Improve your backup power system reliability

with the

Emergency Power Supply System Test Solution

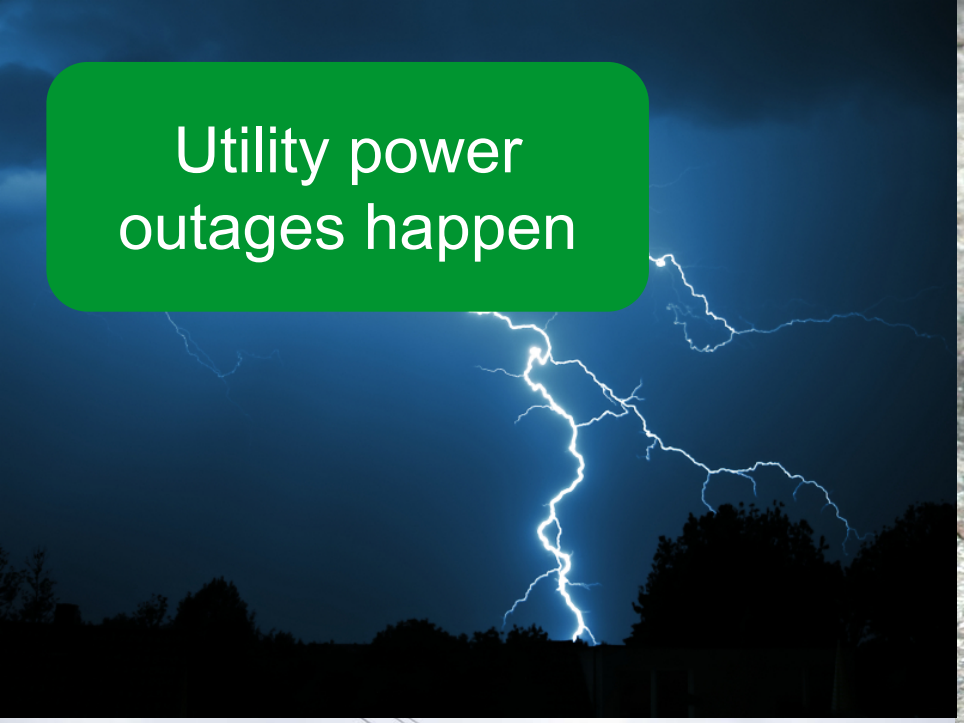
from Schneider Electric

Schneider Electric

Agenda

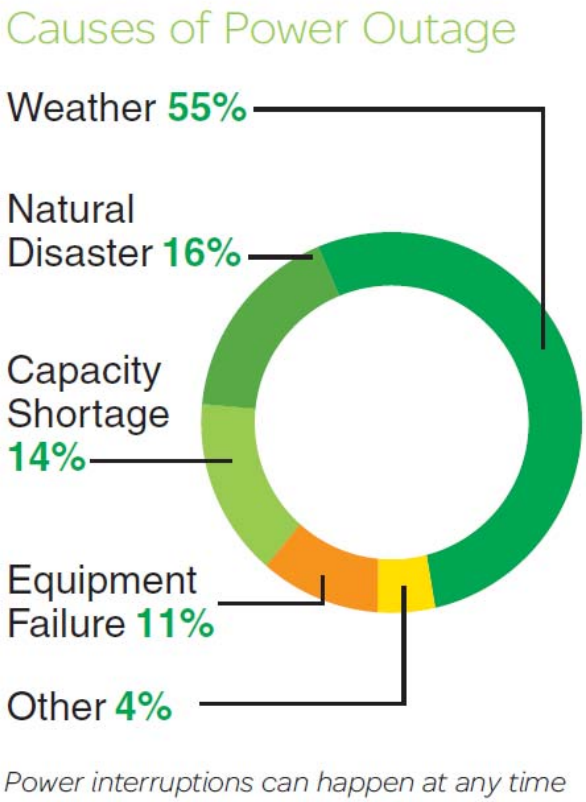
- The challenge
- The solution
- Key benefits
- Ideal architecture
- Features
- Testing process
- Test reports

