

How Automated Critical Power Reporting Helps Healthcare Facilities

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Why healthcare facilities need to test backup power systems

Healthcare providers offer mission-critical life-saving services. Testing backup power systems can often become an additional, unplanned task - yet it is crucial to healthcare delivery. Implementing a testing strategy helps demonstrate readiness and streamline compliance.

Backup Power System Standards for Healthcare

The mission-critical nature of healthcare facilities makes power availability essential to providing continuous patient care. That is why multiple industry codes specify actions for designing, operating, maintaining, and testing backup power systems and equipment.

Compliance is important because it leads organizations toward best practices. The effects of noncompliance can extend beyond testing objectives. Without testing, a healthcare facility may be at risk of losing accreditation.

Below are key codes governing healthcare facilities beyond general facility standards.

NFPA 99 – Requires a regular testing program in accordance with NFPA 110 – Standard for Emergency and Standby Power Systems

NFPA 70 – Requires testing in accordance with equipment manufacturer directions and authorities having jurisdiction, referring to NFPA 99 for guidance on periodic testing

The Joint Commission Hospital Accreditation Standards – Establishes operation standards and elements of performance to verify compliance for accreditation

Executing Tests

A comprehensive backup power testing program is necessary to ensure the proper functioning of a healthcare facility in the event of a power outage. It is also critical to comply with standards such as the NFPA 110, which requires the monthly testing of and annual maintenance of emergency power supply systems and their associated components. This complete process of demonstrating readiness typically consists of four general steps: recording, evaluating, compiling, and reporting.

Neglecting or delaying the maintenance and inspection of Emergency Power Supply Systems can present risks for healthcare facilities, as it means that the essential backup energy source may not be available in a crisis.





Recording Test Data

When an emergency power system is tested, pertinent information must be recorded, including the time that normal power was disrupted, the time that a generator start signal was issued, the time that each transfer switch successfully transferred to a backup power source, and the time of retransfers to the normal power source. At the generator, the total load must be recorded as a percentage of the rated generator capacity over the time the test is conducted.

Recording all the necessary data is important to complete a test. When a system is configured – for example, a single generator and a pair of transfer switches, the necessary data might be manually recorded by querying the controllers on each device. However, this becomes impractical with more complex systems. The labor involved in capturing the necessary data from systems comprised of a half dozen generators, one or more paralleling switchgear systems, and dozens of transfer switches is substantial. If manually recorded, the process is prone to human error.

To automate the process, the controllers of power equipment devices or connected data logging devices record and store the needed data. Timestamps are compiled for key events such as the onset of an outage, the duration of an outage, the elapsed time to bring acceptable power online from gensets, and the elapsed transfer time for every transfer switch.

Evaluating Test Results

NFPA 110 specifies minimum generator loading levels and runtime durations for various tests. The NEC specifies that backup power must be supplied to loads within prescribed intervals, specifically within 10 and 60 seconds for life-safety and legally required loads, respectively. If a test event does not meet these requirements, the facility will not achieve passing criteria. For instance, if the load drops below 30% of genset capacity during a 30-minute run of a monthly operating test, the test data are non-compliant.

The data from the test are subject to comparison with the performance criteria presented by industry codes. Again, manually performing this task is time-consuming and prone to human error. Instead, automated reporting systems are configurable to compare the recorded data for each power device with set points for measured values. Programs can compute delays and elapsed times for switch transfers and validate the run time and loading of gensets automatically and quickly, without human intervention (Figure 1).

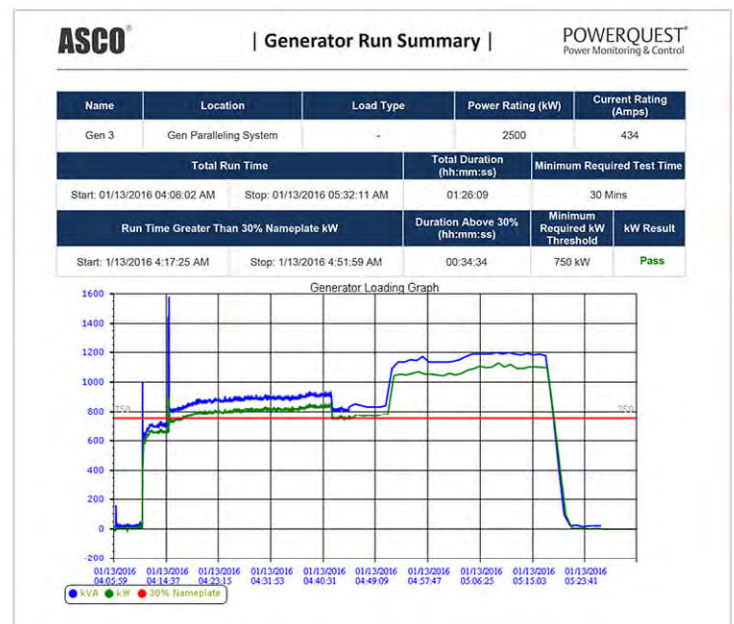


Figure 1
Automated Reporting Systems can record, compile, evaluate, and document critical power equipment performance without human intervention.



Compiling Test Reports

After data is evaluated, the results must be compiled into a test report as evidence of compliance with industry practices and standards that can be shown to auditors. Automated reporting systems format reports to preset templates for the facility, populate the reports with data supplied by the various power devices and the criteria they must meet, identify whether the data meet the test criteria, and automatically produce the resulting report (Figure 2). These systems streamline the entire compliance process. Some solutions can automatically distribute compliance reports to key personnel via email or other means as soon as they are created.

