

Scalable process control

Maximum flexibility



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Process control technology is notorious for its complexity and rigidity. Expanding or adapting an existing plant is often a costly and time-consuming ordeal. Systems with a scalable hardware and software architecture are able to adapt to changing requirements with much greater flexibility and without sacrificing system continuity.





B&R automation hardware integrates optimally with APROL systems.



Ever-shrinking time-to-market constraints have many companies – particularly in the chemical and pharmaceutical industries – looking for new ways to make their plants more agile and responsive. “Traditionally, when a new product or changed recipe requires implementation of a new process,” explains Martin Reichinger, manager of the Process Automation business unit at B&R, “you find yourself at the beginning of a long journey.”

From bench-scale to full-scale

It all starts with lab testing of the new process on a small, bench-scale version of the plant. This is then scaled up to a pilot plant, where the process parameters are optimized. Finally, the process is transferred to a full-scale plant where the product can be mass produced.

“This process is essential to achieving optimal utilization of the expensive full-scale plant, but consumes a great deal of time and money along the way,” explains Reichinger. One reason for this is that each of the three steps often requires its own au-

tomation and process control technology. “In extreme cases you end up rewriting the software twice and swapping out the control hardware twice,” notes Reichinger.

The answer to this is a flexible hardware and software architecture that grows right along with the plant. B&R’s open APROL automation platform is a perfect example of this. “With a B&R solution,” Reichinger explains, “the automation technology in a lab system with only a handful of I/O channels can easily be scaled up for a demanding pilot plant and then again for full-scale production with well over 100,000 channels.” Ultimately, this ensures maximum return on investment for the system software and hardware as well as for engineering work.

Cost benefits even for small systems

The APROL automation platform is based on the Linux operating system and offers all the functionality of a full-fledged distributed control system (DCS). “In addition to core components like the alarm, graphics, reporting and trend systems, this also

includes more than a hundred ready-to-use modules for a wide range of control functions.” The smallest APROL automation solution would consist of the system software, an industrial PC and a few I/O modules. “Even with this minimal arrangement, you have access to the full range of APROL functions,” says Reichinger.

Since the price of the software license is based on the number of I/O modules, cost benefits can be achieved even on very small systems. “If you expand the plant or scale it up, you can carry over all the existing hardware and software,” he adds. Any new hardware and corresponding I/O licenses are simply added on. “This is considerably easier than the conventional approach, where you need a different system at each step,” says Reichinger, highlighting the benefits of B&R’s scalable solution.

Open to all communication protocols

APROL can also be coupled with existing DCS and SCADA systems in large plants. These plants generally incorporate components from various vendors and use a vari-



An Automation PC 910 running the ready-to-use APROL EnMon solution is all you need to set up a full-fledged energy monitoring system.

ety of communication profiles, fieldbus systems and Industrial Ethernet protocols. "That's no problem for the APROL platform, since it has interfaces for all the commonly used communication protocols," explains Reichinger.

This openness makes APROL particularly interesting for plant operators looking to implement special solutions such as energy monitoring or condition monitoring. "For these cases we've developed the ready-to-use APROL EnMon and APROL ConMon solutions," says Reichinger. Assuming all the necessary data can be obtained from existing sensors, the only additional hardware needed to set up a complete energy monitoring system is an industrial PC running APROL. The reports, trends and alarm system are automatically included, so APROL EnMon and ConMon can be implemented alongside existing DCS and SCADA systems.

Modular functional expansion

The flexibility of B&R's open automation platform comes not only from its scalabil-

ity, but also from its modular design. "Once you've set up an energy monitoring system, you can easily add new functions at any time – or even expand it into a full-fledged distributed control system," explains Reichinger, pointing to further advantages of APROL when combined with B&R control hardware: "APROL users benefit from the performance, robustness and scalability of our control technology, which exceeds what you'll find in most DCS components."

B&R I/O modules have onboard intelligence that allows them to compute fast Fourier transforms directly and handle certain open and closed-loop control tasks remotely in the field. The data is transferred

via the open Industrial Ethernet protocol POWERLINK. B&R's integrated safety technology can also be incorporated in the APROL system to achieve safety response times under five milliseconds.

Add user functions

APROL's flexibility doesn't end there. In addition to its ready-to-use solutions featuring tested, documented and field-proven standard control modules, APROL also allows users to create their own copy-protected functions. By providing users with the same development tool it used to program its standard modules, B&R ensures a consistent look and feel that gives users maximum flexibility for implementing their processes. ←



Martin Reichinger
Business Manager – Process Automation, B&R

"APROL can be scaled seamlessly from a handful of I/O channels to well over 100,000 channels."