AC Power
For *Business-Critical Continuity™*

Liebert® Power Systems Test Center

EMERSON™
Network Power

Power-Packed Testing Center Proves Business-Critical Reliability

The Liebert Power Test Center for large UPS systems is a state-of-the-art test facility designed to provide customers with pre-installation testing of the performance, interoperability, and efficiency of Liebert power modules and systems under a variety of conditions. Located in Delaware, Ohio, the 41,000 square-foot facility, including a 2,600 square-foot customer observation suite, is the largest and most comprehensive in the industry.

Testing includes individual UPS modules as well as the complete power system—including large UPS units such as the Liebert NXL UPS and associated switchgear and ancillary products—and is essential to the smooth, rapid installation and commissioning of large power systems. Customers leave the Liebert Power Test Center with documented test results and confidence that their complex power system will operate seamlessly and in accordance with business-critical availability requirements.

Test Capacity and Performance of Liebert Power Solutions

The Liebert Power Test Center for large UPS systems consists of multiple test stations in each of seven test bays. Testing is customized based on the complexity, size and number of UPS components in the configuration, but always includes analysis of every module as well as the entire system. Module and system tests include:

- Steady-state – 0% to 100% plus overload, unbalanced loading; non-linear loading
- Dynamic – 0% to 100% step loads plus overload, unbalanced loading; non-linear loading
- Overload and faults – (>100%, 125%, 150%)
- Plus other customer-specified special test requirements.

Testing on large Liebert UPS systems, may include UPS power modules, input and output switchgear, power distribution units, static transfer switches, and battery cabinets.

Test results certify the input and output, AC and DC characteristics of the system. Performance comparisons against specifications include, but are not limited to:

- Voltage and waveform
- Voltage regulation
- Voltage and current harmonics
- Frequency
- Current and waveform
- I/O power factor
- Efficiency based on kW in and out
- System switching, control and monitoring functionality

Customers may request special tests in addition to the above.

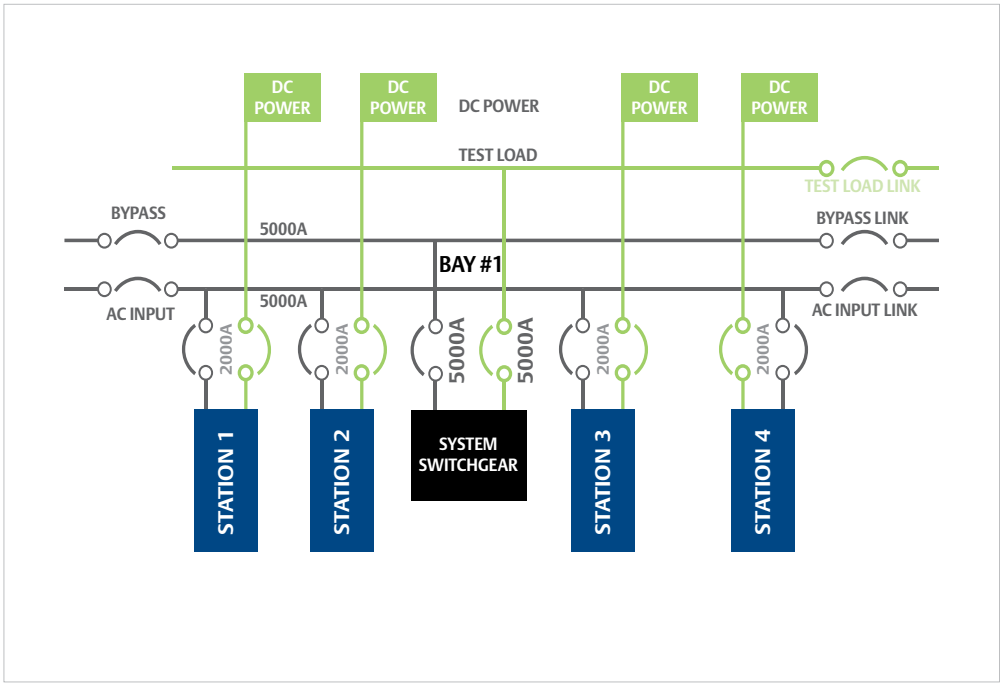
Factory Witness Testing: View the Entire Testing Process

Factory Witness testing for large UPS systems is usually conducted over a period of multiple days. During testing, customers and consulting engineers may oversee the entire process from the Power test center observation suite which overlooks the test bays or in the specific test bay itself. Multiple LCD panels offer easy access to real-time test data, including waveforms, testing procedures and results. Once testing is completed, a report of the results is provided.

