Liebert Data Center Assessment

Services
For *Business-Critical Continuity™*

A Comprehensive Assessment Allows You To Maximize Uptime

- Identify unwanted hot spots to avoid degradation of equipment and critical data
- Identify and resolve other hard-to-solve problems in the data center - electrical spikes, sags, etc.
- Ensure the proper capacity of your electrical systems and the quality of power feeding those systems
- Maximize efficiency of power systems, heat removal, air distribution and floor space
- Reduce operating costs of computer support equipment by employing recommended strategies

Identify And Resolve The Vulnerabilities In Your Data Center

Maybe you're already experiencing power or cooling problems that are disrupting your operations. Or, maybe your data center is aging, and you're considering expansion possibilities. Possibly, your facility appears to be operating normally, but you're simply concerned about availability and any potential risks.

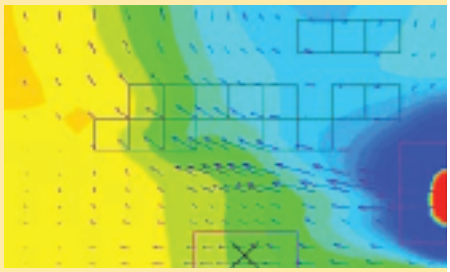
The Liebert Data Center Assessment from Emerson Network Power will identify the risks to your data center posed by inadequate power or cooling strategies. An experienced technician with industry-leading assessment tools will identify the gaps in your availability strategy, and make recommendations for improvement.

The Liebert Data Center Assessment Includes:

- On-Site Thermal and Electrical Assessments
- Documentation of Findings and Recommendations
- Floor Plans and Equipment Lists
- A Computational Fluid Dynamics (CFD) Report
- Assessment of Potential for Equipment Expansion
- In-Person Review of Report Findings

6 Minutes

Time for room temperature to rise from 68˚F to 95˚F at loss of cooling for an average load of 300 w/sq ft.



EMERSON™
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Ensure Uptime: Isolate Heating And Power Problems Before They Cause Problems

Data centers are dynamic environments

- Heat loads are constantly increasing, challenging cooling strategies
- Computer equipment is often moved or changed without thinking about the underlying support strategy
- Technology shifts and blade servers create extreme heat densities and hot spots
- Abandoned cabling reduces adequate airflow for cooling systems

Over time, the changes in a data center can create risks to business-critical continuity.

Sometimes, even new facilities experience nagging power or cooling problems that create risks for continuity or interfere with facility performance.

The Liebert Data Center Assessment from Emerson Network Power is designed to expose vulnerabilities in your underlying availability strategy posed by problems within the cooling or electrical systems.

The assessment is in-depth and on-site – it will:

- Analyze the successful removal of heat from sensitive heat-generating computer equipment – identifying hot spots and risks to the data center
- Assess the capacity of electrical systems and the quality of power provided to your data center – identifying electrical risks that could create downtime

Thermal Assessment

Purpose

Determine the data center's performance as it relates to equipment heat removal.

What We Do

We will conduct an on-site inspection of the data center, and perform the following activities:

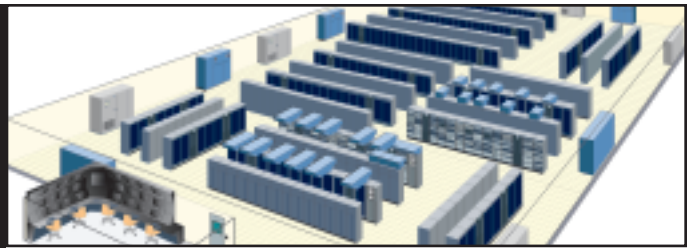
- Take air and temperature readings at critical points throughout the data center.
- Identify hot spots and make recommendations for how to eliminate them.
- Take air flow measurements – identifying raised floor air patterns, under floor obstructions and airflow through computer racks.
- Compare equipment load with unit air capacity.
- Provide a floor plan showing the location of existing equipment, server racks and airflow obstructions.
- Perform and provide a CFD report showing the airflow characteristics of the space.

What You Get

We will provide a comprehensive report of all findings that includes a floor plan of the facility, a CFD report showing airflow characteristics and CRAC unit performance. Most importantly, we'll provide recommendations for improvement—what you can do to eliminate hot spots, improve air flow and reduce heat in your facility.

