

Generator Monitoring: Why Simple is Better



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Generator Failures

Modern onsite power generators are extremely complex, and even a minor failure of any component of their mechanical, electrical or electronic systems can prevent them from working when a utility failure occurs. And, while generators are more reliable than ever before, they still “won’t work something like 20%-to-30% of the time”, according Arshad Mansoor, Senior Vice President for Research & Development with the Electric Power Research Institute.

Whether the generator is for commercial, industrial, municipal, or residential use, generators are a significant investment, and few gen set owners would find it acceptable that their emergency generator may not work when it is needed most.

Common Causes of Generator Failures:

- Design flaws, such as inadequate battery float chargers
- Manufacturing defects
- Mistakes made during installation
- Lack of / poor maintenance
- User errors, such as controller left in OFF mode / Not in Auto
- Blown fuse / tripped circuit breaker
- Battery failure
- Insufficient fuel supply

Regardless of the cause, when a generator fails, the generator owner will often feel that their generator dealer or maintenance company is at least partly responsible for the failure, even when the generator owner caused the failure. Given the fact that generator failures often result in significant financial losses for the generator owner, methods that improve generator reliability will undoubtedly increase customer satisfaction and reduce potential liability.

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Reduce or Eliminate Failures with Generator Monitoring

Generator monitoring has become far more commonplace today than it was even five years ago, but still only a small percentage of all generators are monitored. Monitoring systems range from simple to complex, and range in price from under \$200 to well over \$2,000, with monthly costs ranging from \$0 to \$50 or more. There are 3 basic types of monitoring systems:

Type	Functionality and Costs
Local (Wired or Short-Range Wireless)	Requires user to be on-site and pay attention to fault indicators. No recurring monthly fees.
Internet Based (Ethernet or Wi-Fi)	Requires connection to customer modem, router, etc. Can be unavailable or unreliable during and after storms and natural disasters. Low or no monthly fees.
Long Range Wireless (Cellular or UHF Radio)	Reliable communication methods, even during and after storms. Independent of local internet connection and customer equipment. Monthly fees typically \$7 - \$50.

Simple, or Complex?

By detecting and monitoring just five basic generator conditions, up to 95% of all generator failures can be prevented.

1. Failure to Exercise
2. Not in Auto
3. Common Fault
4. Generator Run
5. Generator Stop

Some of the OEM and aftermarket generator monitoring systems on the market offer a plethora of 'bells and whistles'. Installation of these systems is quite complicated, often requiring advanced programming of the monitor and/or the generator controller, and very few generator owners will bear their high initial and ongoing monthly costs, even if they are informed of the benefits of generator monitoring.

But, do these complex monitoring systems do a better job of preventing generator failures during a power outage than a 'simple' monitoring system? Is real-time data about engine RPM or coolant temperature that are within normal operating parameters useful information? Or is it just 'data noise', which can cause alert recipients to dispatch unnecessary service calls, or become complacent, and potentially ignore useful alerts about a potential future generator failure?

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Detecting and monitoring exceptions to normal operating parameter (e.g. *Failure to Exercise, Not in Auto, Common Fault*) provides the useful information needed to detect problems and prevent generator failures, while most data from complex monitoring systems about *normal* generator operations is just extraneous data. One or more of these exception conditions will almost always precede a generator failure that occurs during a power outage. By knowing about problems in advance, the proper steps can be taken to ensure the generator will function as intended during the next power outage.

By accurately detecting and monitoring Generator Run and Generator Stop conditions, one or more Virtual Hour Meters can provide actionable data to allow for the optimal scheduling of preventative maintenance, refueling, etc., while also sending alerts if the generator Fails to Exercise within a pre-determined timeframe.

CRN Cellular Generator Monitor

The CRN Cellular Generator Monitor is a simple and extremely cost-effective monitoring solution suitable for the smallest residential generator, to large industrial generators, and everything in between. CRN dealers appreciate the universal compatibility and simple, fast installation (typically under 30 minutes). Most dealers find that it is so cost-effective they can standardize on the CRN Cellular Generator Monitor for every generator they install or service.

Every CRN Generator Monitor is shipped with all parts necessary for installation, and mounts directly to the generator enclosure. The dealer controls the flow of information, and decides which recipients will receive alerts, preventing irrelevant alerts and unnecessary service calls. In addition to real-time alerts, dealers can receive weekly exception reports, so they know the status of each generator to maximize service call efficiency.

A Win-Win: Improve Your Bottom Line While Providing a Valuable Service

- **Generate Incremental Revenue** for this valuable service by incorporating it into your maintenance contracts. Your customers will pay for the added assurance that generator monitoring provides.
- **Improve Customer Satisfaction** by proactively addressing generator problems and reducing incidents of generator failure during power loss. Know if there is a problem before your customer does.
- **Increase Efficiency and Profit** by accurately planning maintenance needs and scheduling maintenance visits more efficiently.

CRN Wireless is an international provider of wireless products and services that facilitate the communication and monitoring of data and alarm signals. For over 30 years, our products and services have been used in a variety of applications across a broad range of industries including security, generator monitoring, life safety and industrial monitoring. CRN products have been installed in over 20 countries across 5 continents. From monitoring devices to turnkey wireless networks and fully customized products, we offer a broad range of wireless monitoring solutions.