PROTECTION

Each resistive element section may be protected by HRC Fuses, but they will be provided only on request. Invariably all the load banks will be provided flow switches. Loading is possible only when adequate air flow is there through the resistive elements. If the temperature rise goes beyond a certain level the load bank will trip. Tripping indications will be given.

TOLERANCE

Loading tolerance will be well within 10%. Though the load banks are designed for continuous duty they will normally be in operation for period ranging from 12 to 13 hours. They can also be overloaded for a period of one hour and the overloading will be restricted to 10% of rated output. Under overloaded conditions the performance of the Unit will not be within the guaranteed tolerance limits.

CONSTRUCTION

The enclosure will be made out of 2mm thick sheet steel. The unit will be of indoor type only. Smaller units may be made transportable by using swivel castors. Trailer mounted load banks can also be supplied. They can be towed to different destinations. In all the portable loading stations inlet and outlet cables will be taken out through industrial type plug and sockets.

The cooling fans will be mounted at the bottom covered by wire meshes. If the air flow is effected by blower they will be mounted at the top. The metering compartment will be completely isolated by thermal insulating pads if the Control switches, Circuit Breakers, meters etc. are mounted on the load bank itself.

All the covers will be stuffed with thermal insulating materials. Skin temperature will be restricted to a safe level. Hinged type doors will not be provided except for the metering compartment. Terminal boards for control and power will be provided separately at the bottom.

MAINTANENCE

Periodical maintenance is necessary. The wire meshes at the bottom should be cleaned so that cool air can enter freely. The resistive elements should be cleaned using forced dry compressed air by removing all the covers. Routine testing of insulation level of the resistance bank is a must. As most of the elements, interconnecting copper and hardwares are operating at very high temperatures, periodical cleaning of the contact, removal of oxidation and tightening of the joints should be strictly adhered to.

DATA REQUIRED FOR ORDERING

- Voltage.
- Frequency.
- Load Details.
- System Voltage.
- Control Particular.
- Dimensional Restriction.
- TOLERANCE from Cold to Running Condition.

NATIONAL SWITCHGEARS
33, SIDCO Industrial Estate, Ambattur, Chennai – 600 098. INDIA
Tel: 91- 44 - 2625 2262, 2625 4432, 2635 7368 Fax: 91- 44 - 2432 0480, 2625 5046
E-mail: nsgsamy@sify.com Website: www.nationalswitchgears.com

ISO 9001 - 2008

NATIONAL SWITCHGEARS

LOAD BANK

(FORCED AND NATURAL COOLED)

THE ULTIMATE TESTING DEVICE FOR GENERATORS.

The flourishing demand for standby power stations, in view of growing power famine in the this country, has created a lot of opportunities for the manufactures of gen-sets and battery system.

Load banks are used to test gen-sets, U.P.S. systems and some large industrial D.C battery system to full load capacity, prior to and after installation. The performance of a generator can be ascertained at full load and over load conditions. They are also used on installed units to take on load during periods of load shedding so that the generator does not run below its nominal rating. If it runs below the nominal rating for too long generators can experience glazing of the cylinders. This results in lack of lubrication and is a costly maintenance problem. They also find an extensive use in testing laboratories and R&D institutions as dummy loads for evaluating performance of contactors, circuit breaker and other such electrical power apparatuses at short time current rating.

DISADVANTAGES OF WATER LOAD

Water loads suffer from many inherent defects as detailed below:

- Very high volume coefficient of resistance.
- Evaporating of liquid causes changes in density and resistivity.
- Frequent maintenance.
- Low operating temperature.
- Inconsistent loadings.
- Cumbersome controls.

BASIC REQUIREMENT OF A RESISTIVE LOAD BANK

- To change the current at a constant voltage.
- Very low temperature coefficient of resistance.
- High operating temperature.
- Maintenance free.
- Simple flexible controls.
- Consistent Resistant Values.

FEATURES OF OUR LOAD BANK

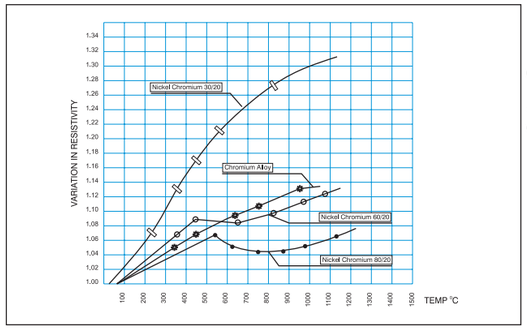
RESISTIVE ELEMENT

The material may be either 80/20 Nickel Chromium Alloy or Chromium Aluminium Alloy having very low temperature coefficient of resistance and high operating temperature. Typical characteristic curve is shown in sketch – A.

The element may be in the form of wire, strip or sheet depending upon current ratings and system frequency. Invariably the wires are used for low current rating and DC applications. Our punched resistors have very good heat dissipating properties and they are non inductive. It has very good advantages at high frequency application.

COOLING

Most of the load banks are force air cooled types. Smaller versions may not have this facility. The load bank can be designed to operate upto an ambient temperature of 55 °C. Air flow may be vertical as well as horizontal. The cooling fan is driven by either single phase or 3 phase standard supply system voltages at 50 Hz. Load Banks for aircrafts operating at 60/400 Hz can be supplied as request. The outlet air from the unit should be taken off by proper ducting which will be in the scope of purchaser.



SKETCH – A.

SYSTEM VOLTAGES FOR LOADING

- 415 V/Three Phase/50 Hz
- 415 V/Single Phase/50 Hz
- 230 V/Single Phase/50 Hz
- 240 V/220 V/ 110 V/48/24 V DC
- 110 V/Single Phase/50 Hz
- 208 V/Three Phase / 400 Hz
- 120 V/Single Phase/ 400 Hz

Loadings at other voltages can also be designed. Auxillary power supply for powering cooling fans and control circuit is taken either from the internal bus or external supply. Normally a neutral is provided to enable testing of single phase loads and is normally rated at 33% of total load capacity. 3 Phase loads can be converted to operate at DC also.

CAPACITY

Loads banks can be designed upto 6 MW. By adding modules at the rate 1 MW higher capacity stations can be built up. Smallest Unit may start from 5 kW.

CONTROLS

The loading can be added in stages by using switches or contactors. For remote controlled units the contactors may be housed inside the remote control panel or in a separately mounted switch board. Loads will be added by selecting appropriate push buttons. Loads can also be controlled by using PLC. Programme switches may be provided on certain causes. For smaller loads MCBs may also be used. Ammeter and Voltmeter will be provided as a standard feature. KW meter, Energy meters and Hour run meters will be provided depending on the requirement. Specially designed instruments will be provided for 400 Hz system. Incoming supply may be through a Circuit Breaker or Switch or straight through a busbar. It will be an optional arrangement and similarly the metering on the incoming side can be provided on request.