

Oak Creek Power Plant

AQCS Area

Twenty miles south of Milwaukee, the third-largest power generating station in Wisconsin can be found along the shore of Lake Michigan. The coal-fueled Oak Creek Power Plant is the most thermally efficient generating station in the state, generating 1,135 MW. Committed to environmentally responsible power generation, We Energies, recently installed new Air Quality Control Systems (AQCS) at its Oak Creek Power Plant. The AQCS consists of two wet limestone forced oxidation flue gas desulfurization (FGD) systems and two selective catalytic reduction (SCR) systems to reduce emissions.

URS, the EP&C firm providing their services for the installation, has a long-standing relationship with F.E. Moran Special Hazard Systems from previous projects they have worked on collaboratively. Additionally, over the years F.E. Moran has done extensive work for We Energies making them a natural choice as the contractor to install a comprehensive fire protection solution for the new FGD and SCR areas.

With an extensive background in FGD projects, including a similar installation at the neighboring Pleasant Prairie Power Plant (another We Energies facility that is the largest generating station in Wisconsin), F.E. Moran's experienced team had a thorough understanding of the nuances of the application. Implementing a complete fire protection system in this environment from beginning to end requires a great deal of expertise and first-hand experience; F.E. Moran knew exactly how to execute the project, even when encountering complex challenges.

Many fire protection contractors do not have the proficiency to perform the underground portion of a fire protection system but F.E. Moran has carried out countless underground installations, which has provided them with the knowledge that was necessary to perform the intricate project. The environmental conditions posed a number of challenges for F.E. Moran, demanding that they call upon their expertise to complete the underground.

With temperatures frequently falling below freezing during the winter months, F.E. Moran had to overcome the obstacles of working outdoors in extremely cold weather and installing pipe in frozen ground. Additionally, the soil contained a high concentration of sand, requiring them to excavate trenches that were larger than average to compensate for potential cave-ins.

Another unique hurdle that F.E. Moran faced was installation of the underground system on a steep slope. The solution required special installation methods in which a 100' boring was made parallel to the slope face and the underground pipe was subsequently slid through the hollow to reach its destination. This method dramatically reduced the cost and disruption that would have been created if typical excavation methods had been used.

Beyond the complications presented by the plant site, many other factors had to be considered when installing the underground to ensure that the system would function optimally. F.E. Moran's skilled



Installing and underground system requires knowledge and expertise; the Oak Creek Power Plant installation involved a complex excavation to achieve the proper installation technique.

installers used their knowledge of equipment such as post indicator valves (PIV's), control valves and thrust blocks to install a system that was in accordance with NFPA 24 Standard for Private Service Mains. Using their expertise, F.E. Moran utilized the appropriate materials for this particular application according to factors such as soil condition, pump type, water source and levels of corrosion in the environment. The accomplished installers used their skill and experience to properly restrain the pipe for a durable and reliable system.

Upon completion of the underground portion of the project, F.E. Moran immediately began the above ground work, with a scope that included a wide array of suppression, alarm and detection systems. FGD systems are inherently complex, with varying risks posed by a vast range of equipment. Scrubbers, oxidation blowers, limestone drive pulleys and other FGD-related equipment demand specialized fire protection solutions that address their unique hazards. The high temperatures that occur within FGD areas necessitate high volumes of water as well as specific protection for limestone and gypsum dewatering areas.

In addition to the host of suppression systems that F.E. Moran Special Hazard Systems installed, they also implemented an extensive alarm and detection system for the plant. In FGD applications it is critical that a highly effective alarm system is in place to mitigate the risk of a potentially high-intensity fire. F.E. Moran not only installed the fire alarm panels, manual pull stations and strobes and horns but they also employed a Very Early Smoke Detection Alarm (VESDA) air sampling system for optimum detection. Through continuous air sampling, the VESDA system can detect trace amounts of smoke in the environment, allowing the facility to respond appropriately before a fire has the opportunity to escalate.

Despite some of the challenges presented by the underground installation at an operating facility and the complexity of the equipment that was being protected, F.E. Moran's Project Manager and his team completed the job on time and on budget, with expert precision. Their experience and unparalleled knowledge of the application allowed them to foresee potential issues before they interfered with the progress of the project and respond appropriately. Additionally, their relationship with the local Authorities Having Jurisdiction (AHJ's) streamlined the approval process, facilitating the smooth progression of the project. The end result is a reliable, wide-ranging fire protection system that meets industry requirements and provides We Energies with the peace of mind that their valuable assets will be protected.



The fire protection needs of FGD areas demand consideration for the unique hazards inherent to specialized equipment such as scrubbers, oxidation blowers and limestone areas.



Scope of the Project

- Underground system
- Above ground fire main
- Multiple standpipes
- One wet pipe sprinkler system
- Three dry pipe sprinkler systems
- Dry standpipe in scrubber building
- Complete alarm and detection system
- Fire extinguishers