

Turning Data into Information

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ABSTRACT

Data is everywhere. Modern automation systems, smart instruments, the IoT, all of these create tremendous amounts of raw data. The usual result is data overload with operators, engineers, and managers trying to make sense of what they are seeing. The big question is how to convert the data into information which can be beneficial for operations, planning, energy savings, and customer level of service.

The GLWA system is made up of 40+ facilities and 300+ remote monitoring locations. These facilities generate tremendous amounts of data 24/7/365. Previously, some of the process data was saved to historians for future retrieval either through reports or trends, while other data was manually recorded. The main reason for data archiving was regulatory reporting, with any analysis limited to tracing back root causes or timelines of system disruptions.

Recent efforts have focused on more meaningful analysis of the data, turning it into information that operators, engineers, and planners can use. We will focus on the operational and planning aspects of the data-to-information efforts, showing real world applications and their impacts on the system, on both the process and bottom line. One application that was implemented was real-time pump control strategy based on power usage and efficiency. Using the recently added power monitoring equipment, algorithms were developed in the control system that calculated the peak power use and maintained a running maximum. Alarms configured at the 60% level alerted operators that the power use at a station was approaching the peak and directed them to alternate pump operation. The goal is to keep the power use below the peak so that they are not subjected to high demand charges, and to lower the peak limit for the next billing year.

Another application that made use of real time data and turned it into information dealt with the distribution system and pressure control. Previously, pump stations maintained a high discharge pressure to ensure that all customers were serviced. Monitoring the pressures downstream in the distribution

system, it was noticed that the pressures were significantly higher than what the customers required. There was an opportunity to lower the discharge at the station while maintaining sufficient service to the customers. Algorithms were developed to monitor the pressure points downstream of a station and their values relative to the customer requirements. Using these values, suggested discharge pressure setpoints were presented to the operators that would reduce the output from the station while maintaining the level of service. The benefit to GLWA was reduced power use and wear and tear on the equipment. This application is being expanded to include all of the stations in the system.

These are only two applications that were developed, with many more in the development or planning staged. The goal of our presentation is to show what can be accomplished with data by turning it into real information. We want to entice others to look deeper into the data that their automation systems gather and squeeze out ways to increase efficiency and reduce cost. The audience for this presentation would be anyone involved in system operation, system planning, control system design and implementation, and those managing and reviewing system performance and output. The goal is to give users and planners real-world applications where information analysis solutions were implemented.

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