F.E. MORAN
SPECIAL HAZARD
SYSTEMS

CASE STUDY
Coal-Fired Generating Station

F.E. Moran Special Hazard Systems used their expertise, resources and efficient project management to successfully install a comprehensive fire protection system for one of the most prominent power generating stations in the Midwest.

Experience, Expertise and an Established Network

In the heart of the Midwest lies an award-winning power generating station, which has generated millions of MWh of electricity since its coal units have been put into service in the 80's. When the plant decided to replace the deluge systems that were protecting four of their transformers, F.E. Moran Special Hazard Systems was a natural candidate for the job because they had a previous working relationship with the plant's owner. Their past performance during preceding jobs with similar scopes and synergy with the owner's engineering group helped F.E. Moran Special Hazard Systems secure the job, giving them the opportunity to deliver another quality solution for the esteemed power plant.

F.E. Moran Special Hazard Systems' experienced designers used their expertise to meticulously perform all of the hydraulic calculations, ensuring that the system was discharging the appropriate amount of water in every aspect of the system. The team utilized their advanced AutoCAD-based system to design a robust fire protection system that was in accordance with the owner's specifications.

Having acquired an extensive network of fabricators throughout the country, F.E. Moran Special Hazard Systems immediately began working with a local trusted fabricator who was able to expedite the delivery of the pipe and fittings. Because the design called for exclusive items, such as pipes with special grooved fittings and other obscure parts to retrofit with existing components, F.E. Moran Special Hazard Systems had to tap in to their wealth of resources to obtain the parts in a timely manner.

F.E. Moran removed all of the existing piping and installed a comprehensive deluge system to protect the facility's transformers

Project overview:

- ***Removed and replaced 600' of pipe***
- ***Replaced 4 existing deluge valves with new equipment***
- ***Demolition, installation and testing completed after 12 days on-site***
- ***Performed additional transformer protection that was originally scheduled for a later date***
- ***Completed the project 2 days before scheduled***

An Effective Solution for Protecting Powerful Transformers

The team of skilled installers replaced four existing deluge valves that were associated with the facility's transformers. All of the existing deluge piping and supports around the transformers, including the pipe stands, were removed while retaining the current buswork protection system.

New piping was installed in a horseshoe header design, mounted above the top of the transformer shell and was supported by the steel blast fire walls. F.E. Moran Special Hazard Systems utilized Elkhart 1 ½" nozzles to provide the high level of coverage and flow density that is required to adequately protect transformers. The nozzles were positioned in a manner that the discharged water sweeps across the top of the transformer casing, creating a spray pattern that is effective and all-encompassing.

As is often an issue in these types of applications, the existing feed mains needed to be considered when designing the project. Feed mains were relocated as to shelter them from damage that could be incurred from the failure of adjacent transformers.

Efficient Project Management for Expedited Project Completion

The owner had slated the installation of the systems protecting the three transformers to occur during a scheduled outage, with the work associated with the fourth auxiliary transformer to occur at a later date. It was imperative that the project be complete before the end of the outage, which meant that F.E. Moran Special Hazard Systems must design, stocklist, order, fabricate, install and test the system within the given timeframe.

Installers were also faced with the challenge of installing the sprinkler system in an environment that presented structural obstacles that impeded their work. The spaces between the transformer equipment and blast walls were quite restrictive, demanding that the installation crew be well-prepared and skilled enough to perform the work within confined areas.

Despite the environmental factors, the crew seamlessly installed the systems with time to spare. Furthermore, because F.E. Moran Special Hazard Systems was ahead of schedule, they also installed the deluge system for the auxiliary transformer that was initially planned for the future.

Following completion of the installation, F.E. Moran Special Hazard Systems conducted testing of all of the sprinkler systems to ensure that every component of the system was functioning properly. In addition to the typical hydrostatic testing that is typically executed post-installation, F.E. Moran Special Hazard Systems also performed a flow test of the nozzles for added reassurance that the system was operating at peak performance. Upon completion of the tests, there were still two days remaining in the outage, meaning F.E. Moran Special Hazard Systems finished the installation, as well as the additional auxiliary transformer, two days before their deadline.

After completing the project, F.E. Moran conducted the standard hydrostatic testing of the system, as well as a flow test of the nozzles, to ensure that they had delivered a quality solution.