



Varying requirements from the AHJ and the insurance provider complicated the design and installation of a comprehensive fire protection system at a natural-gas fueled combined cycle power plant whose production exceeds 600 mw. In the eleventh hour, F.E. Moran Special Hazard Systems dispatched a team to the site to arbitrate, redesign and hand-deliver revised drawings for approval so that the project would be completed correctly and on time.

One of the Region's Most Efficient and Environmentally Conscious Plants

Originally built as a simple cycle power plant that was designed to operate during peak usage times, this natural-gas fueled combined cycle power plant is located outside of one of the Western region's largest cities. In 2011 the plant added two combustion turbines, increasing its production to more than 600 mw to meet growing demand.

Unparalleled Experience Implementing Systems for Combined Cycle Plants

Implementing alarm and detection systems for combined cycle facilities requires a high level of expertise and experience with the nuances associated with the application. Challenges such as complex turbine underfloors and determining the most effective alarm and detection systems for varying types of fuel means that the contractor who is designing and installing the fire protection systems must have in-depth knowledge and firsthand experience.

The EPC firm that was selected for the construction of the combined cycle plant had relied on F. E. Moran Special Hazard Systems to provide fire protection systems for many of their projects in the past. Over the past several decades F.E. Moran has successfully completed dozens of combined-cycle projects, which gave the EPC firm the peace of mind that they had the expertise necessary to effectively implement the appropriate systems for the project.

The scope of the project included the design and installation of a wide array of alarm and detection systems for the new plant, including: electrically actuated deluge systems for the lube oil tank and seal oil skid; a dry pipe system, preaction systems and a dry standpipe system for the turbine areas, and alarm/detection systems throughout the plant facilities. F.E. Moran had also been tasked with the installation of the CO2 systems for the combustion turbine enclosures, with the design to be provided by the combustion turbine manufacturer.



F.E. Moran's extensive experience with combined cycle plants provided them with the expertise necessary to implement a wide array of systems

Solutions that Satisfy the Conflicting Requirements of AHJ's and Insurance Companies

As with every project that F.E. Moran Special Hazard Systems undertakes, the drawings for the system were created in accordance with NFPA requirements such as *NFPA 13: Standard for the Installation of Sprinkler Systems*. However, as the project progressed, it became evident that it was going to be a challenge to satisfy the specific regulations set forth by the Authorities Having Jurisdiction (AHJ) in conjunction with those required by the facility's insurance company.

There were several aspects of the design that necessitated modification in order to fulfill these requirements. In particular, the AHJ called for an elevated hose flow and higher water pressures than were originally calculated. They also stipulated that a unique fire department connection be added to the system, which called for unconventional design tactics. From the insurance company's side, they demanded higher density systems, additional sprinkler heads and more stringent earthquake requirements. Designing and installing a system that complied with all of these criteria demanded careful arbitration among those involved and F.E. Moran's expertise allowed them to navigate the increasing complexity of the project.



F.E. Moran used innovative design and installation techniques to satisfy the requirements of both the AHJ and insurance provider

When Problems Arise F.E. Moran is Ready to Step in and Use Their Expertise

As the project was approaching its final stage, F.E. Moran Special Hazard Systems was confronted with yet another challenge that arose as a result of the turbine manufacturer's CO2 system designs being incompatible with the AHJ's requirements. The CO2 system drawings that were provided by the turbine manufacturer were generic designs which were not produced distinctively for the facility. Upon the AHJ's review of the drawings it was determined that the design must be customized for the site, which meant redesigning the system on short notice in order to meet an impending performance milestone for the turbines. Based on their superior performance throughout the project thus far, F.E. Moran was entrusted the responsibility of making the necessary design and installation alterations to the drawings to meet the imminent deadline.



When the turbine manufacturer's drawings for the CO2 system did not meet the AHJ's requirements, F.E. Moran's designers and technicians immediately traveled on-site to modify the drawings and hand-deliver them to the AHJ for approval

To ensure that the designs were completed efficiently and accurately, F.E. Moran Special Hazard Systems immediately dispatched a crew out to the facility to design the system. Their designers and technicians remained on-site until the drawings were complete and then hand-delivered them to the AHJ for approval. Following the AHJ's authorization of the drawings, they installed the system and tapped into their resources to obtain a CO2 concentration meter on short notice to complete testing of the system.

Despite the onslaught of obstacles that F.E. Moran Special Hazard Systems faced throughout the project, they were able to design and install a comprehensive fire protection system that met the rigorous demands of all those involved. Through their flexibility, their profound knowledge of the systems and their tremendous commitment to the customer, F.E. Moran was able to deliver an effective system that met all relevant codes, within the given timeframe.