Utility power outages happen



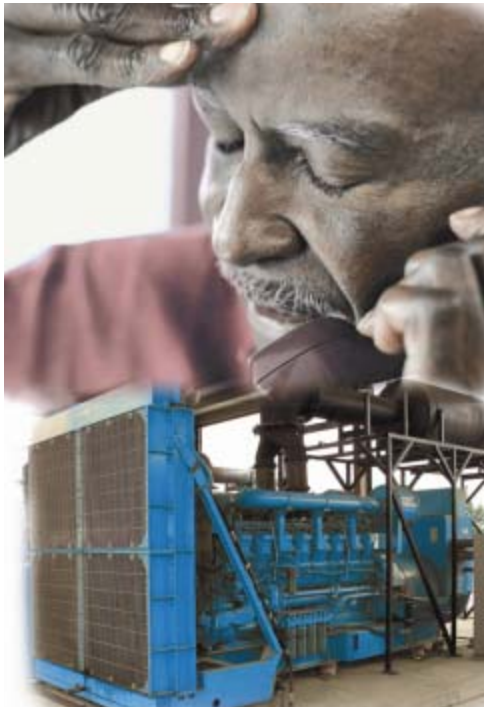
The challenge: Outages happen

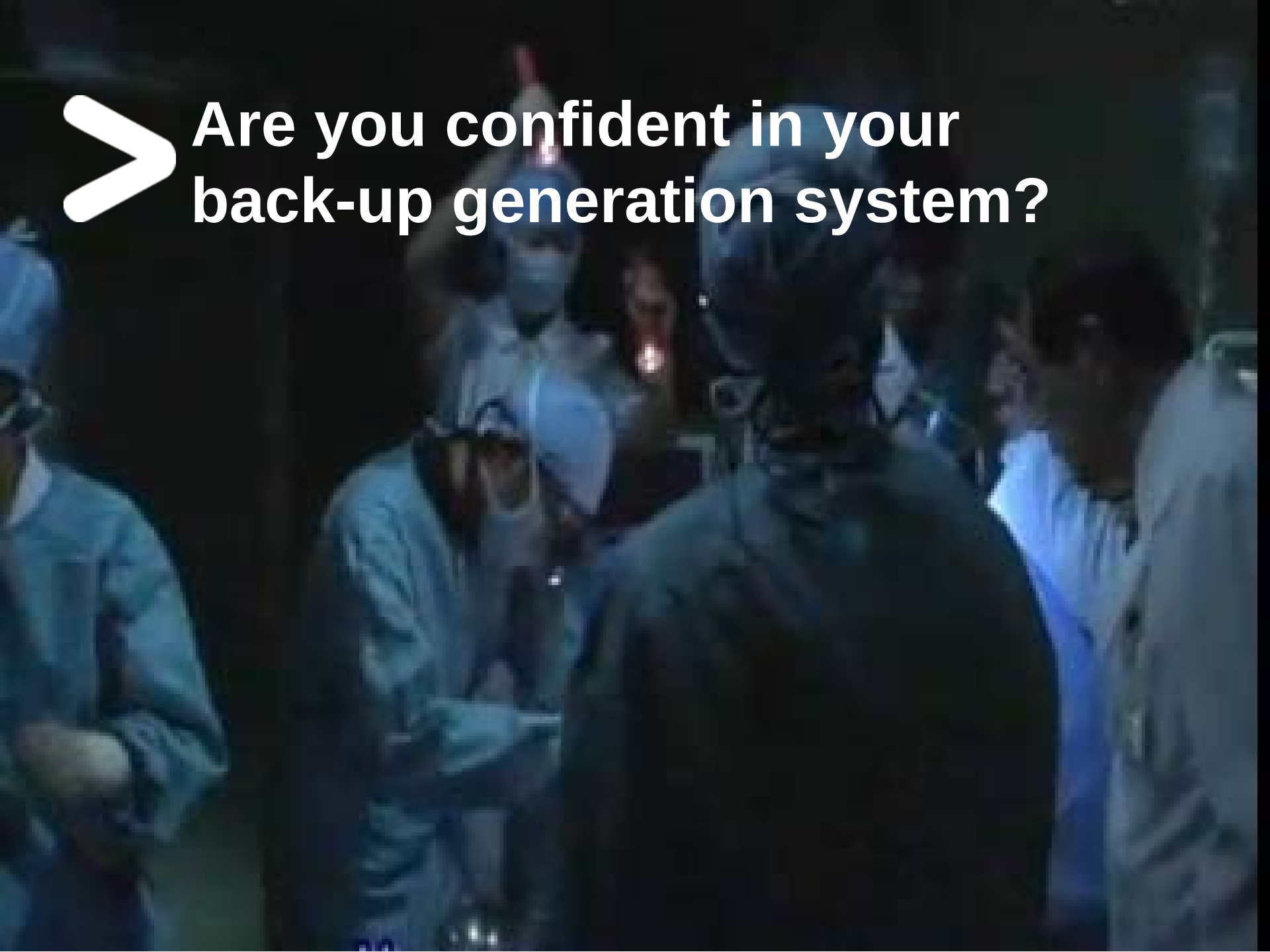
- Utility power outages are unavoidable and are beyond your control
- When the power goes out, you depend on your emergency power supply system (EPSS)
- Keeping a backup power system at the ready is difficult
- Comprehensive manual testing of your emergency power supply system (EPSS) is difficult to coordinate and to validate



The challenge:
Manual testing is difficult and inaccurate

- Manual monitoring & recording of test actions is difficult and inaccurate even with skilled experts
- Inadequate manual testing routines can cause backup power system failure
- Exercising a generator below recommended loading can reduce its reliability and dependability




Are you confident in your
back-up generation system?