The Liebert Power Test Center features seven test bays, each containing multiple test stations, where module and complete system analysis is conducted in full view of the customer.

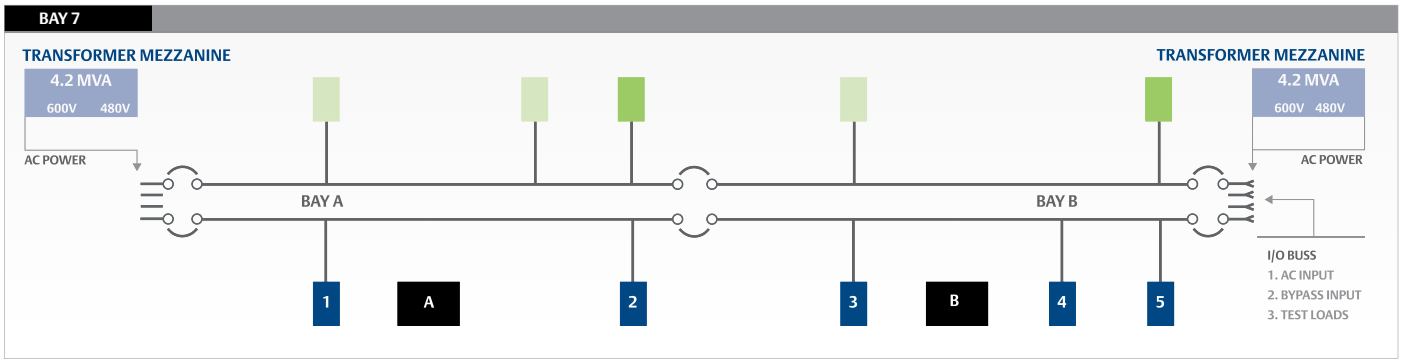
Liebert Power Test Center Features

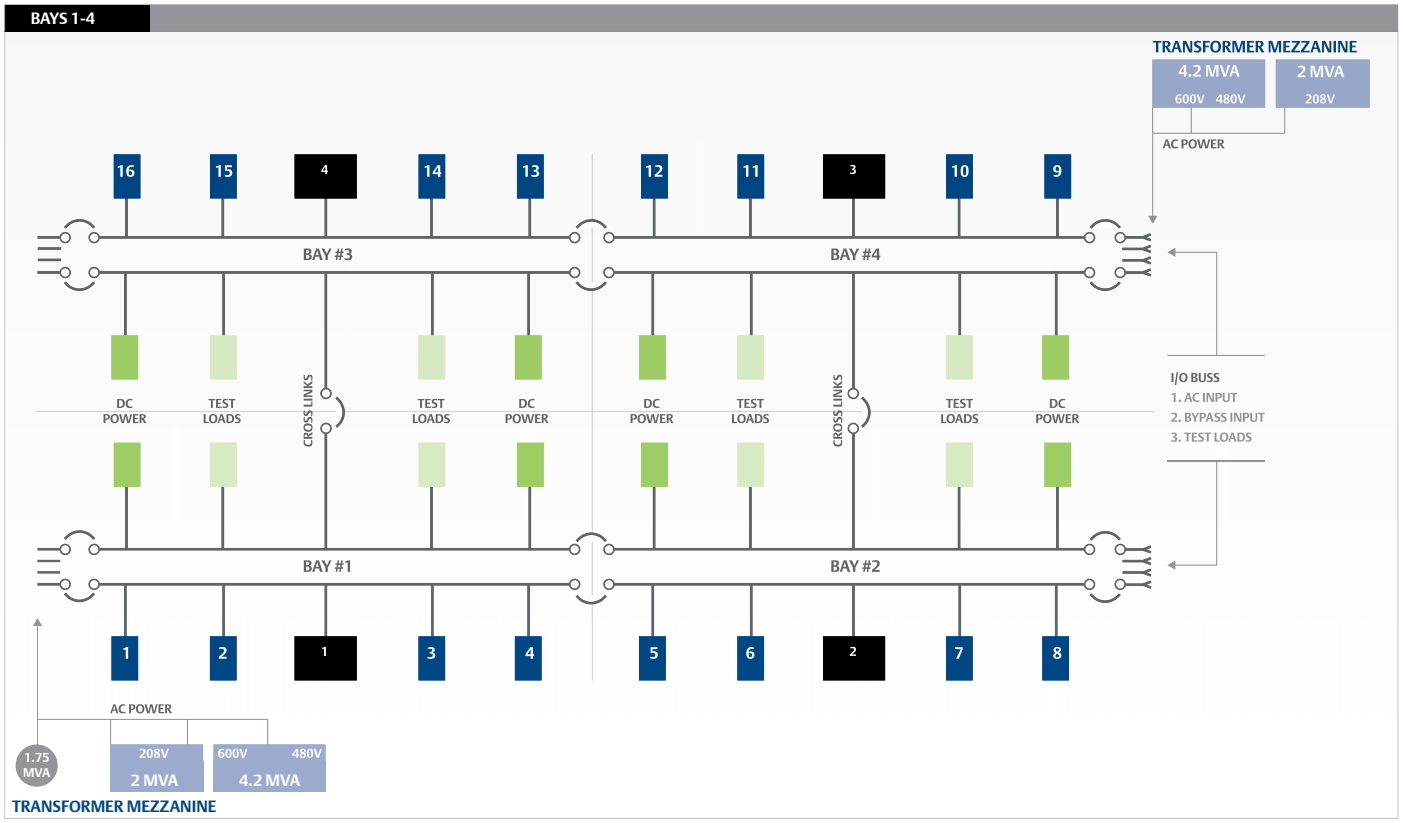
- Seven test bays, each containing multiple distinct test stations.
- Power test viewing suite overlooking test bays and equipped with LCD panel displays that offer easy access to relevant test data.
- Results are provided at the conclusion of each test.
- All I/O circuit breakers can be remotely controlled.
- Voltage, current, frequency and watts monitored on all I/O circuit breakers.
- Total power of >12 MW available via the facility utilities.
- Higher capacities supported through a 1.75 MVA, 750 kVA, and 350 kVA 50/60 Hz engine generator as well as plug-ins for additional generators.

