

Case Study:
U.S. Based Data Center





ABOUT THE FACILITY

This leading U.S. based data center provides data storage solutions for a wide range of global businesses and operations.

Background

This U.S. based data center provides mission-critical storage solutions for a wide range of global businesses. To maximize uptime, back-up power systems must reliably provide power when utility disruption occurs.

Failure of back-up power systems would result in loss of data, and diminished confidence in the facility. It would also jeopardize future investment in the data center.

Case Summary

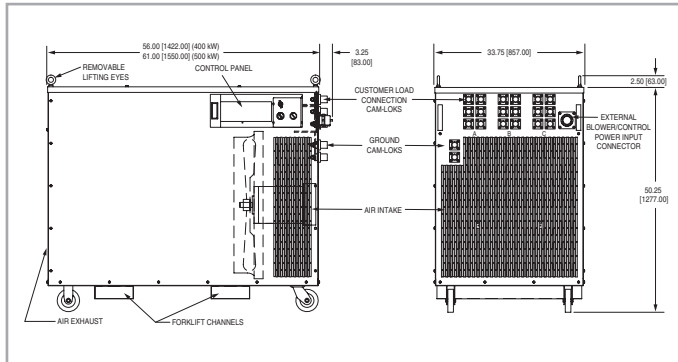
Location: United States

Products/Services: ASCO 2805 portable load bank (500kW).

Critical Need: A means of testing circuit breakers and back-up power equipment to ensure reliable and consistent power for this mission critical data center.

Results:

- ASCO designed and constructed an entirely new type of load bank to suit specific end-user requirements.
- ASCO developed a unique load bank control circuit which allowed operation over a wide voltage range.
- Load bank provided 500kW at 480V, 3 Phase, 60 Hz; 500kW at 240V, 3 Phase, 60 Hz; and 375kW at 208V, 3 Phase, 60Hz.
- Load bank has provisions for interfacing with customer supplied control systems.
- Quick connect receptacles were provided for load control, and ground cables.
- Proprietary designed exhaust louvers were provided for rudimentary delta T control.



2805 reference drawing.

The Situation

This U.S. data center uses multiple voltage sources for circuit breakers, Uninterruptible Power Supply (UPS) and diesel generating sets to provide standby power.

The multi-voltage 500 kW load bank design allowed for the following full load capacities.

- 601 amps per phase at 480 VAC, 3 phase, 60 Hz
- 522 amps per phase at 415 VAC, 3 phase, 60 Hz
- 1202 amps per phase at 240 VAC, 3 phase, 60 Hz
- 1041 amps per phase at 208 VAC, 3 phase, 60 Hz

The circuit breakers at the new data center had ratings between 150-400 amps at 415 VAC. The 500 kW load bank capacity allowed for testing three (3) 150 amp, 415 VAC breakers at a time. This large kW capacity saved on both test time and equipment logistics. The ability for one load bank to test multiple power sources resulted in less setup, operation, and breakdown time. Finally, the addition of quick connect receptacles for both the load and cooling circuits simplified cable installation.

The ability for the 500kW load bank to interface with the existing Building Management System (BMS) allowed for precise coordination with other power equipment.

In the past, 400 kW load bank were supplied, but would only provide 417 amps at 415V. This meant that only two (2) 150 amp breakers could be tested at one time. This capacity limitation resulted in additional load banks, each one requiring dedicated set up and breakdown time.

The Solution

To meet this customer's needs, ASCO designed the entirely new 2805 portable Load Bank. It is the first ASCO load bank with an expanded control power range of 240/400/480 Volts.

To provide 120 Volt control power for the tri-voltage (240/400/480) requirement, a multi-voltage control power transformer was used. Additional beta testing was performed to ensure the control voltage did not drop below the required control power threshold.

The engineering team used the existing 400 kW portable load bank as its base of design. The team was able to increase load capacity a full 25% with only a 6 inch addition to overall length.

Since portable load banks are also used to perform hot and cold aisle HVAC testing in Data Centers, the customer required some degree of Delta T control. ASCO designed a custom adjustable exhaust louver that can direct hot exhaust either vertically or horizontally. The load steps on the unit were then used to control the thermal output.

Primary control is provided by a local manual control panel. The load bank also features a remote/manual mode switch which allows unit to interface (via 24 VDC pilot relays) to customer supplied control platform. Full digital metering with provisions for data logging are also featured on this load bank.

The Outcome

Load testing is performed on a monthly basis or whenever specified. The site manager has piece of mind that if the mains power fails, the back-up supplies will perform as required.

The Data Center facility manager commented on the flexibility of the Model 2805, 500 kW portable load bank. "ASCO created a brand new product in little less than four months for us to achieve all of our testing requirements. The higher 500 kW capacity reduced both our commissioning and logistic costs. In the end ASCO delivered a quality load bank that delivered as promised."

ASCO load banks takes pride in adapting to unique customer load test requirements. We provide custom solutions for a wide range of applications to ensure load testing is performed to desired specifications.

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