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Top Five Missed Opportunities with HMI Alarms and Events

With any new tech device, whether a cell phone or plant-floor controller, there is inevitably a helpful feature or two you overlooked while reading the manual or taking the introductory tutorial. Although these technological devices still perform their desired, basic functions – discovering an underutilized feature makes you wonder how you ever operated the device without it.

Interacting with alarms is one of the basic functions your operators expect from their human-machine interface (HMI) software. However, if you're only using the standard alarming functions, you may be missing out on lesser-known features that could help you save time, ease troubleshooting and reduce headaches. The five FactoryTalk® Alarms and Events functions listed below are often overlooked and underutilized. See where they fit and if you can find some hidden tools in your plant-floor applications.

Associated Tags

In an HMI system, it is useful to have additional system information associated with an alarm for streamlined reporting and more effective handling of alarms. An alarm can be associated with up to four tags that are not only recorded in the alarm history log but can also be embedded in the alarm messages visible in an alarm summary or banner. By associating tags to include process data with event information and alarm messages, operators can automatically receive relevant information that describes what the system's environment looked like when the alarm was triggered. For example, if you have a pump alarm associated with a flow meter output value, a tank weight, and two process valves, you'd typically have to review trending data and activity reports to understand what might have contributed to this alarm becoming active. With associated tags, you get all pertinent information in one transaction. This saves time and effort as it eliminates the need to run multiple reports and correlate the data in separate databases.

Alarm Commands

Addressing the cause of an alarm in a time-efficient manner is a top priority for operators. However, an HMI system that correctly identifies alarm conditions, does no good if the operator still has to click through multiple screens and open new programs in order to access the controls needed to correct the problem. With recent advancements, new HMI software applications can be configured to execute a command when the user double-clicks on the alarm in the alarm summary. For example, an operator can double-click an active alarm and have the appropriate screen displayed for them to take corrective action. This is especially effective in a large HMI system where the operator must have access to a process screen or device faceplate to understand the area of concern before taking action.

Preconfigured Control-Status Alarms

HMI software should be tightly integrated with plant-floor controls and enable you to capture additional data beyond alarm and event information. Collecting data related to environmental factors, such as problems with controllers and other equipment, can help operators better understand what is going on in the system. Newer HMI applications incorporate preconfigured control-status alarms that indicate when there is an issue with a controller or its connection. In addition, operators should be able to run reports showing in-depth detail regarding the conditions of the alarm. For example, with preconfigured control-status alarms, when an operator sees that data is not updating into its system, he/she can review the alarm summary and immediately see that the controller is in program mode and not run mode. This ultimately saves the operator time because he/she is no longer trying to figure out if something in this system needs correction.

Alarm Classes

When viewing many different alarms, it can be a time-consuming task to group like alarms together. Effectively organizing alarms in an alarm summary or report can actually be quite simple when using alarm classes in some applications. The alarm class is a text string of up to 40 characters that operators enter when configuring an alarm. At run time, the value of the alarm class is recorded in the alarm history log, and the content is filtered based on the value of the alarm class. This enables you to easily sort or filter your alarms by function whether for valves that fail to open or close, pressure temperature, equipment running or tank levels.

Remote Alarm Annunciation and Escalation

The last often underutilized alarm-and-event function provides operators with remote access and control capabilities. Specter Instruments, a member in the Rockwell Automation PartnerNetwork™ program, incorporates a FactoryTalk Alarms and Events subscriber plug in for its Win 911 product. With the remote alarm annunciation and escalation, FactoryTalk system notifies operators of alarms via text to speech (calling an operator's cell phone), text pages, email or through voice-over TAPI modem. In the instance that the operator cannot be reached, the Win 911 product can utilize the escalation function based on the response rate. For example, if there is no response when an operator is contacted, the system will escalate to the line supervisor. If the line supervisor does not respond, the system will escalate to the plant manager, and so on until someone is reached who can address the alarm. Because the system is contacting people at home, it also gives employees the ability to remotely acknowledge and address the alarms.

Poorly managed alarms and events can be disasters waiting to happen. Utilize these hidden tools and start streamlining your alarm management today.

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Desigo V5: Innovations from Siemens increase building efficiency

The Siemens Building Technologies Division has introduced version 5 of its Desigo building automation system. Its innovative products such as Total Room Automation as well as efficiency features, like RoomOptiControl and Eco Monitoring, give building operators and users an active role in energy management, leading to permanent reductions in energy and maintenance costs. A state-of-the-art building automation system is always optimized for energy-efficient operation.

However, these optimized settings may start to drift over time. One of the underlying causes is often a lack of transparency for users who simply don't know how the setpoint changes they make can impact energy consumption. This is particularly true for air-conditioned rooms which are also equipped with lighting and sun protection controls. The new version of Desigo keeps room users and building operators apprised of the building's efficiency status. Feedback to users is given using the innovative Green Leaf display, adapted to the expertise and control options of each user group. The system makes it possible to change settings if needed to restore optimal energy efficiency. A study by Technische Universität München (TUM) indicates that by actively involving operators and users in the energy management of a building, energy consumption can be reduced by up to 25% without affecting comfort.

Total Room Automation offers energy savings without reducing comfort

The open, programmable room automation range Desigo Total Room Automation (TRA) is a holistic solution encompassing the HVAC, lighting and shading disciplines. Desigo TRA uses an innovative efficiency feature called RoomOptiControl. It automatically detects unnecessary energy consumption in the room and notifies users by changing the color of the Green Leaf icon on the QMX3 room control unit: If room operations are energy efficient, this icon is green. If settings made by a room user lead to unnecessary energy consumption, the icon turns red. To reset room control to energy efficient operation, the user simply presses the display and the Green Leaf icon returns to green.

Using BACnet/IP, PXC3 room automation stations—also part of the TRA package—are integrated seamlessly into the PX automation level with its primary systems (heating generators, HVAC main units and cooling generators). The primary systems are controlled directly through the demand signals from the rooms. This means that the primary systems are only turned on if needed and their operation is adjusted so it meets the room requirements without exceeding them. One room automation station can cover multiple rooms. TRA offers complete integration of KNX, DALI and EnOcean devices; existing or new sensors and actuators from Siemens can be incorporated as well.

Eco Monitoring to reduce energy consumption and wear

Eco Monitoring is another innovative efficiency feature of Desigo. It monitors ongoing operations of HVAC systems based on energy-related quality condition indicators such as readings from temperature, humidity and pressure sensors, runtime, switching behavior and operational performance of the systems. Should deviations from the target state, inefficient operations or increased energy consumption occur, the building operator is notified via the Green Leaf display on the Desigo Insight management station. Current and future international standards (such as EN 15323:2007) require such a feature in order to optimize building operations over the long term.

Desigo Eco Monitoring not only helps optimize energy consumption, it also reduces wear.

Thanks to its dynamic behavior and timely reporting, the Eco Monitoring feature recognizes unfavorable system operations early on, allowing operators to intervene immediately before any negative impact occurs. If desired, operators can choose to be notified of unusual events via text messaging (SMS), fax or e-mail.

Expanded networking of the automation level

Starting with version 5, Desigo also offers expanded end-to-end networking of the automation level. Enhanced support for communications standards ensures efficient system integration.

The PXC series of compact automation stations has a higher number of universal inputs/outputs, which makes them much more flexible. To protect existing investments, different

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device generations, such as PTM and TX I/O modules and RXC room controllers, can be used in parallel on the same PX automation station.