

# Medium-Voltage PureWave UPS™ System Cures Hospital's Power Quality Problems



## Background

The Willis-Knighton Medical Center campus in Shreveport, Louisiana is home to the Willis-Knighton Hospital, a 369-bed facility, as well as the Steen-Hall Eye Institute, Willis-Knighton Cancer Center, WK Progressive Care Center, WK Health & Fitness Center, WK Work Kare, The Spine Institute, the Center for Fertility and Reproductive Health, WK Extended Care Center, and the WK/LSUHSC Regional Transplant Center . . . plus corporate offices, physician office buildings, and support services.

A few years ago, the hospital constructed a major expansion to their emergency room and catheter lab. Existing switchgear could not accommodate the additional loads, so the new facilities were fed from a separate utility feeder. This feeder, located on a main thoroughfare, close to busy roads, was subject to more voltage sags and interruptions than acceptable. Power quality was compromised, impacting patient service.

## What Did They Do?

As loads on the single feeder approached a megawatt, the hospital began looking at options for improving power quality for the ER and catheter lab. The investigation was subsequently expanded to cover electrical service for the entire facility . . . *all downstream loads*, including normal lighting, HVAC, and other critical loads that do not always have backup protection.

A capital justification study was launched that considered the costs associated with the power quality problems: the need to reschedule procedures, overtime for professional staff, and increased maintenance for x-ray and catheter lab equipment.

Ultimately, the benefits of a medium-voltage UPS approach were recognized and, in 2008, Willis-Knighton purchased a 3500-kW, 12-kV S&C PureWave UPS System.

## Results

The PureWave UPS System—which is installed outdoors, eliminating the need for valuable air-conditioned space—was energized in late 2009, during a period of record rainfall in northern Louisiana. The system protected the facilities from 39 voltage sags in the first two months of operation!

With the additional capacity available from this large medium-voltage UPS system, it was possible to protect several important loads that did not technically qualify as “critical,” including a new fire protection system (sprinklers and fire pump), the nuclear medicine department, and the surgical wing. Other loads that are technically classified as “non-critical”—surgery room lighting, bed heaters, and table power—are also protected.

The PureWave UPS System can be expanded from 3500 kW to 4000 kW to accommodate future growth by adding additional battery modules. The system should be more than adequate, since building systems are becoming more efficient. More fluorescent lighting and LEDs are being used; newer HVAC systems use less energy than old systems; and new models of specialized equipment such as MRIs use less electricity.

