



Power Generation

ENSURING POWER AT NEMOURS CHILDREN'S HOSPITAL

Who Nemours Children's Hospital
What Four 2,250 kW MTU generator sets, powered by MTU 16V Series 4000 engines, with 12,470 voltage and paralleling switchgear.
Where Orlando, Florida, USA

In October 2012, Nemours, a non-profit children's health system, opened a new \$397-million hospital in Orlando. The state-of-the-art, 630,000-square-foot medical hospital has 95 private rooms, world-class pediatric surgeons, a full-service pediatric emergency department and anchors a 60-acre, fully-integrated health campus that includes extensive research and education facilities. The new children's hospital supports families in Florida and the Southeast United States in need of highly specialized medical care.

Like all critical care facilities, Nemours is required by state, local and federal codes to have emergency standby power systems that can be online within seconds of a utility outage. To meet the power generation needs of today, while also planning for future growth that may require additional load management, the hospital installed a new central power plant equipped with four 2,250 kW MTU generator sets with paralleling switchgear to ensure that patient lives are not put at grave risk in the event of a power outage.



The Nemours Children's Health system provides family-centered care in children's hospitals and clinics in Delaware, New Jersey, Pennsylvania and Florida, and is a leader in world-changing research, education and advocacy.

Modern-day necessity

From the computers that maintain patient medical records and the supporting IT infrastructure, to HVAC systems, incubators and defibrillators, modern medical facilities rely on electricity to power every single piece of equipment, and any interruption in power can lead to disastrous consequences.

"Generator sets are vital to hospitals today," said Nelson Roque, director of facilities and construction at Nemours. "They keep critical systems such as resuscitation and life-saving machines online, but it's not only those systems that depend on generator sets. Everything runs on electricity, and without it, we really couldn't function as a hospital."

The leadership team at Nemours was impressed by the MTU power system installed at Halifax Health Medical Center in Daytona Beach in 2009, which the Florida Agency for Health Care Administration cited as an example of "the way it should be done."

The MTU central energy plant has provided standby power to Nemours Children's Hospital for nearly two years as the 24/7 pediatric care facility has touched patients from 20 countries, three U.S. territories, 41 states and 59 counties in Florida. During that time, the generator sets have proven to be capable of handling the consistent demand for critical power needed to ensure patient safety.

Withstanding Mother Nature's fury

The hospital's Central Florida location presents two uncontrollable challenges—heat and hurricanes. "The hospital doesn't have any operable windows. If we were to lose our air conditioning in the middle of summer, this building would turn into an oven in just a few hours," Roque said.

Summertime also ushers in hurricane season, which could easily render the hospital powerless. With the looming threat of Florida's violent tropical storms, Nemours must be confident that both the building and its backup power system can withstand the wicked weather found in the Southeast. The facility was built to endure the heavy winds, flooding and catastrophic damage commonly associated with severe storm systems, including Category 4 hurricanes.

By working side-by-side with local MTU distributor, Stewart & Stevenson FDDA, Roque was able to equip Nemours with an emergency power system also capable of withstanding the elements. With dependability in mind, Roque and FDDA installed the four generator sets on the second floor of the hospital to decrease potential for flood damage and ensure that the plant can provide enough backup power to supply electricity for more than seven days in the event of an outage. To further guarantee power when it's needed, Nemours tests its generator sets and switchgear on a monthly basis by triggering different areas of the hospital to simulate a power interruption.

"We test the backup power periodically to ensure that when the day comes that we need it, it will be operational," Roque said. "In recent years, we've had very mild hurricane seasons and although we have not had a single interruption in power yet, we're confident that if something should happen the generator sets will work perfectly, just like they do in testing."

An air of distinction

For the Nemours facility management team, Rolls-Royce's reputation of engineering toward quality, reliability and power made the MTU generator sets stand out from the competition. Originally, Nemours had designed its power plant around a competitor system, but following a visit to Daytona Beach's Halifax Health Medical Center, Nemours decided on MTU. Halifax relies on standby power from a 4.5 MW MTU power system that was installed in 2009 and the system has been recognized for its excellence by the Florida Agency for Health Care Administration, who used the backup power system as an example of "the way it should be done." This, coupled with the 85% load factor of the MTU engine that powers the four 2,250 kW generator sets, impressed the leadership team at Nemours.

"A large factor in the hospital's decision was the system's capacity for expansion. The MTU's 85% load factor offers increased capacity by 15% over the competition. This flexibility is important because the hospital is not certain what their total power capacity needs will be in the future," said Len Hernandez, director of sales at FDDA.

The FDDA team added one final feature to the state-of-the-art system, and this special design detail can't be found on any other MTU generator sets. Catering to Nelson Roque's personal passion for Harley-Davidson motorcycles, FDDA installed chrome valve covers to complement the orange and black painted floor of the power plant. The thoughtful embellishment to the power system has generated a buzz among employees and industry professionals alike.

"I've shown our Harley theme to quite a few other hospitals in the area. It's been a big hit— everybody's pretty impressed. Now there's talk about chrome covers all over the industry," Roque boasted.

Rolls-Royce provides world-class power solutions and complete lifecycle support under our product and solution brand MTU. Through digitalization and electrification, we strive to develop drive and power generation solutions that are even cleaner and smarter and thus provide answers to the challenges posed by the rapidly growing societal demands for energy and mobility. We deliver and service comprehensive, powerful and reliable systems, based on both gas and diesel engines, as well as electrified hybrid systems. These clean and technologically advanced solutions serve our customers in the marine and infrastructure sectors worldwide.



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