

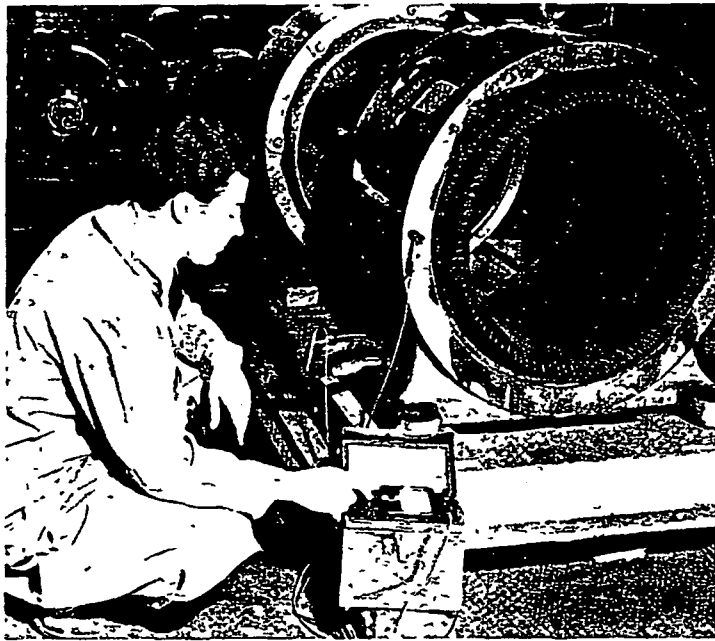


FIG 33-10 — An electrician checking equipment with an insulation resistance tester. His findings will be recorded on a chart similar to that shown in Fig 33-11.

Courtesy Associated Research, Inc.

down voltage

The megohmmeter ("megger") is a high-scale ohmmeter which gives the value of insulation resistance. Almost every wire in a plant (including the wires on motors, generators, and transformers) is wrapped in electrical insulation.

Not all electrical insulation provides a perfect barrier against dirt and dampness. In fact, some types may become porous with age and absorb dangerous quantities of dirt and moisture. In that event, electrical resistance drops to the point that leaking current burns a hole through the insulation to ground.

Sometimes this drop in insulation resistance is sudden, especially if the equipment is flooded, but generally the insulation resistance drops slowly, so that tests can be made, records kept, and failures predicted.

The megohmmeter can be used to check new electrical equipment delivered to the plant to see whether the electrical insulation meets the manufacturer's specifications or whether it has become damaged while in shipment or has acquired dampness and dirt. This factor is especially important in high-voltage equipment.

To check the insulation of an ordinary alternating- or direct-current motor, the motor safety switch is pulled, and one lead of the testing equipment is hooked to the switch blade and the other lead to ground (Fig 33-10). When the megohmmeter is operated, a small current is sent through and over the surface of the insulation at a rated test voltage (usually 500 or 1000 volts dc) and the resistance of the insulation in megohms (millions of ohms) can be read from the instrument's scale. When the test is completed, all that remains to be done is to remove the test leads and put the motor back into service.

A few minutes every six months is all the time required for an accurate checkup of electrical insulation to prevent equipment failure, short circuits, fires, and possible shock hazards to operating personnel. Periodic readings, recorded as shown in Fig 33-11, are an insulation history of the machine. These records, for each piece of electrical equipment, make it possible to determine at any time whether the insulation resistance is dropping or holding its own.

Ground fault indicators and locators An ungrounded electrical distribution system is