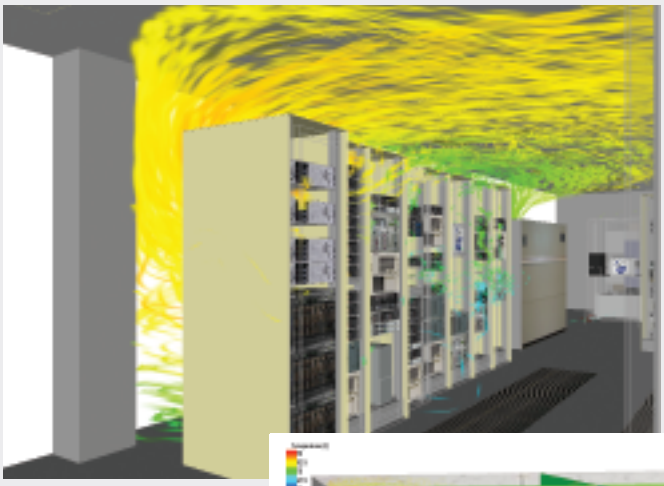
30%

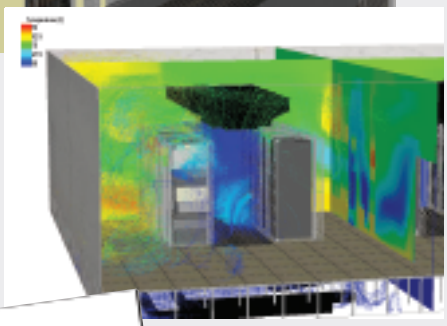
Your chances of Power Quality Problems if your facility is more than 5 years old and has had significant changes.



Computational Fluid Dynamics

CFD is a simulation tool that was designed to demonstrate the air flow characteristics of a raised floor. Emerson Network Power uses CFD to better understand why hot spots are present and to show customers the effects of under floor obstructions on air flow. It visually depicts the heat-related risks in your facility, and allows us to show you the impact of our recommendations for your data center.





CFD images by Future Facilities

Electrical Assessment

Purpose

Determine if the electrical system is adequate for the data center both now and in the future. Evaluate the integrity of your facility's power system to maximize availability of the mission-critical infrastructure.

What We Do

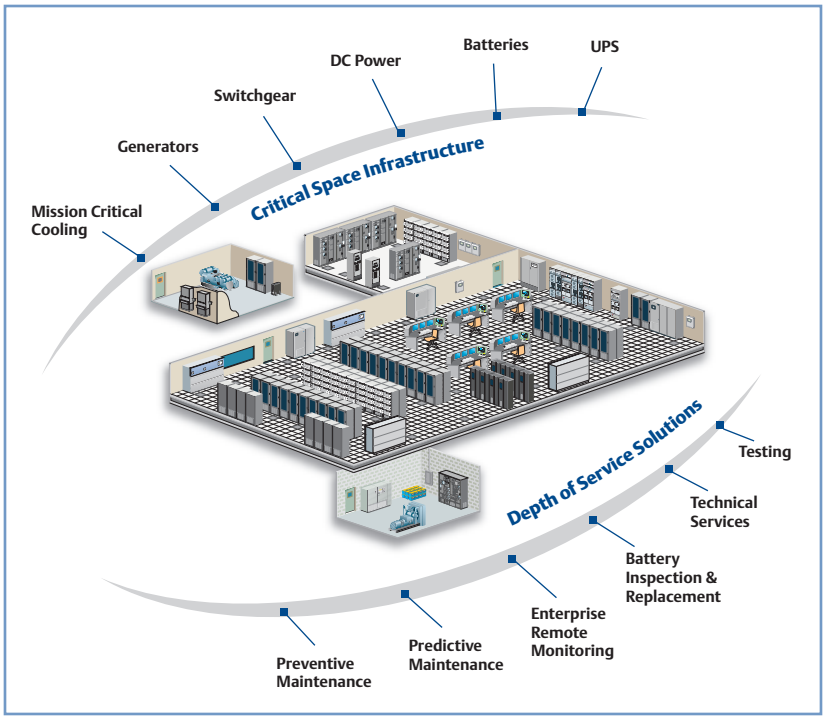
- Perform a single point of failure analysis, which will identify critical failure points in the system.
- Determine capacity of all switchgear from the main to mission-critical PDUs (voltage, amperage, phase).
- Determine current being drawn through all UPS equipment and breakers from the main to mission-critical PDUs (this information will be determined by reading existing meters, if available; otherwise, a clamp-on amp meter will be used).
- Perform analysis comparing measured current and power rating for all breakers from the main to mission-critical PDUs as well as any imbalances; note any areas of concern.
- Determine kW and kVA loading on each UPS and compare to rating of UPS.
- Evaluate the rated capacity of each generator versus UPS rated capacity and note if generator full load rating is <150% of UPS rating.
- Perform a harmonic snapshot at the main breaker switchgear as well as the load side of each UPS and note any anomalies.
- Determine whether breakers are labeled down to the PDU.
- Determine load per rack/PDU. Often, this is not viable without risking shutting down the connected server loads. If this risk exists, these measurements will not be taken; rather, the FLA rating of the equipment within the racks will be documented and added to the analysis.

The power usage measurements taken during the electrical assessment are only valid for the instant in time when the measurement is taken. There may be other times when the IT equipment is being utilized more fully.

What You Get

A detailed report that includes identification of single points-of-failure and any potential power issues surrounding harmonic distortion, voltage regulation and load imbalance. Most importantly, we'll provide recommendations for improvement - to maximize system availability both now and in the future.

The Largest Service Organization in the World Dedicated to Maximizing Availability of Infrastructure Required for Mission-Critical Systems



- Global Service with over 2000 Certified OEM Engineers / Technicians
- 2-Hour Mean Time to Respond
- Web-Based Monitoring & Reporting
- 24x7 Customer Resolution Center
- Global Multi-Tiered New Parts Availability

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