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Leveraging the Hidden Intelligence Within Your Field Devices

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Leveraging the Hidden Intelligence Within Your Field Devices

Maury Bayer, Growth Technologies Lead Engineer at Proconex, an Emerson Impact Partner, talks about the benefits of the AMS Device Manager platform and two of the most popular SNAP-ON™ applications, QuickCheck™ and AlertTrack™. He also previews two new applications.

Are all of your field devices competing for attention?

Just like with your personal devices—cell phones, laptops, and newsfeeds—all of your field devices are likely competing for your attention. Your plant probably invested in a number of smart field devices, both wired and wireless. They may be from Emerson, as well as from other manufacturers. These very intelligent microprocessor devices capture hundreds of values, including sensor status and calibration status, and can even detect problems with upstream or downstream equipment. More than 500 parameters may be available from each of these intelligent field devices. It is likely you have these devices scattered all over your plant. When you add it up, it's a data overload situation. On the other hand, if you look at your control system, you may be seeing only one or two variables; the rest are hidden inside the device. These hidden nuggets of information can only be obtained if you physically go out in the field with a handheld device or a piece of software, like AMS Device Manager, to capture all of the information that is available.

One of the goals of the AMS software platform is to give you access to all those variables from a centralized workstation. The AMS Device Manager allows you to gather any special alerts that you might have in a field device; however, collecting alerts just gives you a lot of data. AMS SNAP-ONs perform intelligent functions on that data that can help you make more informed decisions. We want you to be able to filter out the noise in order to gain access to your most important, actionable items.

What if you could turn your device data into actionable information?

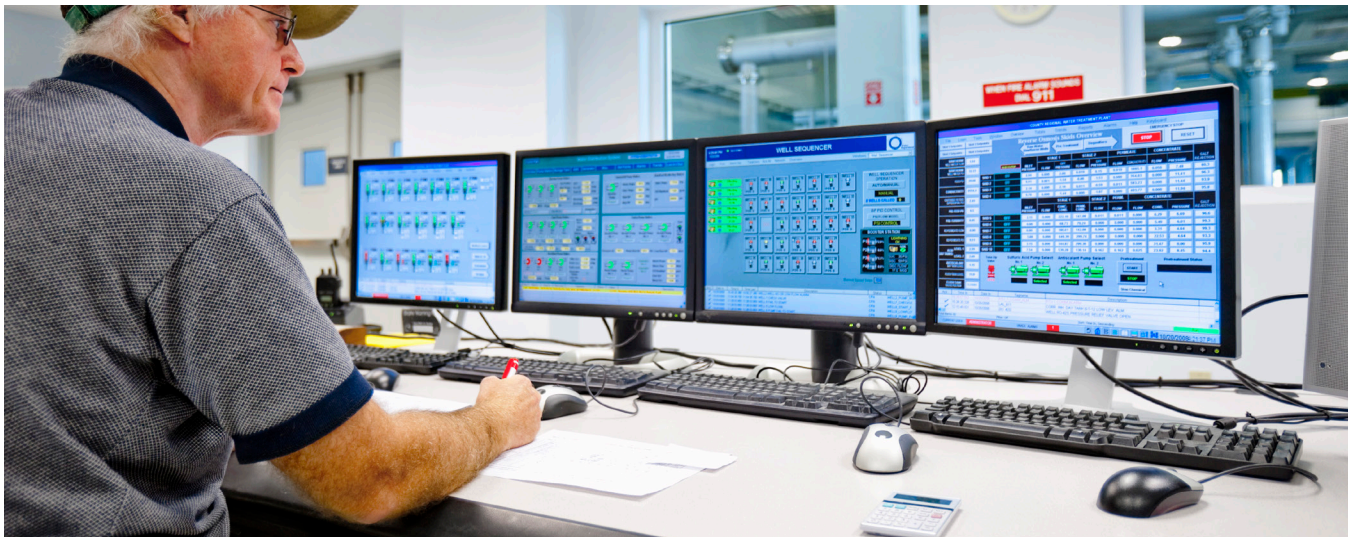
AMS Device Manager, in combination with its suite of SNAP-ON applications, can give you access to hidden information and enable better work practices. Let's first explore our most widely used SNAP-ON, called QuickCheck. With the application's QuickView module, you can instantly gain access to commonly requested reports. These reports highlight devices that were left out of commission, left in maintenance mode, require calibration, or need a replacement sensor.