Are you taking steps to reduce the risk of back-up generator system failure?

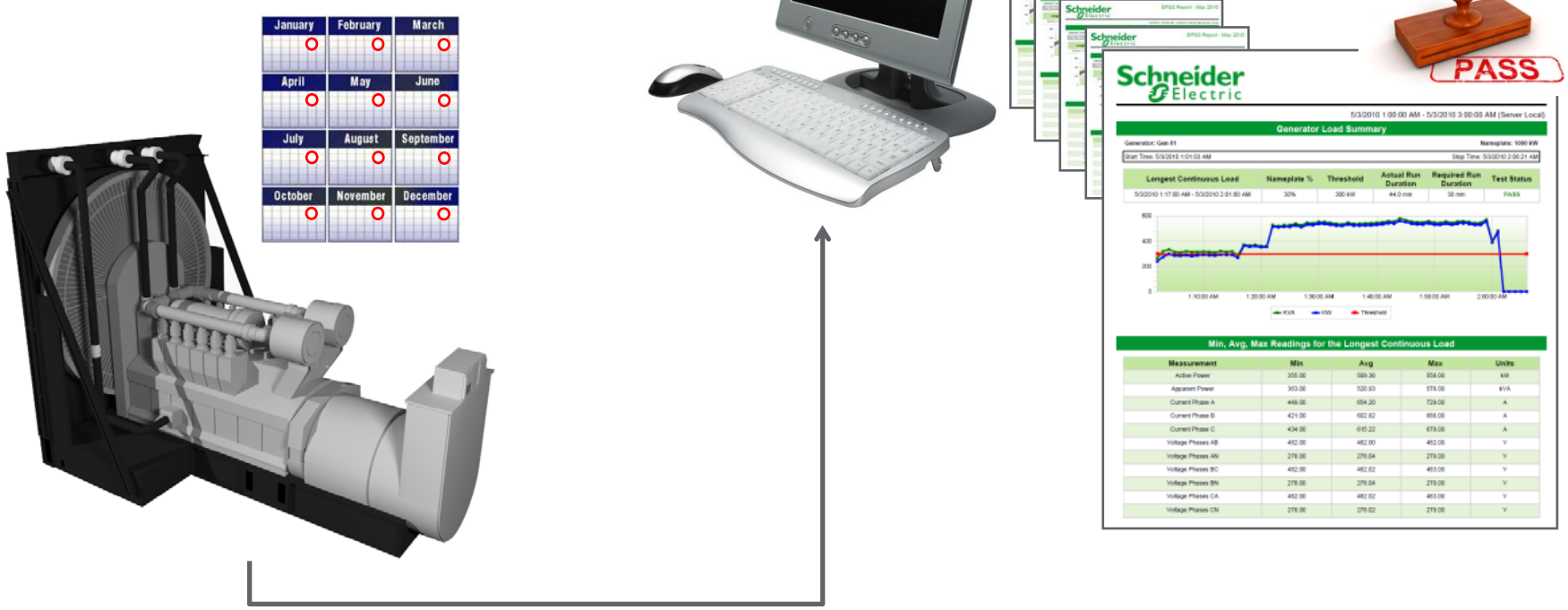
The solution: Automated testing of your back-up generator

Implement stringent testing that meets even the life safety requirements for hospitals:

- CSA Z32 & C282
- NFPA 99 & 110 accreditation process
- Local standards & regulations

Ensure generator set is tested in appropriate conditions

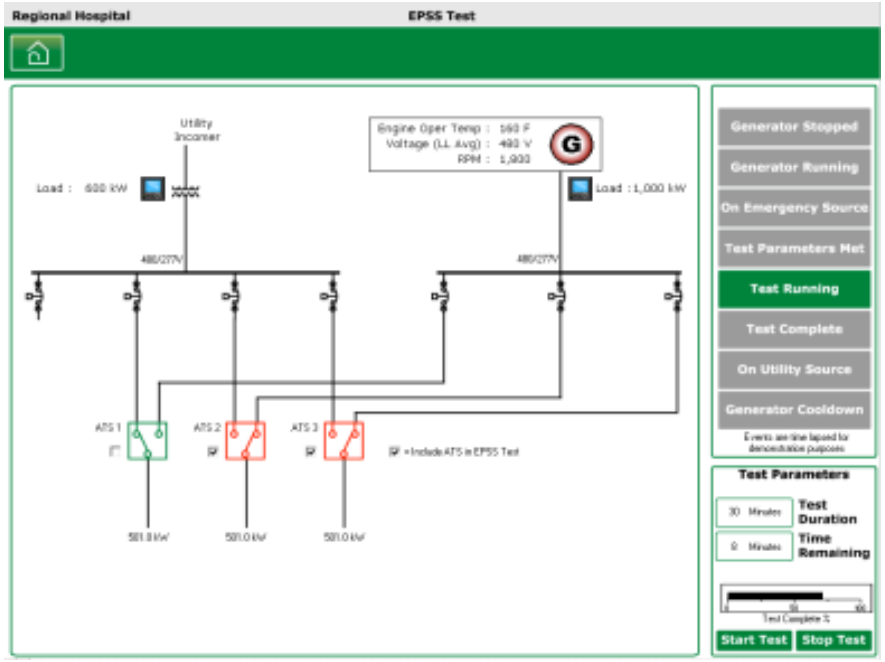
Automated test reporting ensures traceability, consistency, & accuracy



