VERTIV.

Brochure

Vertiv powers imaging equipment

Background

Technology is rapidly transforming healthcare and playing a significant role in improving the health. Advanced technology has become critical in diagnosing, monitoring, and treating patients. This means that technology is not only helping to save lives, but it is also speeding up the recovery for millions.

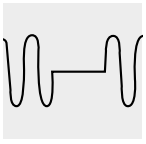
The need for critical equipment and systems to maintain a functioning medical facility has never been more vital. As a result, a new era in healthcare has arrived, placing ever-escalating demands on the technological needs. IT Systems must collect and maintain medical records, rigorous medical regulations and the expectation for round the clock fail-safe operations.

Advancements have left providers more dependent than ever on electronic systems, and an emphasis is now routinely being placed on supporting these systems with proper power quality and power availability.

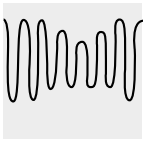
Owing to the recent advancements in electronics, imaging technologies such as MRI, X-Ray and Ultrasound require accuracy, compact footprint and affordability. Large portions of the population now have better access to these facilities providing a range of diagnostic technologies resulting in quicker path to treatment.

As a result, imaging equipment has become a critical tool for medical professionals who need 24/7 access, uninterrupted and efficient operations. In the midst of technology advancements, IT and facilities managers must remain focused on economic pressures and sustainability initiatives as well.

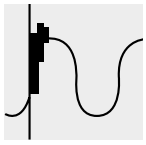
Protection from critical power problems



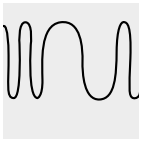
Outages



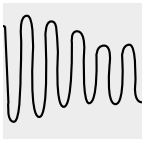
Sags



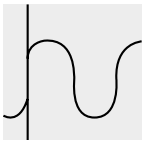
Transient



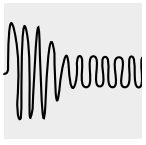
FrequencyDevlation



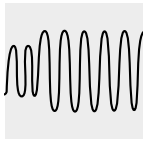
Surges



Spikes



Under Voltage



Over Voltage

Noise

Harmonics

Challenge

What are the possible outcomes if the power is compromised at health care facility or a medical imaging center?

In today's healthcare landscape, increased reliance on technology has emphasized the need for continuous clean power.

Despite major advancements in technology, there continues to be utility power sags, surges and outages which can damage critical computer equipment, medical imaging devices and may be responsible for interrupting medical procedures.

The need to maintain a consistent source of clean and efficient power increases as medical imaging evolves into a digitally oriented environment. The integrity of the data output by the imaging technology is at high risk if they are not well protected from damage or failure caused by power fluctuations or anomalies.

MRI, X-Ray, and other imaging technologies are critical for patient care. Though these procedures do not consume more than few minutes, if there is an electrical outage, it can have a major impact on the operations of these facilities and patient care.

For example, the consequences can be serious if there's a power outage while the radiology team is conducting and creating medical imaging with CT Scanner, MRI or with other technologies. An interruption can cause serious issues if the medical imaging equipment is not shut down properly. Potentially patient data could be lost, which can result in lost revenue for the clinical practice as well as causing inconvenience to patient's time.

This creates more hassle in terms of rescheduling appointments, travel and wait time which is frustrating and time consuming for everyone involved.

Medical facilities located in areas with the potential of having inclimate weather including tornadoes, hurricanes, or severe storms, must prioritize protecting the medical imaging equipment and data it produces.

Since abrupt power disruptions or sags, can damage electronics, it is essential to plan and deploy a robust solution to supply clean power for potential power interruptions and support the high in-rush current requirements of medical imaging devices.

The role of high-quality UPS solutions such as the Vertiv™ Liebert® APM2, ITA2, and EXS in the hospital infrastructure cannot be over emphasized to ensure reliable performance of imaging infrastructure and provide the best possible patient care.