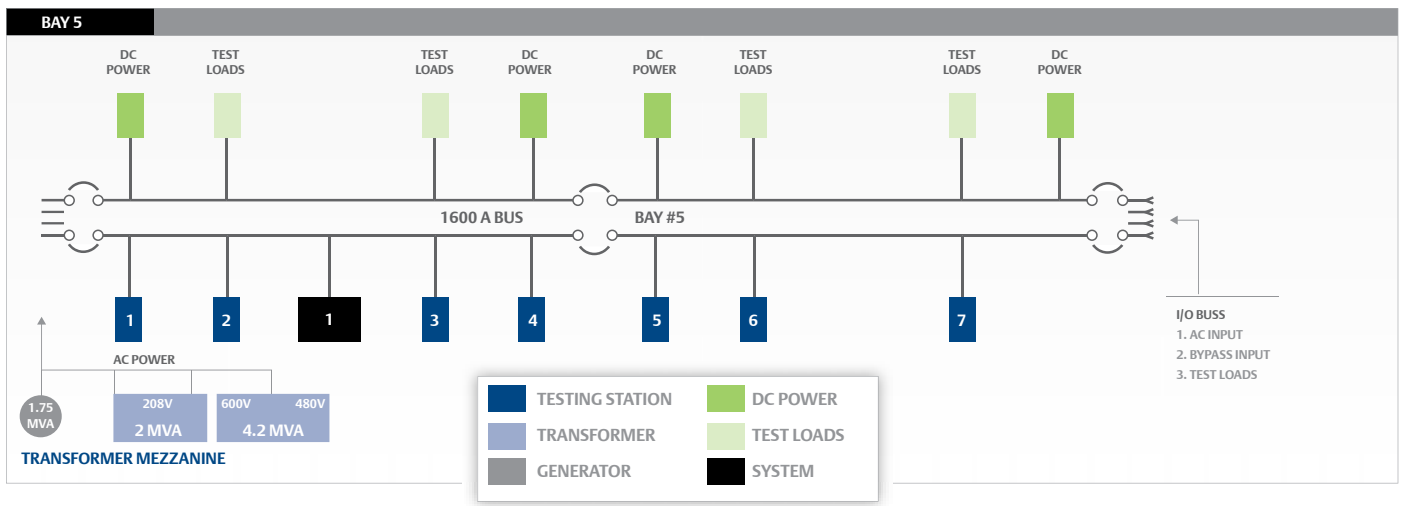


Typical Testing Capabilities per Station

- 1.1 MVA UPS Module
- 1.5 MW Restive Load
- 0.8 pf Lagging Inductive Load
- 0.9 pf Leading Capacitive Load
- Non-Linear Load
- 208, 480 or 600 VAC I/O
- 5000A Load Bus Capacity
- DC Battery Simulators


