

Power Management

A Comprehensive Power Management Solution

Power - all networks need it. Whether it comes from commercial service, solar panels, generators (diesel or propane), batteries, or hydrogen fuel cells, it is a critical component, required 24 hours per day, 7 days a week, to ensure the network availability that today's subscribers demand.

The comprehensive power management solution from Kentrox reduces the need for physical site visits and enables structured and routine preventative maintenance. Additionally, Kentrox supports hybrid power, where commercial power has either failed or is unreliable.

The power management solution provides an intuitive, easy-to-use interface displaying critical alarm status and runtime reports from a central console or a technician's laptop enabling:

Commercial power monitoring – Receive proactive notification of failures from rectifiers, automatic transfer switches, and circuit breakers, with specific site-affecting conditions.

Battery monitoring – Prioritize refueling visits during power failures with integrated battery life analysis. Identify weak or underpowered battery plants.



The Power Management solution from Kentrox provides:

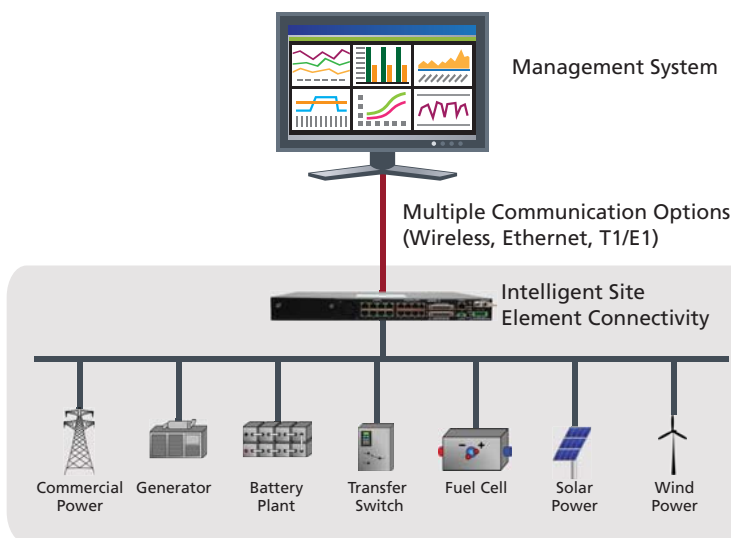
- A complete view of power systems
- Use where commercial power has failed or is unreliable
- Historical reporting and trending
- Proactive management of back-up power systems
- Effective management of regional or weather power outages
- Improved network availability

Generator management – Monitor fuel levels to facilitate timely refills and know how much time remains while under load. Perform power cycles remotely as part of a regular maintenance plan. Meet EPA and other mandates through accurate measurement of generator runtime.

Complete network view and history reporting – Gain a single, consolidated view of all primary and backup power system status. Meet EPA and other mandates with accurate reports.

Generators

Generators are the primary backup solution for failed commercial power to critical sites, often in remote locations. Commercial power fails for numerous reasons: infrastructure issues, malicious intent, contractor error, or adverse weather conditions. In all cases, power failures result in network downtime, lost revenue, safety issues, and potentially lost customers.



Kentrox Power Management solution.

Solution Brief

Many businesses have internal objectives to perform preventative maintenance on generators, batteries, and rectifiers. This requires a physical site visit to inspect fuel levels, alarm conditions, and to manually start and stop a generator, ensuring it is ready when required.

Unfortunately, due to the increased responsibilities of field technicians, this preventative maintenance is often postponed to work on revenue-generating activities, such as infrastructure build-out or technology upgrades. Because these sites are either business critical or geographically remote, the operational cost is higher due to physical site visits. Additionally, in many areas of the world, recent regulations mandate commercial owners of diesel generators to report excessive use (more than 20 hours per year). The ability to monitor and manage power remotely becomes a key solution in meeting compliance initiatives and avoiding costly fines.