Automated analysis & reporting tool for back-up power systems

Increases speed & accuracy of testing, with comprehensive reports to validate results

Ensures minimum level of disruption to staff & equipment

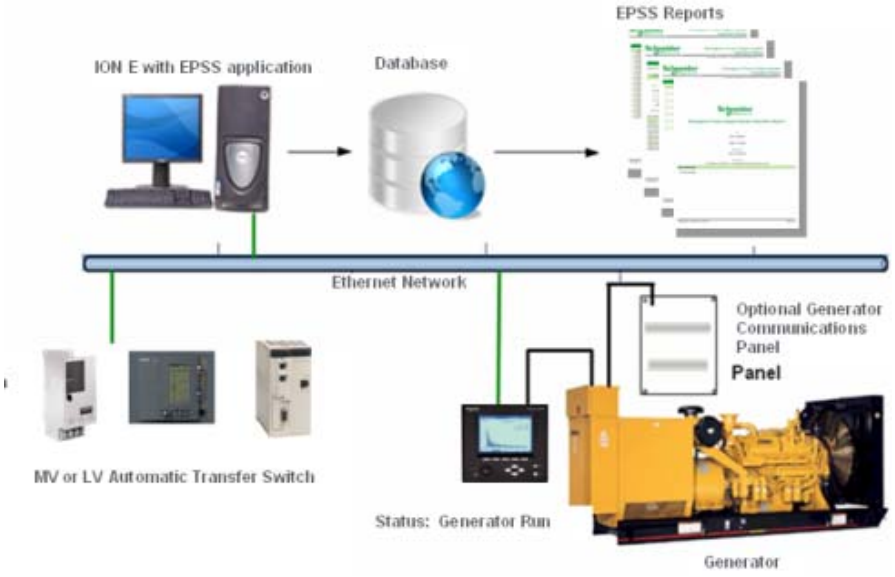


A reliable, automated solution

Ensure a reliable test procedure

Achieve event traceability through logged data

Facilitate preventive & predictive maintenance



All components are designed, manufactured & tested by Schneider Electric, ensuring optimal functionality

The solution:
EPSS Test Solution from Schneider Electric

A reliable and automated solution

> All components designed, manufactured, tested, validated and documented by Schneider Electric to ensure optimal functionality

> The solution:

- Ensures a reliable test procedure
- Allows event traceability through logged data
- Facilitates preventive and predictive maintenance

Compliant with all standards and regulations in force

Back-up generator system testing

Key benefits

Superior staff efficiency

> Free up staff to focus on core duties by eliminating inefficient manual testing

> Automatically measure and monitor your EPSS 24 x 7

> Eliminate labour-intensive data gathering, formatting and reporting, all customised to the needs of individual stakeholders

Key benefits

Dependable back-up power system

> Boost EPSS reliability by exercising generators at manufacturer's ratings for load or exhaust gas temperature or both

> Validate responsiveness of automatic transfer switches (ATS) or transfer schemes

> Raise mean-time-between-failures (MTBF) rates and spot faults before real-world outages occur

> Reduce the effect of human error throughout the EPSS test process

> Supports load bank testing

Key benefits

Traceability and accountability

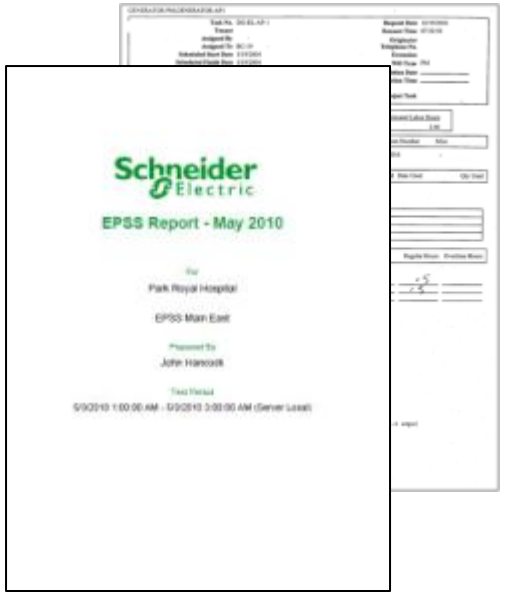
> Precisely tailor the content of reports to match regulatory and management requirements

> Collect data during real outages; use as test data when it meets testing criteria

