

CASE STUDY

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Florida's Halifax Health relies on standby power system from MTU Onsite Energy for new 10-story emergency facility

Halifax Health officials sized the new 4.5 MW MTU Onsite Energy power system to supply all the loads in the new tower, including HVAC. Having a reliable standby power system is not only required by code, but is necessary as a practical matter, because east central Florida is hit frequently by hurricanes and thunderstorms that cause disruptions in grid power.

DAYTONA BEACH, Florida – Halifax Health is the largest medical center in East Central Florida, with 944 beds and 500 physicians representing 46 specialties. Founded as a small community hospital in 1928, it has steadily expanded over the decades, and is now consistently ranked in the top five percent of all medical centers in the country in clinical outcomes. When Halifax Health recently added the new 10-story France Tower to the campus for inpatient and emergency treatment, it selected a 4.5 MW MTU Onsite Energy standby power system from [Florida Detroit Diesel-Allison](#), the local distributor for [MTU Onsite Energy](#).

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Named in honor of the Bill France family, owners of Daytona-based NASCAR, the France Tower contains one of the largest operating rooms on the East Coast in addition to a central energy plant that houses the new standby generators, boilers and chillers. Having a reliable standby power system is not only required by code, but is necessary as a practical matter, because this area of coastal Florida is hit frequently by hurricanes and thunderstorms that cause disruptions in grid power.

Utility power outages are common in Florida

“Summertime thunderstorms regularly wreak havoc with our local utility due to lightning strikes, but these outages tend to be of short duration,” says James Sawyer, electrical supervisor, [Halifax Health](#). “However, there’s always the threat of bigger storms. In 2004, Hurricane Charley was a Category 4 storm that took out the entire grid, forcing us to run on standby power systems in older parts of the medical center campus from midnight until about 6:00 a.m. the next day.” While the new MTU Onsite Energy standby power system has not yet been required to run during an extended outage, strong hurricanes are always a possibility. As testimony to the constantly looming danger, the new France Tower has been constructed to withstand a Category 5 storm, Sawyer says.

While there have been several standby power systems installed in the medical center as it has grown over the years, those systems are sized to provide only emergency power for operating rooms and intensive care units and for egress lighting to meet life-safety codes. The older standby generators weren’t sized with the capacity to power the HVAC systems. Since current



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codes require patient evacuation if an area is without air conditioning for longer than 36 hours (a real possibility during a severe hurricane), Halifax Health officials sized the new 4.5 MW MTU Onsite Energy power system to supply all the loads in the new tower, including the HVAC.

System features three paralleled generator sets

The power system for the France Tower consists of three 1,500 kW MTU Onsite Energy generator sets operating in parallel for a total capacity of 4.5 MW. The generator sets are powered by the EPA Tier 2 MTU 12V4000 engine, noted for its high fuel efficiency and ability to accept full rated load in one step. The electrical loads are prioritized and segmented by up to eight automatic transfer switches per generator set. When an outage occurs, all three generator sets start and assume the load when they are up to speed, in about 10 seconds. If the control system detects that only two generator sets are needed to supply the loads, one generator will shut down in order to economize on fuel, according to Sawyer.

Supplying the three generator sets are two 30,000-gallon fuel tanks. When completely full, they hold enough fuel to operate the standby power system for more than four days at a 75 percent load.

Throughout the medical campus are various uninterruptible power supply (UPS) systems to supply power immediately after an outage while the standby generators start. Sawyer says the largest UPS systems supply the medical center's data center and operating theaters. In addition to the standby power system and multiple UPS systems, Halifax Health has dual utility feeds from separate substations in case there is a transmission problem with just one line.



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Maintenance promotes reliability

Due to the size of the medical center and the number of multiple power systems to maintain, Sawyer has a team of electricians that takes care of all the normal generator maintenance. This includes routine oil and filter changes and weekly generator set exercise. The generators are exercised manually every week to make sure the batteries are operating at peak level. “Every other week, we transfer load using a different automatic transfer switch (ATS) to make sure that each individual switch operates correctly.