BAY 7
TRANSFORMER MEZZANINE
4.2 MVA
600V 480V
AC POWER
TRANSFORMER MEZZANINE
4.2 MVA
600V 480V
AC POWER
BAY A
BAY B
1
A
2
3
B
4
5
I/O BUSS
1. AC INPUT
2. BYPASS INPUT
3. TEST LOADS


BAYS 1-4
TRANSFORMER MEZZANINE
4.2 MVA
600V 480V
2 MVA
208V
AC POWER
16
15
4
14
13
12
11
3
10
9
BAY #3
BAY #4
DC POWER
TEST LOADS
CROSS LINKS
TEST LOADS
DC POWER
DC POWER
TEST LOADS
CROSS LINKS
TEST LOADS
DC POWER
I/O BUSS
1. AC INPUT
2. BYPASS INPUT
3. TEST LOADS
BAY #1
BAY #2
1
2
1
3
4
5
6
2
7
8
AC POWER
1.75 MVA
208V
2 MVA
600V 480V
4.2 MVA
TRANSFORMER MEZZANINE


BAY 5
DC POWER
TEST LOADS
TEST LOADS
DC POWER
DC POWER
TEST LOADS
TEST LOADS
DC POWER
1600 A BUS
BAY #5
1
2
1
3
4
5
6
7
I/O BUSS
1. AC INPUT
2. BYPASS INPUT
3. TEST LOADS
AC POWER
1.75 MVA
208V
2 MVA
600V 480V
4.2 MVA
TRANSFORMER MEZZANINE
TESTING STATION
TRANSFORMER
GENERATOR
DC POWER
TEST LOADS
SYSTEM

On-Site or Remote Viewing of Your Power System Test

The ability to test individual UPS modules as well as complete UPS systems is essential to a smooth, rapid installation and commissioning of large UPS power systems.

Customers and consulting engineers are encouraged to witness the testing in person or to participate in the testing process remotely via the Internet, as an alternate to attending in person. This process allows customers to understand the installation configuration and document the performance of multi-module UPS systems prior to installation.

Offering you the UPS industry's largest power systems testing center is another way that Emerson Network Power strives to make sure our product solutions are a perfect match for your critical power requirements.

Testing To UL 1778 Fourth Edition

Testing your large UPS systems to UL Standard 1778 fourth edition will provide you with the assurance that your critical power systems will meet agency requirements throughout the world. This more harmonized global standard requires testing of every major international specification, for a more stringent and reliable UPS.

The Best Power Protection Equipment Deserves The Best Testing Facility In The Business

The Liebert Power Systems Test Center is fully equipped to test all of our large UPS systems and related power equipment. These products include:

- Liebert NXL UPS

- Liebert NX UPS

- Liebert Series 610 UPS

- Switchgear

- Battery Cabinets

- Liebert STS2

- Liebert STS2/PDU

Learn More About The Liebert Power Test Center

The Liebert Power Test Center is just one more reason Emerson Network Power is the global leader in enabling Business-Critical Continuity™. Contact your local Liebert Representative or Liebert Network Solutions Partner to learn more about the capabilities of the Liebert Power Test Center or to arrange a tour of the facility.

Benefits of Power System Testing

- Provides complete pre-installation testing of large UPS systems and associated support equipment.
- Tests the performance, interoperability and efficiency of critical power systems.
- Assures rapid installation and commissioning of large UPS power systems.
- Confirms the functionality of all subsystems.
- Allows customers to document performance of multi-module UPS systems prior to installation.
- Optimizes the testing process with the use of the latest agency standards.

Ensuring The High Availability Of Mission-Critical Data And Applications.

Emerson Network Power, a business of Emerson (NYSE:EMR), is the global leader in enabling *Business- Critical Continuity™* from grid to chip for telecommunication networks, data centers, health care and industrial facilities. Emerson Network Power provides innovative solutions and expertise in areas including AC and DC power and precision cooling systems, embedded computing and power, integrated racks and enclosures, power switching and controls, monitoring, and connectivity. All solutions are supported globally by local Emerson Network Power service technicians. Liebert AC power, precision cooling and monitoring products and services from Emerson Network Power deliver Efficiency Without Compromise™ by helping customers optimize their data center infrastructure to reduce costs and deliver high availability.

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- Surge Protection