Battery Plants

Remote sites rely on backup power because a battery plant is only capable of providing three to eight hours of supplemental backup power. Battery backup provides the same value as a generator backup except that batteries tend to be less robust. High temperatures at remote sites can adversely affect battery performance, and this could have a negative impact when battery plants are needed.

Commercial Power

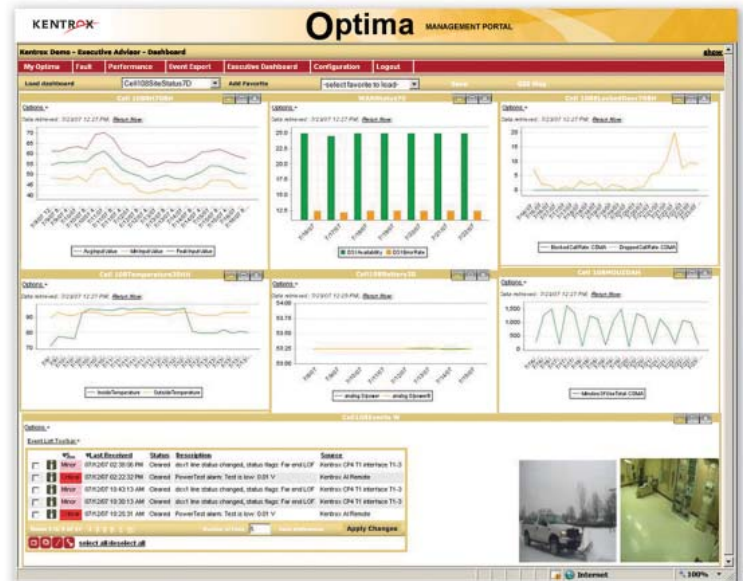
Primary commercial power systems, including rectifiers, circuit breakers, and automatic transfer switches, also require continuous monitoring to ensure availability and proper failover as conditions change.

Kentrox Solution for Power Management

Power management from Kentrox is a comprehensive solution that reduces the need for physical site visits and becomes a key solution in meeting compliance initiatives and avoiding costly fines. The solution uses critical technology innovations for managing commercial and hybrid power without a site visit, including:

Remote - monitoring and control devices that provide IP management to sites and equipment. Remote provides site alarm monitoring, protocol conversion, and equipment connectivity and acts as an intelligent extension of your Operations Support Systems (OSS).

Optima - gives network operators a comprehensive view and control of network infrastructure sites. The management system provides preventative maintenance tools to help identify issues before they occur. It also provides performance reporting to enable operators to view trending and availability of their



Optima management system showing remote site status.

networks. Truck rolls can be eliminated because of the remote access, diagnostics, and control capabilities.

Hybrid Power Management - The Kentrox Hybrid Power Management (HPM) solution provides a complete monitoring and control solution by introducing a reliable, software-based application that performs on proven data collection devices. The HPM application makes 'intelligent' decisions in situations where commercial power has failed, is unreliable, or does not exist. Traditional Hybrid Power Management solutions momentarily revert to discharging site batteries when a commercial power outage occurs. Subsequently, an Automatic Transfer Switch engages and the generator is started. However, the Kentrox solution continues to discharge the batteries until voltage levels reach a configured end-of-discharge limit. When the limit is reached, the generator starts and will run until the batteries have been recharged.

While the HPM application's intelligent management logic optimizes generator run time, it also provides significant operational and maintenance savings. For example, it avoids discharging batteries during periods when a site's temperature exceeds preconfigured thresholds. This logic improves battery performance during discharge periods and prevents premature replacement. By optimizing battery discharge cycles, the generator isn't over-working and fuel consumption is minimized. Fuel levels and overall consumption are continuously monitored. When high fuel consumption thresholds are crossed, the HPM application generates an alarm which notifies carriers of potential fuel theft.

For more information, visit www.kentrox.com, email info@kentrox.com, or call 800-733-5511 (US), +1 614-798-2000 (outside US).