LOAD CUBE

2500KW Load Bank System

Description

The Simplex Load Cube is an ultra-large capacity , fully portable, resistive/reactive Load Bank System intended for field use in testing, maintenance and performance proving of large generating systems. The Load Cube is rated 2500kw, 1875kvar at 400-600v commercial AC voltages. The Load Cube is typically used to test large diesel generators, turbines, paralleled generators and shipboard generators.

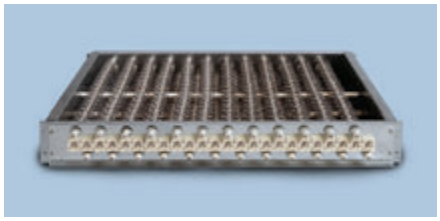
With a purpose-built design consisting of rugged, all-welded, tubular steel frame, heavy gauge steel sides, guarded hinged doors, power-operated ventilation louvers, the Load Cube is far superior to designs which use refurbished and modified ISO shipping containers. Four-sided access allows ready service of all components and facilitates the ultra-compact design.

Compact and easily transportable, the Load Cube is ideal for rental use. With a footprint of only 8 x 10 feet and a height of less than 9 feet, the Load Cube is easily transportable by conventional-height flat bed trailer. Lifting eyes and forklift channels simplify site movement.

The Load Cube utilizes digital load control for direct access of load values, block transitions, and user programmable automation. A selection of digital power meters and data acquisition software is available.

The Simplex Load Cube represents the ultimate technology in large generator load testing performance.

CAPACITY:	3125 kva, 0.8 power factor; 2500kw, resistive; 1875 kvar, inductive
VOLTAGE:	Nominal, 480vAC, 3-phase, 3-wire, to 600V, 50–60 Hertz.
FREQUENCY:	60 Hertz, 50 Hertz available
LOAD STEPS:	Digital load control, 10 kw, 7.5 kvar resolution. Circuits of 10–20–20–50–100–100–200–250–250–500–1000 kw 7.5–15–15–37.5–75–75–150–187.5–187.5–375–750 kvar
DUTY CYCLE:	Continuous
AMBIENT TEMP.:	125°F
EXHAUST RISE:	220°F
AIRFLOW:	Approx 60,000 cfm divided between two cooling fans
CONTROL POWER:	Internal, derived from power source under load. 480-3-60vAC. Control circuits at 120v via internal isolation transformer. Fan motor load: 2 x 10hp, 13A. Control power load: 3.0 kva, 6.25A.



Powr-Web Resistive Load Element

Description

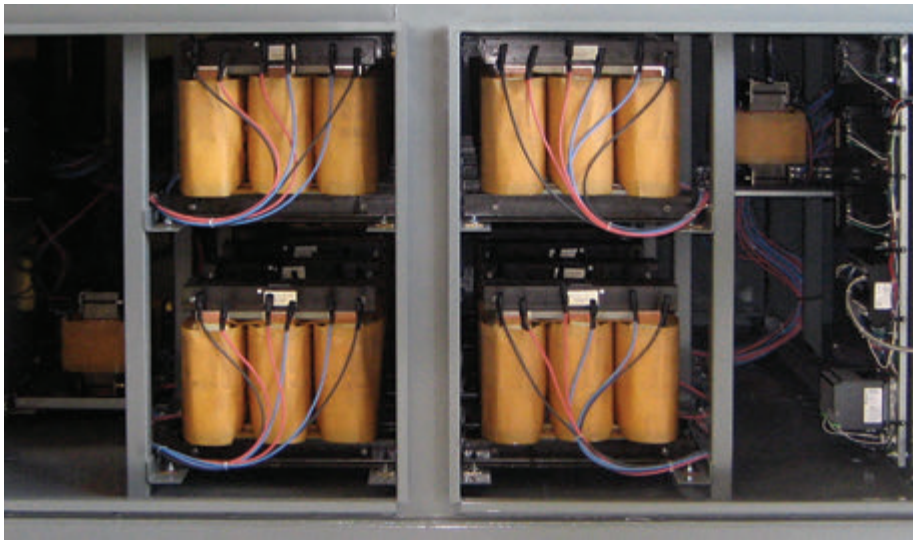
Simplex Load Banks utilize “Powr-Web” load elements. The “Powr-Web” is an advanced design, air-cooled power resistor specifically designed for application to Load Bank systems. The “Powr-Web” is conservatively operated at half the maximum temperature rating of the alloy and features a short-circuit-safe design based on continuous mechanical support of the element by high temperature, ceramic clad stainless steel rods. The “Power Webs” are assembled into discrete trays which are assembled in a vertical “stack.” Each tray in the “stack” is independently serviceable without disturbing adjacent trays.