“We have quarterly services performed by MTU distributor, Florida Detroit Diesel-Allison,” says Sawyer. “The distributor also performs the annual service checks, which include bringing in a load bank to load the generator to do a four-hour test. With the load bank, we ensure that the generators are loaded to at least 30 percent of their nameplate rating to prevent unburned fuel from building up in the exhaust.”

Past relationship with local distributor is an important factor

Florida Detroit Diesel-Allison has been involved with sales, service and repair on several of the older existing standby power systems in other parts of the medical center.

That made the selection of an MTU Onsite Energy power system an easy choice. “The MTU distributor has been outstanding in their promptness and repairs,” says Sawyer. “When the bids went out for the France Tower installation, my recommendation was to go with MTU Onsite Energy. That also allowed us to standardize as much as possible with existing ATS, breakers and panels.”



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“We worked closely with MTU Onsite Energy’s regional office and engineers to prepare the best solution for Halifax’s emergency requirements,” says Tommy Carroll, account manager, Florida Detroit Diesel-Allison. “Our project team coordinated the manufacturing and testing of the MTU Onsite Energy generator sets, switchgear and auxiliary equipment to assure an on-time completion of the hospital’s power system.”

Expansion at busy Halifax Health is continuing, and the new central energy plant has room for an additional two standby generator sets. In the meantime, Sawyer and his team are making sure that all the critical loads in the medical center are backed up with reliable standby power, no matter what the Florida weather sends their way.



All of the electrical loads, including HVAC, in Halifax Health’s new 10-story France Tower are backed up by a 4.5 MW MTU Onsite Energy standby power system.

(MTU-8109)



Three 1,500 kW MTU Onsite Energy generator sets operating in parallel are each powered by the EPA Tier 2 MTU 12V4000 engine, noted for its high fuel efficiency and ability to accept full rated load in one step.



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MTU Onsite Energy Corporation

MTU Onsite Energy Corp. (formerly Katolight Corporation) is a leading producer of diesel-powered generator sets from 30 to 3,250 kW and natural gas-powered generator sets from 30 to 400 kW for standby, prime power and cogeneration applications. The company also provides automatic transfer switches, paralleling switchgear, controls and accessories for complete power system solutions. Based in Mankato, Minnesota, MTU Onsite Energy Corp. combines the expertise of Katolight and MTU Detroit Diesel Power Generation under one brand to meet the ever increasing distributed power needs of customers in North America and around the world. MTU Onsite Energy Corp. is part of the Tognum Group's business unit, Onsite Energy and Components. For more information, visit www.mtu-online.com

Tognum

With its two business units, "Engines" and "Onsite Energy & Components", the Tognum Group is one of the world's leading suppliers of engines, propulsion systems and distributed energy systems. These products are based on diesel engines with up to 9,100 kilowatts (kW) power output, gas engines up to 2,150 kW, fuel cells up to 360 kW and gas turbines up to 50,000 kW.

The product portfolio of the "Engines" business unit comprises MTU engines and propulsion systems for ships, for heavy land, rail and defense vehicles, and for the oil and gas industry. The portfolio of the "Onsite Energy & Components" business unit includes distributed energy systems of the brand MTU Onsite Energy, fuel-injection systems from L'Orange, and drive shafts from Rotorion. The energy systems comprise diesel engines for emergency power generation, basic and peak load, and cogeneration power plants based on gas engines, fuel cells and gas turbines that generate both electricity and heat.

In 2008, Tognum generated revenue of more than €3.1 billion and employs more than 8,900 people. Tognum has a global distribution and service structure with 26 fully consolidated subsidiaries, more than 140 sales partners and over 500 authorized dealerships at approximately 1,200 locations. The shares of Tognum AG (ISIN: DE000A0N4P43) have been stock-exchange listed since 2007 and are included in the MDAX.