> Eliminate information gaps by collecting key outage data in a central location for analysis

> Validate conclusions and verify analysis

> Reduce your organisation's risk of litigation in the event of a back-up power system failure with accurate EPSS testing reports



Key benefits

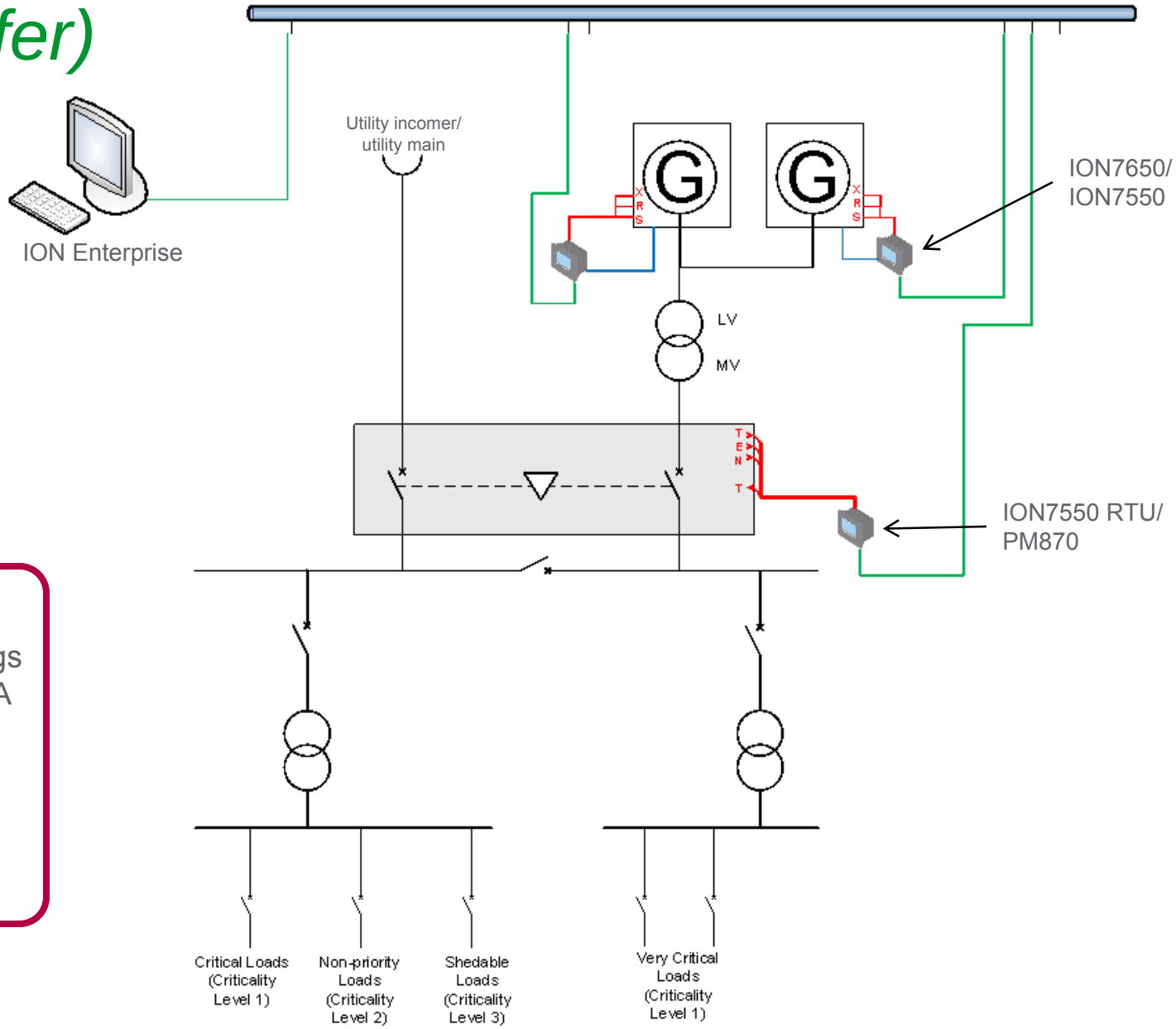
Improved energy efficiency & energy cost savings

> Evaluate load shedding, peak shaving and demand response with detailed electrical distribution system information

Genset back-up system architecture example *(MV transfer)*

Status inputs from ATS:
- Test (T)
- Emergency (E)
- Normal (N)

Status inputs from generator:
- Start (X)
- Running (R)
- Stopped (S)



> For large hospitals:

- Designed for buildings with more than 1MVA
- With limited load shedding capacity
- Designed for multi-building sites

