Keeping Conservation on Track: Cimtec Automation Hardware Used to Monitor Dehumidification in a Historic Warship

The USS Missouri (BB-63) is a World War II (WWII) battleship with a historic past. In addition to its service throughout WWII, Korea, and again in Desert Storm, it served as the site of the official surrender of Japan on September 2, 1945. On that day, Fleet Admiral Chester Nimitz and General of the Army Douglas MacArthur, the Supreme Commander for the Allies, received the surrender of Japan from Foreign Minister Mamoru Shigemitsu, bringing WWII to a close.

While the battleship went on to further service after the surrender ceremony in 1945, the USS Missouri is today a floating museum in Pearl Harbor, Hawaii. The battleship was towed to a nearby dry dock in late 2009 to undergo a facelift, including a number of improvements and upgrades, including hull repairs, painting, and humidity reduction and monitoring.

High-Tech Dehumidification

BAE Systems led the restoration efforts of the USS Missouri. AMSEC LLC, a subsidiary of Northrop Grumman, was hired by BAE to handle the dehumidification portion of the project, which included monitoring humidity levels as chemical desiccants are used to dry out tanks and voids. AMSEC hired Cimtec Automation to engineer the programmable logic controller (PLC) and HMI/SCADA systems. Stan Baker, an engineer for Cimtec Automation was part of the dehumidification project, and shares some information on how Cimtec's expertise was put to work on this project. According to Stan, "This project was unique in that it involved programmable logic controller (PLC) technology that monitored and managed numerous inputs for the battleship."

Cimtec developed a system that connected approximately 430 humidity sensors located throughout the ship to a central PLC via 11 separate nodes. The components of the system included:

PLC VersaMax CPUE05 w/ 10 I/O nodes, each with a VersaMax Ethernet Network Interface Unit (ENIU)
I/O VersaMax Analog Input modules, 4 at the CPU and 4 at each I/O node
I/O Communications Ethernet
HMI Proficy HMI/SCADA Cimplicity

"The VersaMax CPU accumulates data from all of the sensors across the ship and makes it available to the HMI system," explains Stan. "The HMI system monitors and logs the humidity data and displays the data on various screens that depict sections of the ship. The system also includes alarms to notify the engineers when the humidity reaches 40% RH, or if there are any communication problems between the VersaMax CPU and its I/O nodes. The PLC hardware and HMI system all worked flawlessly when we started up the system."

Preserving History

The technology and expertise provided by Cimtec helped the restoration team keep their activities on track and identify problems with the dehumidification effort before they affect other parts of the project. The restoration of the USS Missouri, completed in January 2010, allows the warship to continue to educate visitors from around the world about the historic battles and events of WWII and beyond.