

Lamp Load Bank

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Abstract

A load bank is a device which used as an [electrical load](#), applies the load to an electrical power source and converts or dissipates the resultant power output of the source.

The purpose of a load bank is to accurately mimic the operational or “real” load that a power source will see in actual application. However, unlike the “real” load, which is likely to be dispersed, unpredictable and random in value, a load bank provides a contained, organized and fully controllable load.

Consequently, a load bank can be further defined as a self-contained, unitized, systematic device that includes load elements with control and accessory devices required for operation.

Key Words:

Mimic operation
Active power
Reactive power
Lagging power factor
Leading power factor

Introduction:

A Load Bank is a device which develops an electrical load, applies the load to an electrical power source and converts or dissipates the resultant power output of the source. Ensuring proper operation of your backup power system is critical. Today's emergency standby diesel generator sets are designed to operate under a specific load level. Emerson Network Power offers Averno Brand Load Banks which provide the complete solution with the most advanced and reliable controls in the market to provide proper loading of the backup power system.

Permanent, Portable, Containerized, Trailer-Mounted, Skid-Mounted, Radiator-Mounted, and Server Load Banks (HVAC commissioning) provide a continuous and accurate means for load testing. Emerson's Averno Load Banks are available from 5KW up to 7MW in a single package. Available in a variety of voltages and frequencies, we have been the market leader in load bank technologies since 1953.

Literature Review:

A load bank is a device designed to provide electrical loads for testing various power sources. Load banks are also used to provide additional loads to diesel generators to ensure the engine fully consumes the fuel in the combustion process, reducing “wet stacking” problems.

Resistive Load Bank-

A resistive load bank, the most common type, provides equivalent loading for both [generators](#) and [prime movers](#). That is, for each [kilowatt](#) (or [horsepower](#)) of load applied to the generator by the load bank, an equal amount of load is applied to the prime mover by the generator. A resistive load bank impacts upon all aspects of a generating system.

Inductive Load Bank-

An inductive load consists of an iron-core reactive element which, when used in conjunction with a resistive load bank, creates a lagging power factor load. Typically, the inductive load will be rated at a numeric value 75% that of the corresponding resistive load such that when applied together a resultant 0.8 power factor load is provided.

Capacitive Load Bank-

A capacitive load bank or capacitor bank is similar to an inductive load bank in rating and purpose, except leading power factor loads are created, so reactive power is supplied from these loads to the system, hence improves the power factor. These loads simulate certain electronic or non-linear loads typical of telecommunications, computer or UPS industries.

Methodology:

In resistive load bank, the incandescent lamps are used as resistive load. We use total 48 incandescent lamps, out of which 24 are of a 100 watt and remaining 24 lamps are of 200 watt. The combination of series parallel connection of lamp is used. Lamps are connected in series in horizontal manner and parallel in vertical manner.

The material used for this load bank are such as kitkat fuse, batten holder, tumbler switches, connecting wires, connecting knobs, square net, particle board and rolling wheels.



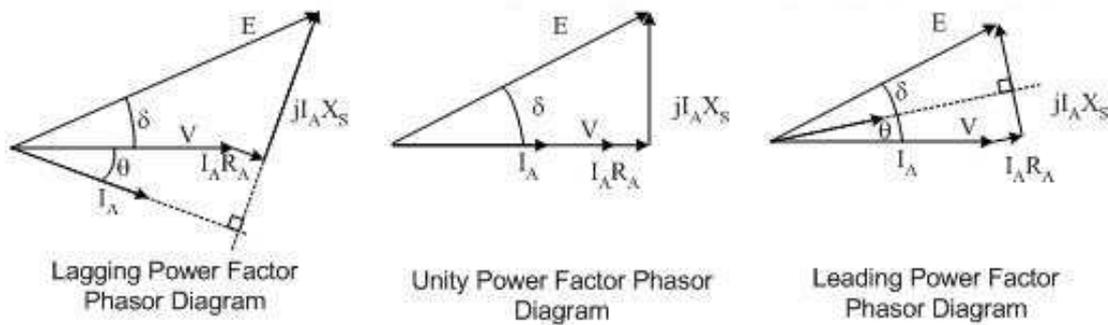
Project Development:

There are three types of load banks

Inductive: The current lags behind the voltage

Resistive: The current is in phase with voltage

Capacitive: The current leads the voltage



It is a cost effective investment for:

Testing and maintaining electrical power systems.

Avoiding excessive wear on under loaded diesel generators.

Prolonging the life of generators and UPS or battery systems.

Observation:

Load (watt)	Voltage (volt)	Current (ampere)
500	230	2.17
700	230	3.04
900	230	3.91

Conclusion:

Load banks are used in a variety of applications, including:

- Factory testing of [turbines](#) and engine [diesel generator](#) sets
- Reduction of [wet stacking](#) problems
- Periodic exercising of stand-by engine generator sets
- [Battery](#) and [UPS system](#) testing
- Ground power testing
- Load optimization in [prime power](#) applications
- Removal of carbon build-up on [piston](#) rings
- [Load rejection](#) test