Specifications

- Alloy: FeCrAl
- Maximum continuous temperature rating: 1920°F
- Maximum operating temperature as applied in Load Bank: 1080° F
- Cool down time from operating to ambient temperature is 10 seconds.

Construction

- Ceramic clad, stainless steel through-rods.
- UL Recognized



Inductive Load Elements

The Simplex inductive load banks consist of discrete iron-core load elements. These are non-saturable, air gap calibrated, air cooled devices and are field replaceable. Standard elements have a temperature sensor embedded in the windings to detect element overheating and through the module malfunction detection system, disconnect the load elements and activate an alarm. Standard elements are varnish coated; epoxy coatings are available for severe environments.

Specifications

Tolerance:	5%
Maximum Harmonic Distortion:	1%
Power Factor:	.05
Insulation:	220°C
Cooling:	Air

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Nationwide Manufacturing (ISO9001: 2008 certified), Services and Rentals. (800-637-8603)
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The Load Bank is a completely self-contained, freestanding unit which includes all resistive load elements, load control devices, load element branch circuit fuse protection, main load bus and terminals, cooling system, control power supply, unit controller and malfunction detection system and type enclosure.

System Protection

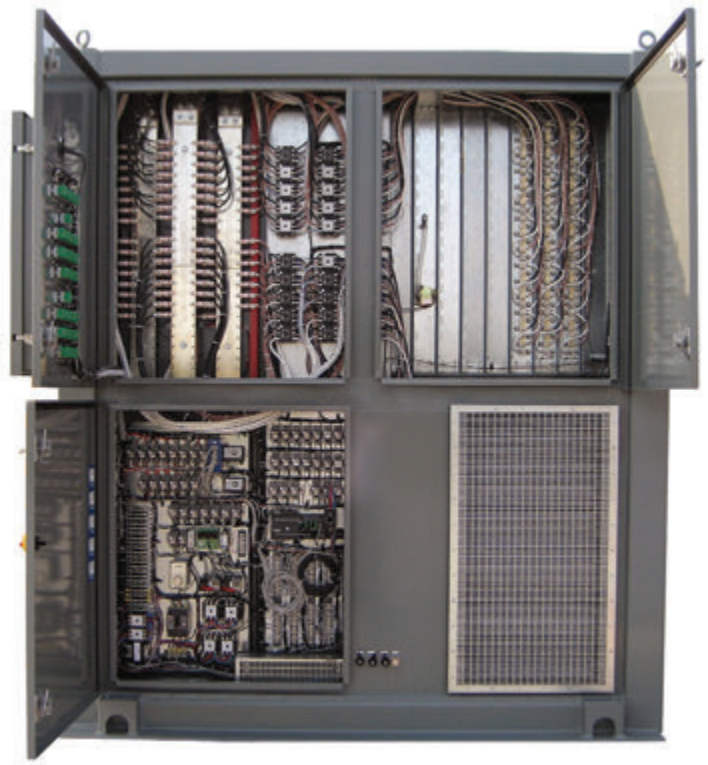
Sensors, alarms (alarm message on remote operator interface terminal), lock-outs as appropriate, for the following:

- Fan failure, each of two fans
- High exhaust temperature, each of two fans
- High intake temperature
- High interior temperature, sensed at three points
- Louver open/closed, each of eight louvers

Load Elements

Simplex Powr-Web: Open wire, helically wound, chromium alloy, load element thermally derated to 60%. 5% tolerance, 2% balance. .995 p.f. Element wire mechanically supported over entire length such that if a wire should break, the broken wire segments will not short to adjacent conductors or to ground. Load elements are individually serviceable and replaceable in the field without major disassembly of the load bank. The load elements are installed in slide-out, removable trays such that any element is easily accessed without disturbing any other elements.

All materials used in the mounting and installation of the load elements are suitable for the temperatures encountered, in both normal operation and under fault conditions. Materials in direct contact with the element wire are ceramic. Other materials which structurally support the load elements and/or which form the hot air duct within which the elements are mounted are steel, stainless steel or aluminum. Plastics and glass reinforced plastic materials and flammable materials are not used for installation, support and mounting of load elements or in the construction of the load bank hot air duct.



