**Stationary Load Bank With Automatic ReGen Power Absoption Control Specification**

**2.13 Load Bank**

A. Provide a UL Listed, Free-Standing, Outdoor Resistive Load Bank. The load bank shall be suitable for installation in the following ambient conditions:

Wind Loading: 75 MPH

Seismic Rating: Zone 4

Ambient Temperature: -20⁰F to +120⁰F

Altitude: 5,000 feet above sea level

B. The load bank will be rated for a continuous duty cycle at \_\_\_\_\_ KW at \_\_\_\_ Volts AC, 3-phase, 60 Hertz. The Load Step Resolution shall be approximately 10 percent of the total load bank capacity.

C. The load bank shall be a completely self-contained, freestanding unit which includes all resistive load elements, load control devices, load element branch circuit fuse protection, main load bus, control terminals, system protection devices and NEMA type enclosure.

D. The load bank is designed for installation and operation in an outdoor environment with sufficient fresh intake air available, while secured to a flat surface such as a roof, finished floor or concrete pad. Cooling air is drawn in from the screened air-intake sides, with hot air vertically exhausted from the top of the unit away from personnel. The load bank enclosure shall be constructed of galvanized steel with powder coat paint finish with exterior stainless steel fastners. Dead front access to all electrical and mechanical connections shall be provided.

E. All power connections including main-input load bus, external bower power, operator remote control, instrumentation and customer interface connections are made within the enclosed relay/connection compartment. Bottom access through a removable gland plate provides a “safe and sealed” ease of installation of all conduit entry cable. Load connections are made directly to the main input load bus bars. A standard NEMA 4-hole pattern shall be provided for customer load cables connections. All copper bus bars are plated for superior oxidation resistance. Relay/connection compartment is heated and thermostatically controlled to limit any harmful effects of condensation.

F. The load bank shall have a sound level of 80 dB(A) or less at a distance of 23 feet.

G. The load bank will cooled by an integrally mounted blower system. The system will include a TEFC motor with high-performance, direct-driven fan blade. The Blower can be powered from an external 3-phase supply source, or internally from the main input load bus (source under test).

H. The load bank control circuits will be operated at 120 VAC AC, 1-phase. The control power will be derived from a control transformer connected to the bower circuit. The Control Transformer will be primary and secondary fuse protected.

I. Resistor load element provide the necessary KW load rating for each load step. Resistors are fully supported across their entire length within the air stream by stainless steel support rods which are insulated with heavy-duty, high temperature ceramic insulators. The change in resistance is minimized by maintaining conservative resistor designs.

J. Branch circuit fuse protection provides short-circuit protection of all load steps. Fuses are fast-acting, current-limiting type with an interrupting rating of 200K A.I.C.

K. The load bank will include safety circuits which will disable the load bank if an over-temperature or loss of air flow condition occur. The Blower Motor is short circuit protected by current limiting fuses and thermally protected by overload relay. Load cannot be reapplied until the fault condition is corrected.

L. Load Bank Control Panel will be installed in a NEMA wall mountable enclosure. The control panel will include; Main Power On/Off switch, Blower Start/Stop push buttons, Master Load On/Off switch, and Individual Load Step switches KW On/Off). Illuminated indicators provide Power On, Blower On, Motor Overload, Air-Flow Failure, Over-Temperature and Load Dump. An Emergency-Stop (E-STOP) push button is provided to disable control power voltage to all operator control circuits, including blower and load application circuits.

M. Automatic Load Leveling and Regen Power Absorption Control shall be provided. In the “Generating” or “Forward Power” mode the control will add/subtract load bank load in response to dynamic power fluctuations of the connected building load. It utilizes the load bank as a supplemental load for maintaining a minimum load on the power source.

Upon detection of reverse power levels load bank load steps will be applied at 5%, 10% and 20% of the GenSet nameplate KW rating. A customer supplied “transfer of control” contact closure initiates the load bank and time delay load application circuit. A separately supplied current transformer provides the necessary feedback signal for sensing the building load.

N. Automatic Load Dump circuit provides user interface provisions to the generator controls, automatic transfer switch or building management system, to disconnect and disable all load steps from a normally closed (NC) set of auxiliary contacts. In the event of an actual power failure, all load bank load is removed from the source under test.

O. Remote Indication and Alarm contact closure [form-c-type, normally open and normally closed] provides user interface to building management system for indication, detection and alarm of Air-Flow Failure, Over-Temperature and Load Dump.

P. The load bank will be manufactured by Load Banks Direct or approved equal.