

Putting the Operator First

Case Studies on Rethinking HMIs and Addressing Alarm Management

Ryan Kowalski, P.E. ^{1*}

¹ARCADIS, 44 South Broadway, 15th Floor, White Plains, NY 10601

(*E-mail: Ryan.Kowalski@arcadis-us.com and Phone: 914-641-2654)

FORMAT

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HMI Design, Alarm Management, Operations

ABSTRACT

Automation and SCADA systems are fundamental to water plant operations. More and more utilities are completely dependent on them for protection of public health and safety. While most facilities are fully automated, organizations struggle with massive amounts of alarms, increasing HMI screen counts and I/O, and very little ability to mine such data and information effectively. This presentation examines two areas where theoretical approaches are being applied in practice. Case studies are referenced with experiences from some of the largest water treatment plants in the world.

- (1) The transition to SCADA system maintenance after commissioning often highlights problems with alarming and annunciation systems. Forward-thinking utilities are beginning to adopt standard methodologies for commissioning and maintenance of alarm systems to improve operator response to abnormal conditions and reduce risks of regulatory non-compliance. Case studies for alarm rationalization, based on ISA Standard 18.2 and other industry benchmarks are included.
- (2) As SCADA systems reach higher speeds and increased software features, operators may sense a “loss of view” when having to scroll through multiple screens to reach data. Operator awareness of problem situations can actually be reduced. Some utilities are embracing a new paradigm, wherein SCADA operator interfaces are reconfigured so key process indicators and abnormal situations are emphasized to increase operator situational awareness. Case studies of how to introduce a shift in the HMI configuration approach to operations and management, as well as applied industry concepts for HMI screen design for operations situational awareness are presented.

These and other recent trends are paving the way for more reliable water SCADA systems, which in turn leads to better protection and safeguarding of our environment.

ABOUT THE AUTHOR

Ryan Kowalski, P.E. is ARCADIS' (Water Division) national Technical Knowledge and Innovation discipline leader for ARCADIS's SCADA/Automation team, which includes a heavy emphasis on instrumentation and controls. He has 16 years of experience and has provided consultation, quality control reviews or led discipline design teams for over 40 different projects, ranging from small telemetry systems to SCADA installations for large, urban water and wastewater treatment plants treating hundreds of MGD.