How Vertiv's solutions help support healthcare applications

Solution

Vertiv™ Liebert® has a long history of providing reliable and resilient uninterrupted power supplies (UPS) with the Liebert® family of products. Offering robust protection to sensitive equipment, Vertiv's healthcare UPS portfolio is designed to protect critical equipment in the healthcare space. Along with providing clean and consistent power quality, these UPS solutions handle high inrush current from imaging devices without affecting scan quality and ensure continuous operation. In the event of long power outages, generators are effective in sustaining proper systems operations, and are essential to bridge the power time gap between the loss of electrical power until the generator is back online. The Liebert® UPS solutions also provide necessary power conditioning to ensure the highest power quality while the systems are on generator and can provide the necessary power allowing the systems to shut down gracefully while avoiding any loss of data.

Vertiv's healthcare UPS portfolio

- Robust power back up in the event of unexpected power outages.
- Help ensure round-the-clock availability of critical equipment.
- Simplified installation, management, and maintenance of the medical imaging facility's backup power solution.
- Extended UPS service life and run time.
- Integrated battery health monitoring to enable proactive management and reduce failure risks.
- Maintenance bypass solutions to avoid powering down IT systems.
- Flexibility to meet extra capacity or redundancy demands.
- Enhanced data insight and visibility with user-friendly interface.
- Remote service diagnostics to proactively identify problems and enable a quick efficient response. efficient response.

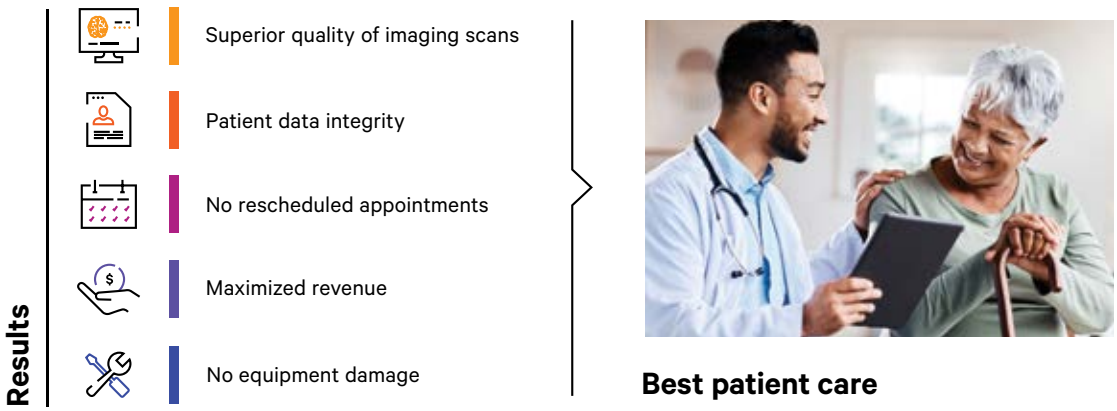
Vertiv's solutions support healthcare and medical imaging and diagnostic applications including:

- MRI (Magnetic Resonance Imaging).
- X-Ray equipment.
- CT (Computed Tomography), Ultrasound.
- IT (Information Technology).
- Computing, Networking.
- PET (Positron Emission Tomography).
- PACS (Picture Archive Communication System).
- Mammography.
- Digital Radiography.
- Gamma cameras.
- Laboratories [Forensic, Pathology, Blood Analysis, Bacteriological Analysis, Dental and Ophthalmic labs].

Vertiv's power solutions offer high reliability, efficiency, and remote monitoring. Vertiv is actively committed to environmental sustainability by designing critical digital infrastructure to address energy usage and efficiency and to support customers who want to transition to renewable energy sources.

Check these environmentally conscious features of Vertiv's UPS portfolio:

- Energy Star qualified with up to 99% efficiency in ECO mode compared to average industry standard of 96.5% efficiency.
- Up to 98.8% efficiency when using double conversion mode.
- Can sustain high ambient temperatures up to 40°C.
- Small to midsize IT applications.
- Edge of the network operations.
- Midsize/regional colocation facilities.
- Testing, medical and telecom systems.
- UL 924 Emergency lighting.



