

Kerman Telephone Finds **New Solutions** to Network **Backup** **Power**

By Sandra Saathoff

When you're trying to increase the reliability of your network, sometimes it helps to think outside the box. Donald Kountz, Network Supervisor of Kerman Telephone, is the kind of man who is willing to look at the alternatives and make a change to meet his goals.

Kerman Telephone Company has been providing telephone service to the 12,000 people of Kerman, California since 1911. Known for its respect for its customers, colleagues, and community, Kerman Telephone has been instrumental in programs such as the Kerman Community Literacy Program, the goal of which is to invest in the future of Kerman's children through literacy awareness and improved reading skills. Kerman Telephone employees take this investment in the future to their jobs every day.

Kerman Telephone has an exchange area of 182 square miles. They currently serve 6,500 access lines and 1,000 DSL customers. In 2005, they completed a new network comprised of a TEKELEC T-9000 (SanteraOne) soft switch and 54 TELABS (AFC) remotes. The network established a 5,000-foot loop reaching 95 percent of their customers. The new network is a star configuration consisting of nine major nodes and 46 sub nodes.

In order to maintain quality of service in the event of an extended outage, six of the nine major nodes required an onsite power backup system. In the past, backup power needs have been resolved by deploying additional battery strings and/or AC generators. For this new network, Kountz chose to go a different route and look at newer technologies.

Making the Decision to Use Fuel Cells

When large telecommunications companies decide to try new equipment, they generally start with a very limited number of sites and increase that number over a period of years. When you only have nine major sites, the decision to try new equipment is a fundamental shift in thinking and not to be taken lightly.

The business case for fuel cells is simple. Hydrogen fuel cells offer an effective, reliable, and commercially competitive backup power solution. Increasingly, communication network operators and engineers are deploying fuel cell systems in critical communication applications in the wireless, wireline, utility, and government sectors. The inherent properties of fuel cells provide enhancements over traditional technologies and this has created opportunities for fuel cell solutions. Batteries offer limited life, in some cases failing without warning, and they require routine maintenance in order to provide reliable backup power. Over time, this continued maintenance adds up and poses a substantial cost to the end user. Worldwide, billions of O&M dollars are spent to replace and maintain backup battery banks. In the past, battery replacement and maintenance has been the price of reliability, resulting in life-cycle costs that can significantly exceed the cost of fuel cell alternatives. Fuel cells offer a cost-effective solution with multiple benefits.

Kountz elected to implement the ReliOn I-1000™ fuel cell system. The I-1000™ is a modular 1kW PEM hydrogen fuel cell utilizing ReliOn's patented hot-swappable Modular Cartridge Technology®. This modular approach provides parallel redundancy for the backup solution. The I-1000™ offers a simple, air-cooled, self-hydrating solution with very few moving parts. The design of the ReliOn I-1000™ fuel cell allows users to scale solutions from 500 Watts to 5,000 Watts to meet their requirements. The I-1000™ has been deployed in commercial applications for over three years. In that time, more than 500kW of backup systems have been delivered to sites in North America and other countries.

For Kountz, the decision to install ReliOn's fuel cell solution came down to several issues. Chief among them were reliability, ease of maintenance, safety, and environmental aspects. The inherent modularity of the ReliOn system and its field proven



reliability gave Kountz the peace of mind to utilize the ReliOn solution. Kountz stated, "I chose the ReliOn hydrogen-based fuel cell product for many reasons. The system requires very little maintenance and has built-in cartridge redundancy. In the event of a component failure, the cartridge is unplugged, boxed up, and replaced via an overnight shipper."

Another factor in Kountz's decision was the issue of theft at outside plant sites. He commented, "The placement of a noisy AC generator at these sites, which are easily accessible to the public, makes them easy targets for theft. The ReliOn unit comes in a cabinet that conceals the fact that it is a backup power system and there are no concerns regarding noise."

Additionally, the ReliOn system's only exhaust is warm humid air. Furthermore, an Air Resources Board (ARB) permit, typically required for installation of a generator, is not required to install the ReliOn system. Longer run times traditionally only associated with generators can now be realized in an environmentally clean, simple to use, reliable system.

Kerman Telephone Fuel Cell Installations

The first of the six fuel cell sites was installed in August 2005. The remainder of the sites were installed by year end. Each of the six major node sites identified by Kerman Telephone as priority sites is now backed up by a ReliOn 2kW fuel cell power solution with 48kWh of hydrogen storage. This provides an average of 48 hours of backup reserve at the sites and allows for growth as Kerman's network capacity increases. From Kountz's point of view, "The installation process consisted of merely connecting to battery string location and providing an AC source for transfer control."

Conclusion

In a world where issues such as reliability, ease of maintenance, safety, and environmental aspects are becoming increasingly important – and severe weather seems to play a greater role in many telecommunication outages – it pays for small companies as well as large ones to take inventory of the options for backup power. Donald Kountz represents one company among many who are taking a leadership position to make a shift in the way they provide backup power to their networks by utilizing fuel cells. •