Inductive elements: Non-saturable, air-gap type, iron-core power inductors. 5% tolerance, 1% waveform distortion, 0.05 power factor, 150°C rise, 220°C insulation.

Basic Dimensions

96.5”W x 110.25”H x 130”D.

Load Control

Branch circuit contactors, each 50 KW resistive circuit max or each 75kvar inductive circuit max. Inductive circuits are double-break. Contactors have enclosed silver surfaced contacts, 120V coils; electrically operated and electrically held.

Element Circuit Protection

Branch circuit fuses, each 50KW resistive branch circuit max , each 75kvar inductive branch circuit max. 600v, 200kAIC, current limiting type.

Power Wiring

150°C insulated; color-coded and numbered.

Control Wiring

105°C

Power Connection

Plated bus bar behind hinge-up access door.

Control Connection

Connector plugs with recessed protective well.

Cooling

Forced air, horizontal airflow. 2 x 10HP, 3-phase, TEFC motor direct driving cast aluminum fan blades. Circuit breaker combination motor starter.

Enclosure

Type 3R control section; Type 3R power section. Epoxy primed, polyurethane finish coating, dark gray. Power operated ventilation louvers. Lifting eyes, forklift channels, hinged, lockable, access doors with flush latches.

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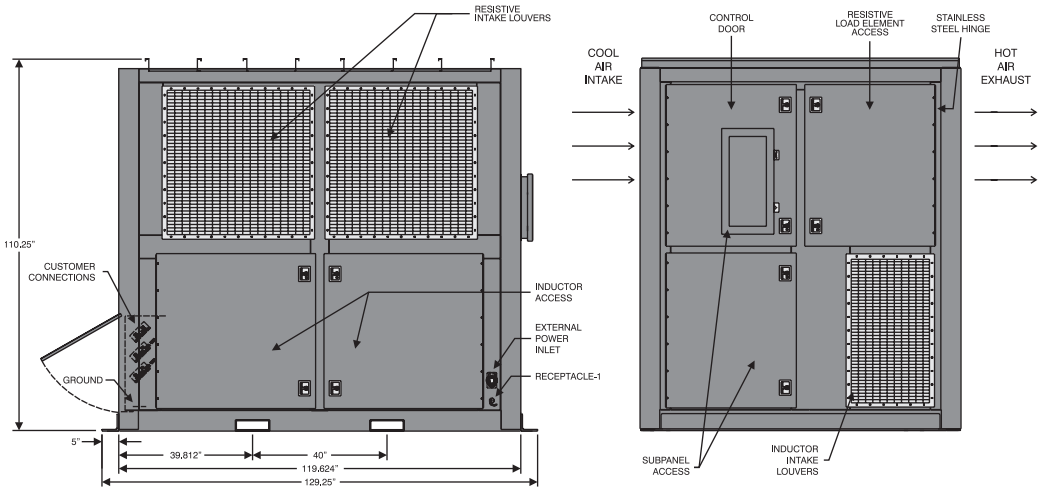
Dimensions and Key Features



Load Bank Features

1. Portable, self-contained
   a. Lifting eyes
   b. Forklift channels
   c. Heavy skid base
   d. Suitable for direct transport by standard flat bed truck
2. Horizontal airflow
3. Intake and exhaust louvers with linear actuator power operator and protective screen
4. Four-sided service access via hinged doors with lockable, flush latches
5. Power cable connection behind hinge-up door. Cables connect to full rated copper bus bar
6. Control connection to plug-in connectors located within recessed side well
7. Type 3R weatherproof construction suitable for all-weather transport and use
8. PLC based digital control with remote operator interface terminal
   a. Direct access digital load control
   b. User programmable automatic load control
9. Data acquisition system (optional)
   a. Digital Power Meter
   b. Data acquisition software for use with user supplied PC
10. Tray mounted resistive load elements
11. Rack mounted inductive load elements
12. Forced air interior cooling

Load Bank Control

- Remote digital load control and data acquisition.
- PLC based load control with remote operator interface control.
- Direct access digital load control in increments of 10kw, 7.5 kvar.
- Operator programmable automatic test routines.
- Digital Power Meter with data acquisition software.

Optional Equipment

- Data acquisition systems
- Remote controller, suitcase-style or panel mount
- Cam-Lok quick connection panels
- Non-standard voltage ratings
- Multi-unit control

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