Roche Relies on Natural Gas for Added Runtime

Gas Injection Doubles Emergency Generation Capacity

From I-69, the Roche Diagnostics campus looks like just another in a series of office parks. But for the world's leading provider of diagnostic systems and decision-oriented health information, this 144 acre collection of buildings play critical roles in day-to-day operations.

In addition to providing space for offices, research and production of medical devices, the Indianapolis facility is also an IT hub for the company. "Even if we weren't producing anything, we have people who need nonstop power," explains Jim McCoy, who oversees the facility's emergency generators. "We have uninterruptible power supplies, but the best of those provide power for only up to an hour."

That's why Roche invested in a large backup generation array in 1993. If the electricity supply fails, the system's five 1600-horsepower Caterpillar engines will be synchronized to deliver enough electricity to meet the needs of the entire campus in just two minutes. "We can bring an individual engine up in 20 seconds, but it can't carry the campus load, so we bring them all up and synchronize them before we throw the switch," says McCoy.

Five years ago, in an effort to minimize the risk of a long-term power loss, Roche studied ways to increase the runtime of the generators. An obvious solution would be to double the storage capacity

of the system's 20,000-gallon diesel fuel tank. However, the complexity and approvals involved with adding that much fuel storage led the company to examine alternative approaches.

They found the best solution in natural gas as a supplement to the diesel fuel. "It was one of the easiest options, because we could use the same generators and simply pump the gas in. The natural gas for the generator is injected into the combustion air past the air filter. "When we run the generators at about 60 to 70 percent power, injecting natural gas gives us about a 50 percent reduction in diesel consumption." Automated PLCs control the injection of diesel and natural gas, adjusting as the fuel mixture changes.

The system has delivered the reliability Roche needs. In addition to performing well during regular test runs of up to a half hour, the system was put to a real challenge last year when Indianapolis Power & Light encountered serious problems at its Castleton substation. "We ran the generators for four days," McCoy recalls. "We were on and off IPL power for four days, and these ran non-stop."

Company Moves to Natural Gas for Cooling, Too

While global warming has inspired a lot of discussion on this side of the Atlantic, Europe has seen much more in the way of action. One example is the decision by the European owners of Roche Diagnostics to eliminate the company's use of hydrochlorofluorocarbons (HCFCs). That move presented Jim McCoy with a serious challenge, and natural gas played a big role in the solution.

"Their decision means we can no longer use halogenated hydrocarbon as a refrigerant," McCoy explains. When it came time to replace rooftop packaged systems, Roche selected natural gas-fired ammonia absorption units manufactured by Robur (now owned by Servel). "We looked at gas-fired lithium bromide units, but they weren't set up in the sizes and styles we needed, and we would have needed a mechanical room to put them in" he says. "For something to be mounted outside, this is the option that made the most sense."

Only a small portion of the Roche campus is currently being cooled by the gas-fired absorbers. "Right now, I've got 5 of these machines, with 23 ammonia absorbers," McCoy says, adding that existing rooftop units will probably be replaced by gas-fired systems as they reach the end of their service lives.