Genset back-up system architecture example *(LV transfer)*

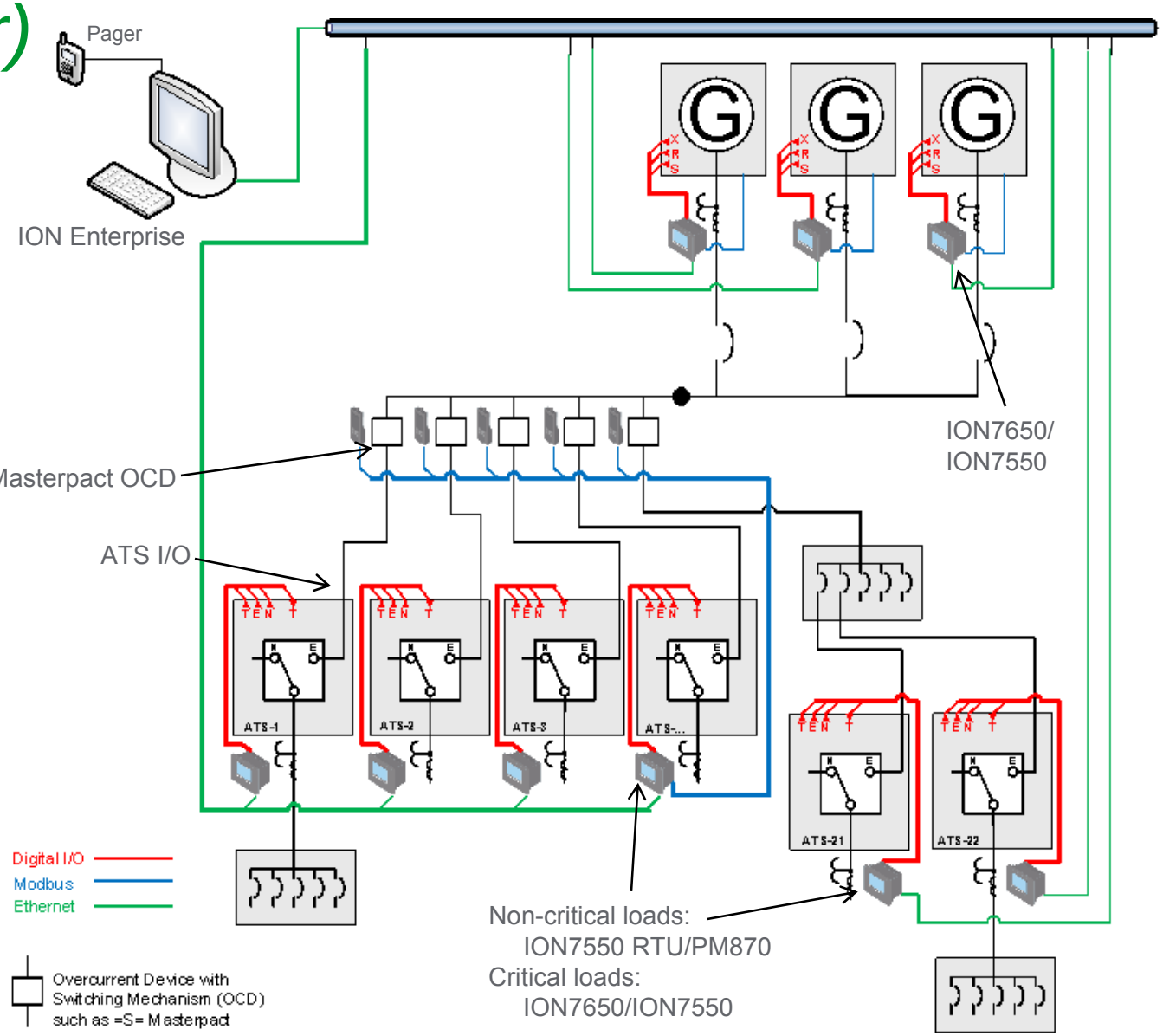
Status inputs from ATS:
- Test (T)
- Emergency (E)
- Normal (N)

Control output to ATS:
- Test (T)

Status inputs from generator:
- Start (X)
- Running (R)
- Stopped (S)

> For medium-sized hospitals:

- Designed for buildings with less than 1MVA
- With multiple ATS systems
- Designed for single-building sites



Features

- The architectures shown provide the following features:
  - Genset monitoring / logging / trending
  - Power quality event capture and analysis on generators
  - Pre-configured EPSS test reports
  - Full supervisory testing control
  - Remote EPSS Test Start Option

Features

- The architecture shown provides the following features (continued):
  - Power monitoring
  - ATS status, logging and trending, and power quality analysis
  - Optional event-based paging
  - Breaker status monitoring

