Power Generation

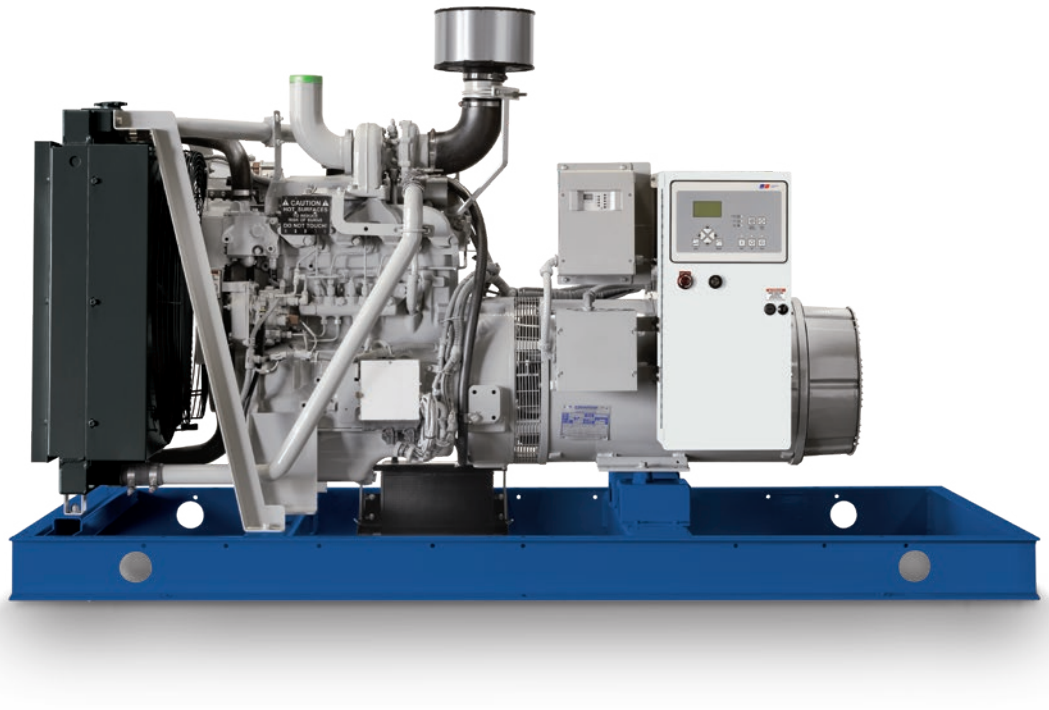
HOW AMERICA'S LEADING TELECOM PROVIDERS SUSTAIN CRITICAL POWER DURING UTILITY OUTAGES

Who	Telecom industry giants
What	Over 18,000 MTU standby generators
Where	North America

The jump from our dialup and home phone lines to wireless internet and smartphones began gradually and then exploded. Our expectations of a 24/7/365 connection continues to rise, and our patience has plunged. In today's hyper-connected world, we expect nothing less than uninterrupted phone and internet signal and momentary loss of service can seem unbearable. Add in the feeling of despair and helplessness that follows a major emergency, and you have a full-blown catastrophe on your hands.

For telecom companies to effectively service their customers, uptime is king. MTU standby power units are the hidden heartbeat poised to power today's phone lines and internet connections in the event our telecom company's main power sources are compromised. The top three telecom companies in the United States have positioned over 18,000 permanent MTU 30 kW and 50 kW generators throughout the country to ensure they're providing their customers the connectivity they expect.

A Rolls-Royce solution



"We have units installed in all 50 states serving different telecom companies," said Mark Jentges, corporate accounts manager. "The carriers are beginning to place generator sets everywhere mobile users can be found, whether at home, in the office or on vacation—from the Boundary Waters to Disney."

Mile by mile, the mobile telecom industry's carrier sites dot the entire United States geography. The largest carriers operate 40,000+ sites, all of which are serviced effectively by Rolls-Royce's global network of authorized MTU distributors, despite far flung and remote carrier site locations. Since these telecom contracts are often non-exclusive supplier agreements, success is determined by product design, performance and service execution.

"Rolls-Royce is known for providing custom solutions to meet rigorous local requirements, whether it's meeting extremely low noise ordinances, strict aesthetic requirements, or strict environmental regulations," said Heather Isebrand, corporate accounts project manager. "We've customized our MTU generator sets to emit sound at less than 55 dBA at full load, blend in aesthetically to pristine property areas, and triple contain against hazardous environmental spills."

Mounting demands

In the early 1990s, small, regional telecom companies began to consolidate and evolve into the large regional and national carriers we see today. As the business landscape evolved, so did customer demands. Telecom companies reliability became critical after September 11 and an extremely active hurricane season in the early 2000s, which included Hurricane Katrina. During this time, telecom companies discovered how much their consumers depend on and expect uninterrupted mobile service during emergencies.

"Rolls-Royce is known for providing custom solutions to meet rigorous local requirements, whether it's meeting low noise ordinances, strict aesthetic requirements, or strict environmental regulations."

Heather Isebrand
Corporate accounts project manager

The reputation of cell phone tower's standby power and service providers became a critical selling point. Telecom companies also started seeing consumers eliminating their home phone line and relying solely on cell phones to communicate with friends and family—especially during emergency situations. The industry-leading reliability of MTU generator sets has helped telecom companies meet their customers' demands and expectations for flawless mobile service, helping Rolls-Royce quickly grow its client base from hundreds to thousands.

"Rolls-Royce has served one of the largest wireless carriers of the Gulf Coast through several natural disasters, including the very active hurricane seasons of 2004-2005. We have nearly 2,000 generator sets along the Gulf Coast states powering wireless and other telecom services," said Isebrand. "One of our large install base of generators served wireless carriers during Super Storm Sandy. Our telecom customers are very service oriented and demand reliability during the harshest conditions. Their customers are our customers, and we are focused on providing them the best service."

Tailor-made technology

To the benefit of risk-averse telecom companies, Rolls-Royce takes a very conservative approach to designing and rating its generator sets. For example, MTU generator-drive engines are designed with more cylinder displacement per rated horsepower than alternative products. As a result, MTU generator sets are certified at an 85 percent average load factor over 24 hours, significantly higher than the 70 percent average load factor required by ISO 8528. Other generator set manufacturers merely meet the ISO load-factor minimum, which means the average load factor that can be sustained by most generator sets over an extended power outage is only 70 percent of the nameplate rating. Since MTU generator sets can handle 15 percent higher average loads than competing products, users may be able to specify fewer generator sets for data center applications, depending on the size of the installation.

When creating a custom MTU power system, the customer determines the priority for each cell site and bases the reliability requirements on highest priority. Some sites are more susceptible to outages than others. The number of generator sets a company requires depends on the individual companies different site level priorities. Some customers mandate backup emergency power at 100 percent of their locations (where feasible). Statistical analysis is used to determine what emergency backup power requirements are needed. Most single carrier cell towers can be sustained with a 30 kW generator. Equipment designed for indoor applications require additional climate controls, which increase the power requirement.

“The power business is very competitive. Rolls-Royce excels in offering complete solutions to its customers,” said Jentges. “Our MTU systems are made with careful custom design work manufactured precisely to the customer’s requirements.”

To protect against power blackouts, telecom company power schemes include layers of redundancy. Customers generally install generators as an open transition backup to their utility power—if there is an outage from one substation feed, the second one will automatically take over. To supplement these layers of utility redundancy, battery back-up is used for short duration outages. Battery backup is very expensive to maintain and does not last as long as a single generator set will last.

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.

A Rolls-Royce solution

08 294 (77 3E)