

Focusing on Power Quality Can Reduce Downtime 20 Percent

Power is mission critical in the healthcare industry as, without the delivery and use of high quality power, disruptions in hospital operations can potentially impact lives. Equipment such as MRIs, CT, X-Ray, ultrasound and nuclear machinery provided by large OEMs like GE Medical, Phillips, and Siemens to name a few, all require a consistent and reliable source of high quality power to operate. Power is so important that in fact by law, facility backup generator(s) are required to be available and tested regularly.

Most medium-sized hospitals experience an average of 20 power-related disruptions per year, often lasting only a few cycles in duration, and these events are often hard to detect. However, industry experts believe that approximately 20 percent of these disruptions can be prevented with appropriate power quality programs, real time monitoring, and proper mitigation devices. (Source: Rockwell Automation)

Yet most hospitals have not put in place appropriate monitoring systems outside of the generator to analyze and prevent future occurrences. Why? Many reasons exist. Often, most operations teams are spread thin focusing mostly on day-to-day maintenance, without a focus or understanding of power quality issues. These same operations teams are often unaware of the available technologies and the proper design of solutions. Much like their hospital practitioner brethren who often rely on information supplied and recommended by pharmaceutical and OEMs, operations must work collaboratively with OEM and power quality solution providers to solve these complex problems.

Like other industries, poor power quality can impact hospital operations and delivery of patient services. Equipment, such as MRI, CT or X-Ray, can stop functioning, fail, or perhaps be damaged requiring repair or replacement. Disruptions can create negative consequences - impacting patient treatment and scheduling, reduction in hospital billings, and create even costlier compliance issues.

A disruption impacting operations and billing can cost a hospital \$100 per minute in downtime in lost billing. In fact, **a 2-hour disruption impacting a single MRI can cost the hospital over \$125K**. So, reduction in disruptions increases efficiencies and utilization rates for both machines and people.

To better understand the issue, we need to understand also how power is delivered from the energy producer. Electric utilities provide hospitals with emergency room power with generator or modality power. Utilities that use generator transfer switches to provide power often do so using open transfer switches that cause deep sags in power or drop off-line upon transfer of power causing unprotected equipment to be damaged. Modality power is often unprotected and often equipment can be damaged or experience interruptions due to voltage sags.

Also, high speed switching on the grid can cause short term voltage disturbances that can impact hospital equipment - equipment fitted with very sensitive electronics often costly to repair and replace. Monthly testing of hospital generators, mandated by regulatory authorities, can also cause damage or disruptions to unprotected equipment.

Further still, the healthcare industry faces challenges due to regulatory constraints. Many state laws prevent hospitals from using closed-transfer switches so if these switches are left on or unprotected and a power event occurs, damage to equipment can result in disruption of operations and lengthy repair delays. And by federal law, hospitals cannot use load banks to simulate hospital loads, meaning hospitals have to leave equipment running and on-line to perform "full load" testing. Due to possible damage to high cost equipment, most hospitals turn the equipment off anyway for several hours to conduct the test, resulting in NFPA and JCAHO compliance-related issues. This downtime impacts delivery of needed services and added costs.

Although the issues are complex and consequences potentially substantial, solutions exist today to monitor and engineer remedial actions. Cloud-based, scalable, industrial-hardened SCADA systems supportive of remote monitoring of power combined with the appropriate installation of engineered monitoring equipment and remedial solutions provide a cost effective and easy to implement solution - with substantial impact to the bottom line - even potentially saving lives. The best part - solutions are available today.

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Healthcare Industry Perspective: Focusing on Power Quality Can Reduce Downtime 20 Percent

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