Improve power system visibility and intelligence at diagnostic facilities

Lack of visibility into the imaging facilities power system's performance can lead to costly mistakes and business productivity loss. Asking staff to manage power protection in addition to day-to-day responsibilities could hinder productivity and produce unintended problems.

How to solve

Facilities need power systems that provide instant access to critical operating information. Intelligent, easy-to-use UPS display panels allow both experienced and inexperienced staff to quickly obtain operating status while reducing the likelihood of human error. If the provider lacks resources to manage critical power, the need for a partner who can provide both remote and local onsite support to ensure an accurate and timely response is vital.

Touch-Screen control panel offers intelligent control

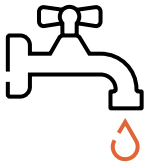
- Intuitive, easy to use to reduce chances of human error.
- Improves productivity by providing information you need.
- Power performance parameters visualized.
- Service and maintenance support at your fingertips.
- Compatible with The Vertiv™ Power Insight.

Capacity

Humidity

Temperature

Access



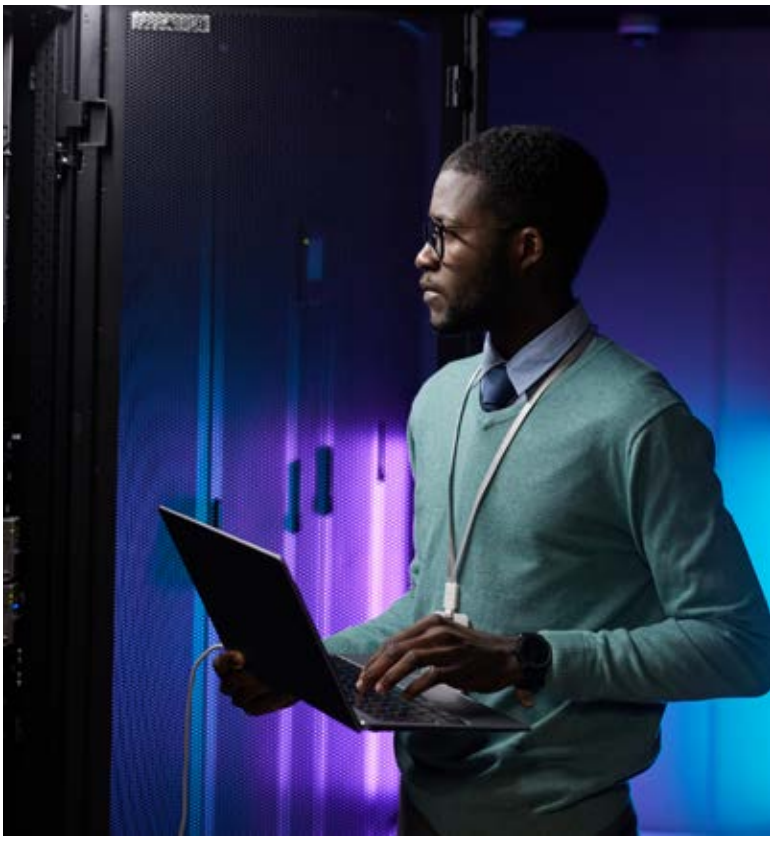
Leaks

Software

Vertiv connects and protects systems with unmatched expertise. For maximum visibility and effective monitoring in one view, pair your Vertiv™ UPS with a software solution.

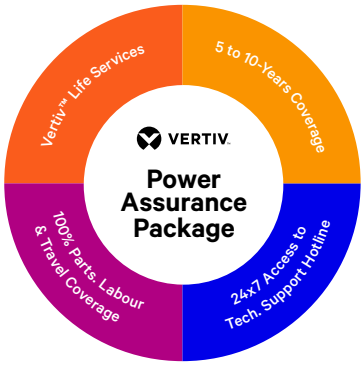
Vertiv™ Environet™ Alert provides industry companies with critical facility monitoring software that is affordable and easy to use. This solution delivers superior monitoring, alerting, trending and data organization.