Testing process

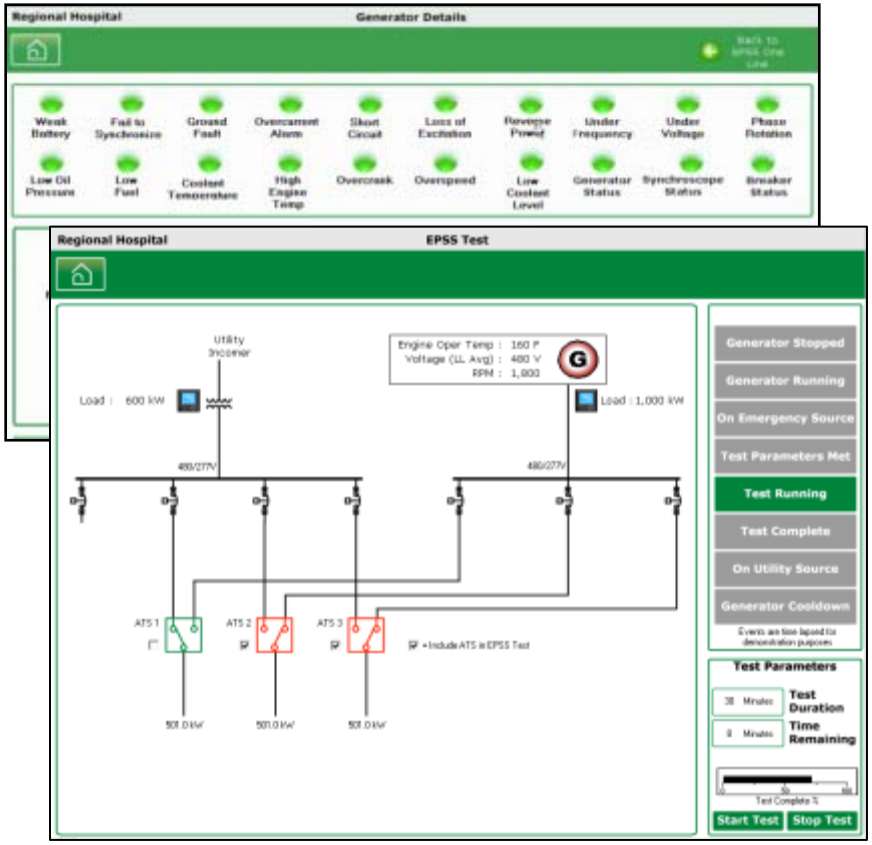
- The EPSS Test Solution uses a validated process to ensure thorough testing:
  - Monitors and controls your back-up power system through metering and I/O devices
  - Records engine start times and parameters, plus electrical parameters from generators and transfer times from ATSs
  - Reports test data in both tabular and graphical format, and can also document waveforms from critical equipment
  - Generates detailed reports that can be sent to anyone who needs them

Let’s take a closer look at the system in action

Testing process

Automated test process is simple:

> Launch the test
> Follow procedure stages
> Monitor genset and ATS status
> Check transfer times
> Measure power quality and load levels
> Finish testing when appropriate test time has passed



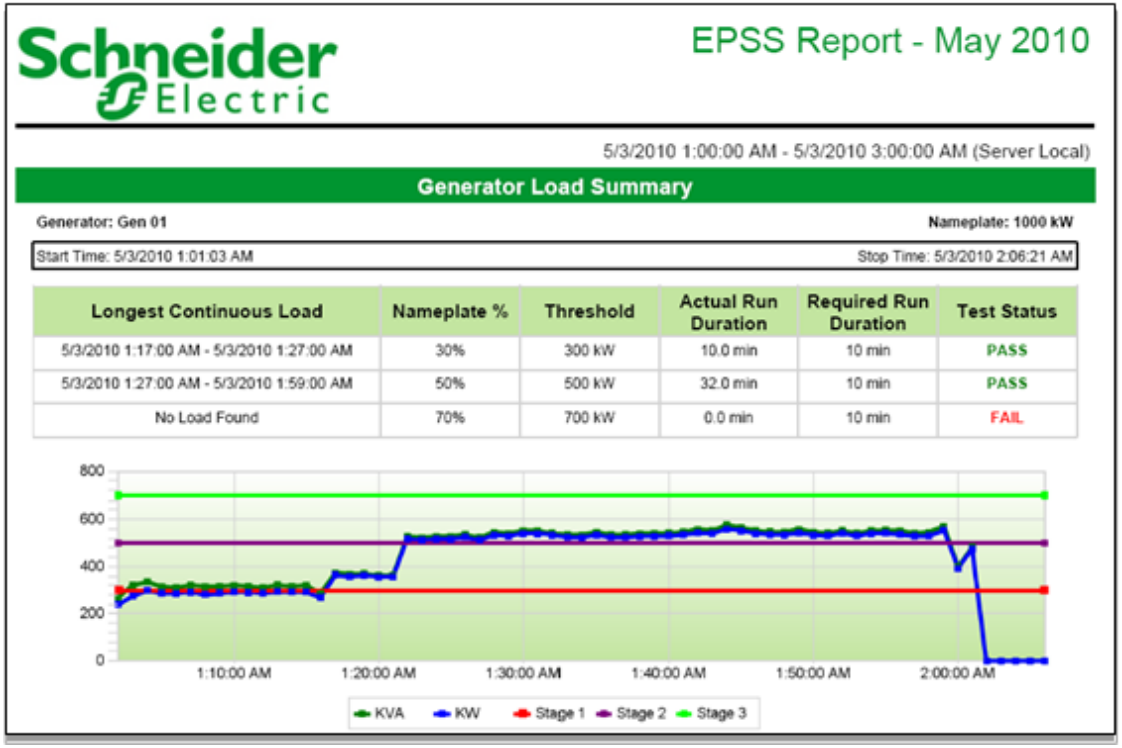
The solution can help **demonstrate compliance** to regulatory standards, including:

