ANNUNCIATOR REPLACEMENT SOLUTIONS
Statement of Qualifications

Hurst Technologies: Solutions for Obsolete Annunciator Systems at Nuclear Plants.

A nuclear unit's annunciator system is the critical link between the human operators and the automation and control system. As nuclear units undergo life extension and uprates, annunciators often must be replaced; the underlying equipment becomes obsolete relatively quickly because of rapid advances in digital technology.

Hurst Technologies, a power industry leader in digital technology, has the most current nuclear plant annunciator replacement and upgrade experience. Importantly, we are vendor independent. We do not merely deliver vendor-configured equipment; we engineer hardware and software to meet the performance specifications required of the plant.

Case Study – Nebraska Public Power District (NPPD) Cooper Station

The 1990-vintage annunciator system, which replaced the original legacy system supplied with the plant in the early 1970s, became obsolete by the early part of this decade. This was the last system of its type and vendor support evaporated. NPPD turned to Hurst to plan, design, fabricate, and test a state-of-the-art digital annunciator system, manage the project, and then provide the necessary training to the plant operators.

Elements of this project include:

⇒ Defining and verifying operating requirements, including simulator integration.
⇒ Preparing a Conceptual Evaluation Document (CED) conforming to Cooper's design engineering procedures, and identifying all regulatory impacts, and detailed design package.
⇒ Developing a procurement specification with functional and physical design configurations and documents suitable to support bids on all equipment, software, and integration.
⇒ Integration and physical design of equipment at Hurst site – including distribution of I/O, cabinets and enclosures, server racks, and workstation installations - and review and comment on detailed design docs.
⇒ Configuring and integrating the individual software components and initial testing.
⇒ Implementing all project software quality assurance requirements and verification and validation (V&V) plans.
⇒ Making all necessary control room changes, developing detailed control board fabrication/mounting drawings, providing a software-related graphical user interface (GUI) based on the client's "look and feel" requirements.
⇒ Review of licensing requirements and updating documents as necessary, performing all human factors engineering for the control room and the simulator modifications; and updating inventory and spare parts lists.

In addition to being responsible for all technical aspects of the replacement, Hurst provided all project management, installation support, closeout, and operating training to Cooper staff.

Where necessary, Hurst provides custom and unique solutions to overcome limitations of vendor supplied equipment. For example, it was essential that the system allow alarm horns and lights to operate even if the Windows server went down. The GUI and software provided by the annunciator system supplier did not possess the functionality for this option. Therefore, Hurst engineers designed the logic and wrote a program that routes I/O signals to the lamp box alarms whether the service is on-line or not. At Cooper's request, our engineers also designed logic and associated software that would allow the new system's displays to exactly replicate the legacy DCS screens.

If you are considering or evaluating an annunciator upgrade or replacement, visit our Web Site for contact information.