But the real power of QuickView is in its customization capabilities. With QuickView, you can develop your own reports, or create custom views. You can filter those 500 or so parameters to only those few that are really important. For instance, if you are in charge of a commissioning and startup, you likely want to make sure that your smart field devices have all the right materials of construction, upper and lower ranges, and everything else you can configure within that device. This way, once you start measuring the variables, you get the information you need quickly, such as: Did somebody hook up the sensor correctly? Is the range in the field device as expected?

QuickCheck also has a module called QuickStep. QuickStep allows you to quickly check the proper functioning of your interlock or safety logic. QuickStep allows the user to drive multiple field devices in a coordinated manner. QuickStep allows quick interlock and safety logic testing ensuring the control system responds appropriately. This check covers the field device, wiring, junction boxes, signal conditioners, and IO modules in the control system. It is a much better check for both first time commissioning projects as well as routine safety checks, than just simulating logic in the control system.

These QuickCheck modules can help you speed up your commissioning and start-up process for any new equipment that you have in your plant. Also, while the plant is running, and before plant shutdowns, you're going to want to know about device status and performance. You can easily see which devices need maintenance and create a convenient list that shows sensors that need to be

> Before, you would have to click on menus and hunt and peck for the appropriate information, or alternatively, send someone out in the field with a special handheld communicator to talk to that device. With QuickCheck, you can create your own reports and know which devices need attention.



replaced or calibrated. Maybe you would like to know firmware revisions/other parameters for all your devices. With QuickCheck and QuickView, you can create those reports—and filter the information—without having to go into each individual device for the status and configuration values.

How can you generate the right alerts—not more alerts?

Another SNAP-ON application, called AlertTrack, focuses on generating custom alerts. You might ask, "Why do I want to generate more alerts? You just told me there are all these parameters and QuickView should filter through that." The reality is that with hundreds of parameters on each device, the manufacturer may not have created an alert for your specific need. If you don't have an alert within that device, you have to spend time filtering through all the data to find it. AlertTrack allows you to generate alerts on any parameter in the device. You can perform a device health check on sensor status or other conditions that the device manufacturer didn't preprogram. With AlertTrack, your devices will be monitored periodically. If there are any issues, it will generate an alert. You don't have to keep coming to the screens to look for and find out what's going on with your device.

Example use cases

Many customers have field devices in cold climates. They often have to surround those devices with a steam tracing or temperature blanket to avoid freezing. Every smart device has an internal device temperature; however, device manufacturers typically do not make that available as an alert. With AlertTrack, you can poll all field devices and make sure they are all above a certain temperature. If a device drops below that temperature, AlertTrack lets someone know that we might have a problem with a steam tracing or temperature blanket. The alert generated from AlertTrack focuses attention on the issue before the device freezes and creates a process issue. Rather than users having to check these temperatures manually, AlertTrack does the job automatically.

We also have customers that are looking at pH probe status and signal strength on vortex/radar transmitters. For these applications, alerts are only valid in a certain operating range. For example, you only want an alert on vortex signal strength while material is flowing. AlertTrack allows the user to configure a range and not alert on poor signal strength when the material is not flowing. AlertTrack allows the plant to create custom alerts that fit your particular application and generate actionable information, as opposed to nuisance alerts.

- AMS Device Manager enables you to collect data from hundreds of instruments and the SNAP-ONs enable customized ways of interacting with it.
- QuickCheck automates your interlock and safety System Checkout Procedures.
- QuickView allows you to create reports that you can run at your own workstation, as well as perform interlock/safety system checks.
- AlertTrack enables you to set up custom alert conditions, based on exceptions.

With AlertTrack you can send emails or text messages that notify the appropriate people when one of these alerts occurs. You can also define what areas of interest in the plant, specific devices in the area, specific types of alerts, or a number of other filters.

How can you leverage SNAP-ONs to improve your work practices?