- US – NFPA 99 & 110
- Canada – CSA Z32 & C282
- UK – HTM 06-01
- Australia/NZ – AS/NZS 3009:1998
- Europe – IEC 60364-7-710

Test reports

Ensure traceability through:

- Automated analysis and detailed diagnosis in case of failure
- Comprehensive report to validate performance
- Data is logged in the system, making it easy to demonstrate standards compliance, submit information for accreditation, and reduce litigation risks



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EPSS Report - May 2010

5/3/2010 1:00:00 AM - 5/3/2010 3:00:00 AM (Server Local)

Generator Load Summary

Generator: Gen 01 — Nameplate: 1000 kW

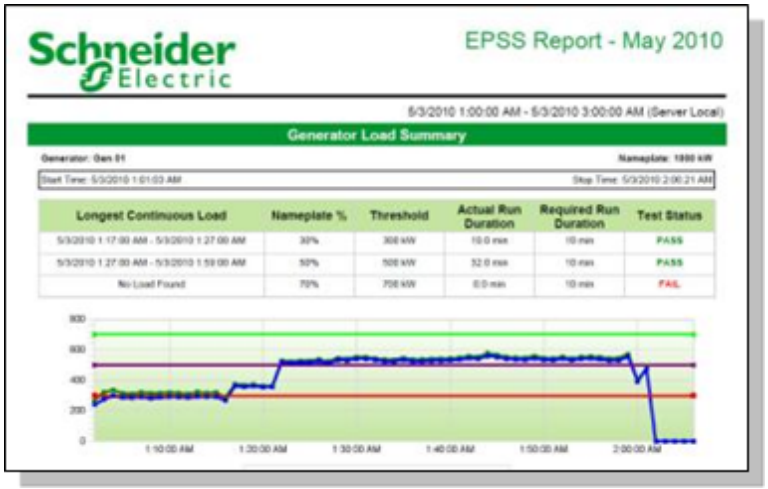
Start Time: 5/3/2010 1:01:03 AM — Stop Time: 5/3/2010 2:06:21 AM

Longest Continuous Load	Nameplate %	Threshold	Actual Run Duration	Required Run Duration	Test Status
5/3/2010 1:17:00 AM - 5/3/2010 1:27:00 AM	30%	300 kW	10.0 min	10 min	PASS
5/3/2010 1:27:00 AM - 5/3/2010 1:59:00 AM	50%	500 kW	32.0 min	10 min	PASS
No Load Found	70%	700 kW	0.0 min	10 min	FAIL

Test reports

Report highlights include:

- Generator loading pass/fail indication
- Minute-by-minute generator run table & trend plot
- Min/max/avg voltage and current readings during test period
- Generator run time information — engine hours, cool-down, etc.
- Engine data - automatic collection of exhaust gas temperature, oil pressure, water temperature, DC amps and DC volts
- Ability to run reports for real outages as well as test scenarios
- Event log showing date/time stamping of ATS and generator status
- Configurable pass/fail option to indicate if emergency power transfer occurred within configurable priority levels and associate transfer times



You need to maximise power availability, streamline backup system testing, enhance organizational efficiency and verify regulatory compliance.

The Emergency Power Supply System Test Solution from Schneider Electric is a revolutionary automated analysis and reporting tool with unique capabilities and advantages

Total assurance

that your backup power system will perform in an emergency

Additional info…

- For more information on the advantages of automated EPSS testing, please check out our white paper:

  Automating Emergency Power Supply System Testing in Hospitals

ROI for EPSS Test

- Our best success has been with customers who already have ION E and some metering
- The value proposition is solid when you tie in Power Monitoring, PQ monitoring, cost allocation, SER (sequence of events recording) etc. The same metering and software can be leveraged for all of the above.

EcoStruxure™ for Healthcare

- An intelligent energy management system that enables compatibility between infrastructure systems in your hospital. It:
  - Is simple to use
  - Ensures reliability
  - Saves money
  - Reduces waste
- Makes it easier and less expensive to build & operate hospitals and deliver high levels of both patient safety & energy efficiency.
- Can monitor everything that uses energy in your hospital and uses a single energy dashboard to provide access to real-time data for every element of your energy equation
- Helps you make active and informed choices that will both protect your patients and reduce operating expenses

To learn more, visit
www.schneider-electric.com/healthcare