

Generator No. 1. 40 KW. 110 volts

Date	Insulation Resistance. Megohms.	Weather condition	Time of Test Temperature of Machine
Feb. 25	15	Fine and bright	Machine hot
27	10	—	Monday morning Machine cold
Mar. 10	50	Cold and dry	Machine hot
12	30	Very cold and dry	Monday morning Machine cold

Generator No. 2. 50 KW. 110 volts

Feb. 25	25	Fine and bright	Machine hot
27	15	Fine and bright	Monday morning Machine cold
29	50	Dull and dry	Hot after 12 hours at 28 K/Ws.
Mar. 1	12	Rainy	After standing 12 hours
10	100	Cold and dry	Machine hot
12	50	Very cold and dry	Monday morning Machine cold

Generator No. 3. 135 KW. 460 volts
New machine being erected

Feb. 24	20	—	Armature only
24	25	—	Field only
Mar. 5	4	—	Complete machine on completion of erection
8	2.5	Fine	Machine hot
9	30	Fine	Machine cold after standing all day
12	75	Very cold and dry	Machine cold
23	20	Fine	Machine hot Test after running all day

INSULATION TESTS ON POWER HOUSE GENERATORS
with a 500 volt Constant Pressure Megger Insulation Tester

TESTING MOTORS AND GENERATORS

Faults on electrical machinery must be due to one of two causes. One is the absence of continuity in the conductor which is supposed to be carrying the current. The other is an absence, or partial absence, of insulation. The latter is by far the more common and the more dangerous of the two faults. A burnt out armature, for instance, is usually due to insulation failure.

It is of the utmost importance, therefore, to make regular tests of the insulation resistance of all machinery so as to detect incipient faults. The result of such tests should be entered in a log-book. Entries from a typical log book are shown opposite and it should be noted that, against each entry, a reference is made to the state of the weather and to whether a machine has been tested when hot or cold, as these conditions may influence the value of the insulation resistance.

Effect of damp weather

A drop in insulation resistance may often be accounted for by damp weather. An examination, for instance, of the log of Generator No. 2 (opposite) reveals that during the 12 hours from February 29th to March 1st the insulation resistance fell from 50 to 12 megohms. It will be noted, however, that the weather conditions deteriorated during this period. That this drop in insulation resistance was due to the change in atmospheric conditions and not to an incipient fault was confirmed by the subsequent test on March 10th, when the weather was again dry and the resistance had risen to 100 megohms.

Effect of temperature

As regards the effect of temperature it should be noted that the insulation resistance of motors and generators is generally lower when they are hot than when they are cold as the insulating varnishes used in the building of the machines have a lower resistance when hot than when cold.