One of the things you can do with QuickCheck is identify human errors. If your instrumentation or maintenance technicians are in the plant, they may work on a device in place, or bring it to the maintenance shop. During the process of repairing or calibrating a device sensor, they may inadvertently leave a device in an incorrect mode. Typically, these errors are not found until the plant has already started back up and some control algorithm is not responding correctly. With QuickCheck, you can open one of the prebuilt reports—such as Fixed Output, Device Connection Status, or Write Protection—to ensure that your devices are all in the proper modes. These reports are built into the system to make it easy for you to improve your work practices. We also offer reports that can help you find future issues. If you have a temperature transmitter, very often you have a primary and secondary probe. For instance, how do you get a consolidated report that shows that your primary probe has failed and switched to the back up? While you're at it, what is the probe 'type', so that the maintenance person not only knows which device needs a new probe, but also which probe to bring when replacing the sensor. A Hot Backup is instantly available in QuickCheck to isolate this information.

Are there more good work practice capabilities with QuickCheck?

Definitely. In your plants, you may have complicated interlocks or a safety system. Are you performing interlock checks or safety system checks manually? With multiple people and radios? And using personnel who may have to enter hazardous areas to be able to simulate a value on a device? To follow industry recommendations when performing safety system checks, you should check the safety logic, as well as the health of a transmitter, any IO cards, wiring, or signaling between the field device and your control system. The proper way to simulate this is to transmit a known signal from the field device back to the control system. That could mean sending a whole bunch of instrument technicians to the field with calibrators or handheld devices to simulate a field device. Coordination for this process is often by radio, which is not only time-intensive, but also may require someone to climb a ladder or put themselves in harm's way. This can all be accomplished in an automated fashion via the QuickStep module, within the QuickCheck SNAP-ON application, from the comfort of your control room. With AMS and QuickCheck there are no handheld devices involved. It's completely automated and repeatable, while leaving the controller in the normal operation mode and not pushing it into a simulation mode.

I'd like to introduce two new applications that work with QuickCheck—ProcessCheck™ and SIS ProofCheck™. To use these products, you need to purchase and install QuickCheck.

Coming soon: ProcessCheck™

Customers may want to get an entire survey of their plant—both field device information and information from their control systems. How can you perform a check on all your devices to make sure everything is in good shape before you start your next 30-day batch? ProcessCheck, one of our newest applications, leverages the capabilities of QuickCheck to check all of your devices to determine if anything might impair your process. You can look at calibrations, interlocks, sensor status, and other information to ensure you are ready to start up your plant.

ProcessCheck can show you: go/no go, what your issues may be, and anything that may cause a delay. You can customize the testing criteria and run a report manually, or you can also run it programmatically

from a control system. Before you start that 30-day batch, you can automate the process of checking your equipment, so you don't start a multimillion-dollar batch, get in the middle of it, and then find out your pH probe isn't working properly.

Coming soon: SIS ProofCheck™

When customers perform a safety check, they need to include manual checks, in addition to capturing data from their automated devices. SIS ProofCheck will cover all of the automated device checks within QuickCheck, as well as the manual checks. The frequency for manual checking is typically low, once a year or every other year. SIS ProofCheck will include the entire procedure—the full standard operating procedure including videos and photos—to perform these manual steps in the field. By having all of the information in one convenient application, customers can perform these infrequent tests with the knowledge that the technicians have all the information in front of them. Additionally, since customers need a permanent record of the testing, not just today, but also from previous years when they may have had different equipment, we have included a full versioning capability to capture the history. One complete SIS ProofCheck record shows all of the manual visual inspections, automated checks, and records of personnel involved in the test.

We can all agree that we have too much information coming at us on a daily basis. The only constants are change and the need to do more things with less people. Now is the time to leverage your investments in smart field devices. AMS Device Manager, along with its QuickCheck and AlertTrack SNAP-ON applications, provide many ways to improve your work practices and focus your attention where it is truly needed. These tools can help your facility meet the ever-changing production requirements in the digital age. Please reach out to us and let us know how we can help you achieve top performance from your smart assets and improve your maintenance practices.

About Proconex

Proconex is the exclusive Emerson Impact Partner for Emerson Automation Solutions in the Mid-Atlantic region. We provide a full portfolio of Process Equipment, related technologies and services to manufacturing customers. Proconex software is developed in close coordination with our customers in the Life Sciences, Chemical, Power, Refining, Oil & Gas, Food & Beverage, Paper, Metals, and other industries. Our iterative development processes center around validating customer results before a product is first released. Our 75 years of operating history and deep connections with our customers allow the Proconex Software Team to deliver solutions that provide value out of the box, and new value to customers with every release. We listen to and adapt software based on its use in plants. We measure success of our software by customers continued operation and maintenance benefits.

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