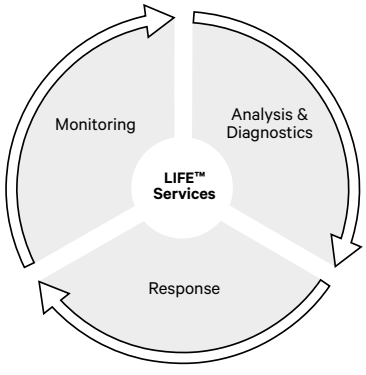
Vertiv™ Power Insight is a complimentary web-based software designed for users with a distributed infrastructure that need a way to manage multiple devices.



Service and support

Vertiv Services can support the degree of services required to ensure the availability needed for critical systems. Several programs are available to meet the needs of your operation.





The Power Assurance Package from Vertiv Services gives you a trusted partner and a complete, worry-free power protection solution to assure uptime at your small or remote IT sites.

Vertiv™ Life™ Services provides secure, remote monitoring by experts to provide early detection and response.

Healthcare application selection guide

Healthcare application	Recommended UPS	Recommended UPS
Hospital data centers	APM2	Highest scalability (10-600kW), N+1 redundancy, hot-swappable components
Large imaging centers (MRI, CT, PET)	APM2	Handles high inrush current, scalable capacity, high fault tolerance
Regional medical centers	APM2 or ITA2	Flexible deployment options, high efficiency, parallel capability
Outpatient imaging facilities	ITA2 or EXS	Rack/tower versatility, VRLA/Li-ion options, right-sized capacity
Urgent care centers	ITA2 or EXS	Compact footprint, integrated maintenance bypass, high reliability
Medical offices & clinics	ITA2 or EXS	Space-saving design, integrated battery, simplified maintenance
Mobile imaging units	ITA2 or EXS	Compact design, high power factor, noise-free power conditioning

UPS feature comparison

Feature	APM2	ITA2	EXS
Capacity range	10-600kW	15-40kVA	5-20kVA
Form factor	Modular rack/tower	Convertible rack/tower	Tower
Installation flexibility	In-row, room, against wall	Rack or tower mounting	Standalone
Battery type options	VRLA/Li-ion	VRLA/Li-ion	VRLA
Double conversion efficiency	Up to 97.5%	Up to 93.4%	Up to 96.2%
Runtime expandability	Extensive	Moderate	Limited
Footprint	Varies by capacity	Compact	Very compact
Hot-swappable componentws	Full modularity	Battery only	Limited
Parallel capability	Up to 4 units	Up to 2 units	N/A
Typical healthcare applications	Large healthcare facilities, large imaging centers	Outpatient facilities, medical offices	Clinics, small imaging centers

Healthcare facility sizing guide

Facility type	Size	Typical power needs	Recommended solution
Large hospital	>300 beds	100kW+	APM2 (scalable to 600kW)
Medium hospital	100-300 beds	40-100kW	APM2 (scalable as needed)
Small hospital	<100 beds	20-40kW	APM2 or ITA2
Imaging center	N/A	15-30kW	ITA2 or EXS
Medical office	N/A	10-15kW	ITA2 or EXS

Summary of benefits by solution

Liebert® APM2: Ideal for larger healthcare facilities and hospital data centers requiring scalability, high availability, and maximum efficiency.

- Best for: Critical hospital infrastructure, enterprise data centers, large imaging facilities.
- Key differentiators: Highest scalability, modular design, best efficiency, maximum redundancy options.

Liebert® ITA2: Perfect for medium-sized imaging centers and outpatient facilities requiring flexibility in form factor and deployment options.

- Best for: Imaging centers, outpatient facilities, medical office buildings.
- Key differentiators: Rack/tower flexibility, lithium-ion options, small footprint with moderate expansion capabilities.

Liebert® EXS: Best suited for smaller medical offices, clinics, and edge applications where space is limited but reliable power is essential.

- Best for: Clinics, small medical practices, laboratory equipment, edge applications.
- Key differentiators: Most compact design, simplest installation, integrated maintenance bypass and battery.

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