Hurricane Katrina hit New Orleans on August 29, 2005 and shut down the electric grid, the water supply, and the communications grid, and flooded approximately 80% of New Orleans due to failures of levees and pumping systems. The Nelson office building was up and running on generator power eight days later on September 6, 2005 despite the devastation. In an interview shortly after Katrina, a reporter asked how we had been able to accomplish this feat. Our answer was “We do this for a living.” Indeed, the senior staff members who came into town to hook up the generator were very experienced in designing standalone power systems for our industrial clients. In fact, we’re usually doing it on an oil platform many miles offshore, and the only way to get there is by boat or helicopter. Other than negotiating the flooded roads and checkpoints that were in place after Katrina, the ability to drive to the installation site was comparatively easy access compared to what we normally have to do.

From the beginning of the company in 1945, we have worked in locations so remote that we have had to create the infrastructure to support the project, including all the elements that Katrina knocked out of use: electricity, potable water, and communications. Our founder Waldemar Nelson had an often repeated saying that “Engineering is the foundation of civilization”. He had grown up in a time where this was very apparent in everyday life and not taken for granted. In a world where a second thought were not universal when he was born, and he took great pride in being able to bring them to more people.

This issue will concentrate on the topic of electric power generation because we have frequently been involved in projects requiring the knowledge to bring electricity to remote sites. Most of the United States is served by transmission lines that bring utility power to users. However, this is a big country, and there are still places where a large demand for power cannot always be reliably met by simply “plugging in” to the system. One example is pipeline compressor stations that may be located in very remote areas due to the need to boost pressure at certain intervals along the pipeline. They may have access to fuel, either natural gas from the pipeline or trucked in liquid fuel such as diesel, but there may not be utility lines anywhere near the location of the station. In these instances, we have worked with engine and turbine manufacturers to

Remote Power Generation
by: Kenneth H. Nelson, P.E.
Remote operations such as offshore oil platforms require total self-sufficiency in power generation. The electrical engineers select the generators, transformers, switchgear, and utility interface, and design their interconnection, operation, and protection. Control systems engineers provide the instrumentation to monitor and control all aspects of the facility. Chemical engineers design the process systems for fuel supply, emissions controls, and lubrication. Architects design the building to house the equipment. Environmental engineers handle pollution prevention plans and compliance with environmental regulations. Over the years, we have provided all of these services in whole or in part as dictated by the client’s needs and working in concert with various equipment manufacturers. Wherever there has been a need to “keep the lights on”, no matter what the circumstances or how remote, Nelson has designed innovative solutions. We all take for granted that electrical devices will perform their function when the switch is turned on, but it takes a tremendous design effort to make sure it happens, especially in remote locations.

2018 SERVICE RECOGNITION DINNER
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