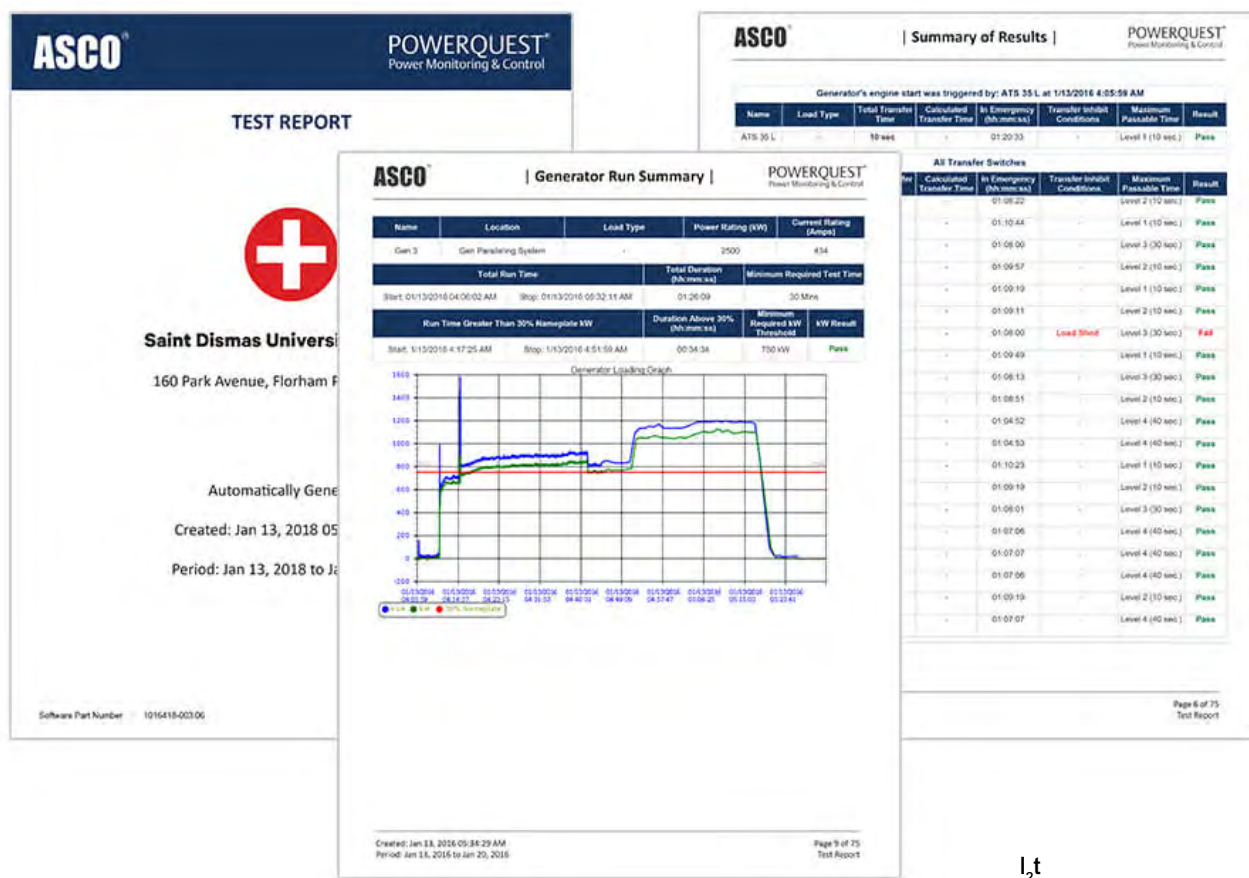


Figure 2
As an example, ASCO automated reporting system can capture, compile, evaluate, and report test results without human intervention.

Reporting Platforms

Automated reporting typically requires controllers or dedicated data logging devices in critical power equipment to be connected to automated reporting software of either a computer server or a dedicated power monitoring appliance. These systems can be included in new equipment installations and can often be readily retrofitted to existing power systems.



Three Benefits of Automated Reporting Systems

In summary, three of the most important benefits of Automated Critical Power Reporting systems are:

1. **Streamlined Testing Operations:** From recording data to evaluating the results to documenting compliance, automated reporting systems simplify the testing process and free up personnel to complete other work.
2. **Increased Compliance:** Streamlined testing is more convenient than manual means, and automating the process gives one less reason to postpone or avoid backup power test events. Heightened accuracy and more consistent recordkeeping can make it easier to document compliance to auditors.
3. **Potentially Fewer Test Events:** Some automated reporting systems can identify whether backup equipment operation during an actual utility outage meets requirements for backup system compliance tests. For instance, if a system detected that a generator has run for more than 30 minutes at more than 30% load for any reason, the data from an outage event may be used to demonstrate compliance and a subsequent scheduled test event can be canceled. This leads to less facility disruption due to testing activities. It can also reduce total generator runtime and its associated emissions and costs.

Healthcare facilities can reap numerous benefits from automated reporting systems with transfer switches and paralleling switchgear systems offered by leading critical power equipment manufacturers. To find more information, contact an [ASCO Power Technologies representative](#).

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