Dam Safety Instrumentation Data Aquisition, Monitoring, and Data Visualization Improvements at the Rocky Mountain Hydroelectric Plant

Peter Zimmerman, Canary Systems, Inc.; Vann Newell, Oglethorpe Power; Daryl Jordan, Oglethorpe Power

Collection, organization, and presentation of instrumentation data can be a daunting task for dam owners. Historical data may be stored in multiple locations and formats, surveillance and monitoring programs may include numerous types of instruments with varying methods of data collection, instrumentation from different vendors may run on separate and often incompatible software, and dam safety instrumentation reporting is often time consuming. Add in the challenges of limited manpower and remote sites, and running an effective dam safety instrumentation program can become overwhelming. Dam owners such as Oglethorpe Power Corporation (OPC) have implemented improvements to their monitoring program utilizing new technology in data acquisition, database management, and reporting.

By 2012, OPC's original Automated Data Acquisition System (ADAS) at the Rocky Mountain Hydroelectric Plant was unreliable and in need of replacement. The combination of automated instruments, manually read instruments, and survey complicated data acquisition, data organization, and data display. Preparation of OPC's annual dam safety surveillance monitoring report was labor intensive and was complicated by the numerous sources of data. OPC recognized that their staffing level demanded a more efficient and effective method for reporting. Additionally, they needed a method to immediately identify and review data that exceeded alarm levels. Advances in automated data collection and development of software for integrating geo-monitoring data offered solutions to OPC's instrumentation challenges, and they initiated monitoring system improvements.

OPC's Rocky Mountain Hydroelectric Plant improved surveillance monitoring plan includes a combination of automated and manually read instruments that are synchronized into a single data management database platform. A mobile application for recording manually-read instruments automates data synchronization. Integrated data management software allows OPC to quickly access and compare charts and reports on the same graphical view, set alarm notifications, and use templates to easily generate quarterly and yearly instrumentation reports. Database management and reporting software offers obvious advantages for relatively complex systems such as the one at Rocky Mountain pumped-storage plant, but the technology can be scaled to meet the individual dam owner's needs.