, it is unrealistic to expect that control system components will have the same life cycle as the production system. We do expect this, however, from the applications software. In practice, this means that PCs and operating systems may change, but the new systems must run the same applications software. This enables users to run the applications software for many years and will use up-to-date PC hardware and software. This approach can also minimize the downtime associated with software upgrades. Long-term use of applications software must be included as a design goal during control system development. Design engineers should evaluate their system strategies from this point of view. Passing the buck to operating system suppliers is not acceptable. At the end of the day, it is the system developers who choose the operating system.

PROCESS: How can the security of control systems be safeguarded?

Kopec: The necessary external links have to be planned into the system right from the beginning. Process control personnel should have access to simple, user-friendly tools which enable them to keep an eye on what is going on. Applications such as virus scanners must not degrade system performance. Security needs must be defined so that appropriate measures can be implemented. In a company network, a router with MAC addressing restrictions is often sufficient. The operating system on current control system PCs is often little different from multi-media PCs, and this makes them vulnerable to security breaches. In the long term, security aspects will have to be given adequate consideration during the system development phase.

"In the future, we will have to get a handle on software version management."

Hellmut Kopec

PROCESS: What is on the wish list of control system users?

Kopec: You have to differentiate between different categories of users. The plant operations team is undoubtedly looking for high reliability and enhanced process control functionality. Planners would like to have better tools and better integration of planning aids. The system support staff wants better diagnostic and system admin tools.

PROCESS: What will be the big challenges in the future?

Kopec: Virtually all of the installed process control devices and systems will have intelligence features and will be connected to a network as appropriate. This creates two main challenges. The core functionality of a process control system, namely to control and monitor industrial processes, must not be degraded. Second, we will have to get a handle on software version management. This issue is addressed in detail, for example, in NAMUR recommendation 105 with reference to field device parameterization tools.

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