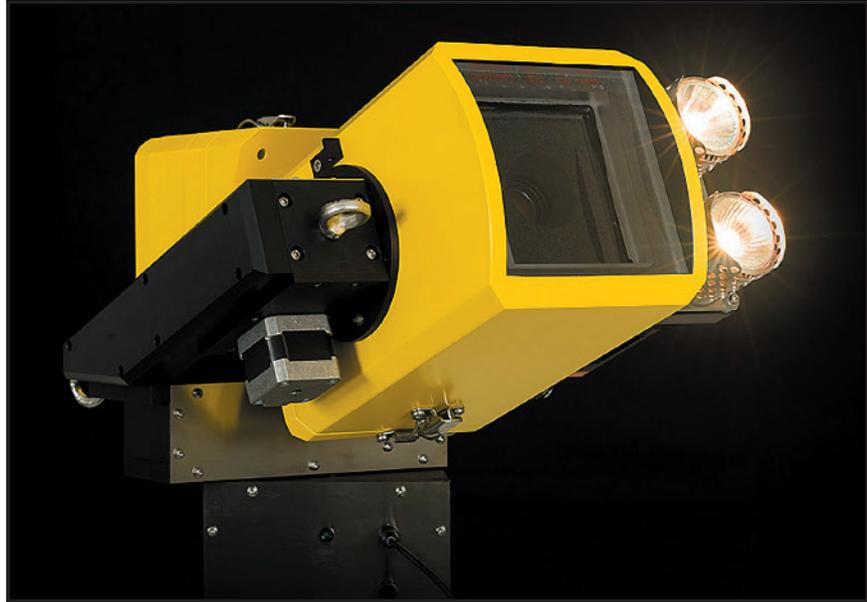


Southeastern U.S. Nuclear Power Plant Radiation-Tolerant Camera for Monitoring Inside Containment

Customer Challenge

Radiation Protection (RP) teams at the nuclear power plant were researching a radiation-tolerant camera used in European nuclear power plants to monitor containment. This type of camera would allow reviews of emergent issues without shutting down plant systems or workers receiving unnecessary dose.

BHI Energy is a U.S. distributor for the RADCAM, manufactured by Swedish-based company ISEC Industrial Security. BHI's Automated Monitoring Services (AMS) Division works closely with ISEC representatives and U.S. utility customers to ensure successful results.



Preparation & Testing

The Plant acquired a camera to run compatibility testing of its use in the drywell. At the start of the outage, RP placed a temporary camera in the drywell to study its performance in an operating cycle.

The best design scenario was analyzed with input from several departments, ensuring the cameras received optimal placement, protection and the safety and protection of interacting workers. System Engineering gave suggestions on good test areas and interesting components to watch: main stream isolation valves (MSIVs) and a recirculation pump. Civil and Mechanical Engineering then developed seismic and structural constraints for the camera, limiting installation to only structural steel beams. Senior engineers worked together to design a pedestal to hold the camera, with assistance from the linemen to develop the installation sketches. Mechanical Maintenance then constructed the pedestal for camera placement and I&C maintenance technicians wired it to the existing BHI RP video system.

BHI ran qualified test results, showing it would survive seismic events and withstand high heat levels. The test camera was then placed near the personnel hatch (ideal for testing because temp averages more than 150 degrees). At this location, RP can view two MSIVs, recirculation pump B and the reactor recirculation pump 2B discharge valve. While not the optimal position for permanent installation, this position provided a valid test of the camera for future use.

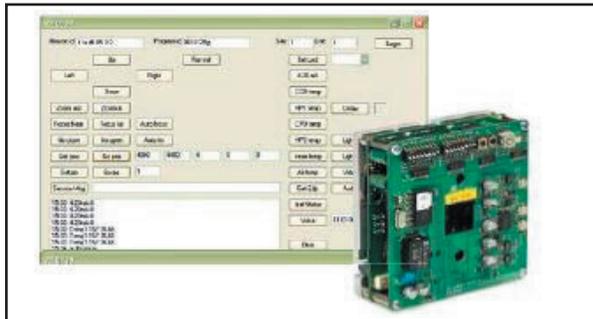


The Results

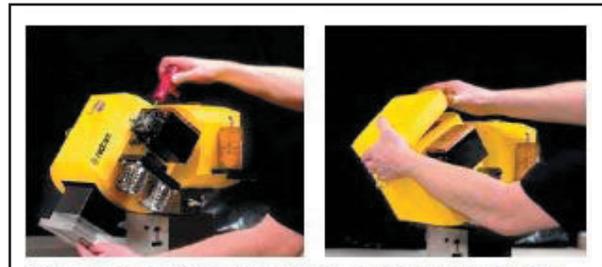
BHI Energy's Value-Added Approach

This project was the first-ever of its kind performed in the U.S. As a result of teamwork and use of an innovative technology, the Plant will be able to use this project, along with recent laser drywell measurements, to install eight RADCAM cameras for their next refueling outage.

The drywell test camera relied on varied input from departments across the plant for success. Each program made considerable investment in assuring protection of plant employees, the reactor and its components.



With its dedicated test program, it is easy to do a full camera system check. The service keyboard on the control board makes testing of different functions easy, even when the camera is not connected to a control system.



The camera module, halogen lights, and fans can be swiftly replaced in only minutes. All actions can be done using typical radiation protective clothing and gloves.

Customer Testimonial

"Future camera placements will allow inspection of components without risk of high dose and unnecessary plant down powers, increasing the overall safety and reliability of plant operations."

The project outcome, supported by positive feedback, clearly represents The Gold Standard of service routinely provided by BHI Energy.