

Weather-Proof Wireless Communication at Your (SCADA) Service

On Monday, Aug. 29, 2005, Hurricane Katrina devastated the south central coast of the U.S., leaving a trail of destruction in its wake. The storm caused severe damage to the city of New Orleans, and communication networks were hit hard by the hurricane—as was most of the city’s metropolitan infrastructure. The loss of communication gear included the city’s SCADA system, placing a serious threat on the city’s ability to cope with the possibility of a future disaster.

By Aviv Ronai



Faced with the challenge of constructing a new communication network, the city of New Orleans looked to advanced wireless solutions

Although this hurricane destruction hit more than two years ago, there are still ongoing efforts to reconstruct from the damage left by Katrina. The city of New Orleans has recently put in place a brand new SCADA network, and this time it is based on wireless high-capacity microwave solutions. Wireless radios provide continuous communication of mission-critical data for use during tropical storms and major hurricane events.

The challenge

When Hurricane Katrina struck in the summer of 2005, New Orleans’ city pump sites failed to evacuate water from the sewage system, thereby flooding the canals and the city itself. A copper and fiber communication system was being used at the time for voice and data transmission between pump sites and the city’s mission-control center. Due to the excessive flooding New Orleans experienced—and without any back-up facilities—this network was completely destroyed.

Faced with the challenge of constructing a completely new communication network, the city of New Orleans looked to advanced wireless solutions. By choosing a wireless solution, the city saved its engineers a major rewiring effort that would have otherwise been required to connect remote pumping stations to the city’s command post.

Wireless proved to be a quicker and less expensive alternative. Typically, wireless systems have a 12- to 18-month return on investment, and this was no exception.

An entire network for voice and high-speed data traffic connecting six pumping stations was completed in only three months. The extra time was mostly taken to reinforce the foundations of communication towers to allow them to withstand Category 5 winds. Additionally, with the microwave solution that was deployed, the system is easily upgradeable for future bandwidth needs, so the city of New Orleans can enjoy its benefits for many years to come.

The solution

For this specific installation of the SCADA communications network, New Orleans chose Ceragon Networks’ wireless high-capacity microwave solutions. Deep South Communications, a regional microwave integrator based in Baton

Rouge, La., deployed this solution while providing the turnkey solutions for the microwave and network integration.

Ceragon's wireless radio technology was mounted on towers to support communications between outfall control structures and associated pumping stations, as well as the emergency operations center in New Orleans. To connect the six pumping stations, a five-path network was put in place. Three of the five paths are used for fail-over backup to fiber interconnects, while the remaining two paths are primary communications interconnecting all site communication.

The Ceragon FibeAir IP-MAX solution enables primary communications between the outfall canals and back-up communications along the canals. Each of the six pumping sites is equipped with full IP video capability to monitor pumps and water levels in the canals without interruption. In addition, the system provides telemetry, meter reading, flow/pump control and other data points that are monitored at the site. The video and SCADA applications are transmitted at speeds of up to 50 MB per second, giving city wastewater personnel crucial real-time data.

Back at headquarters, engineers can examine the live footage and compare it with other electronic data. They can talk with onsite personnel and share information gathered at other sites around town in real time under any conditions.

Weather-proof gear

As a result of the Katrina experience, one of the main conclusions is that cities can never be overprepared. In operation since the first quarter of 2007, the network's infrastructure and microwave links for wireless communication are designed to withstand a Category 5 hurricane. To ensure continuous communication under extreme winds, redundant antennas were set with rigid antenna mounts and towers designed to withstand 220-plus mph winds. The radio frequency equipment itself was designed for rainfall conditions comparable to those of a Katrina-like storm.

Summary

Needing to reconstruct its SCADA network quickly and cost-efficiently during the aftermath of Hurricane Katrina, New Orleans' city engineers opted for a

wireless microwave solution. Put in place by Deep South Communications, Ceragon Network's FibeAir IP-MAX solutions already enable high-speed voice and video communication among six pumping sites and the city's mission control center. Guaranteeing continuous voice and data flow, even under a Category 5 storm, these advanced solutions help make New Orleans' water and sewage system more reliable and the city itself a much safer place to live. **WWD**



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