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PREVENT INSULATION BREAKDOWN AND CONDUCT TESTS ON ELECTRICAL EQUIPMENT

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Annotation: in this article, work is carried out to prevent the breakdown of electrical equipment insulation and to carry out tests, and the implementation of testing work is mentioned in a certain correspondence, as well as the observance of the rules of technical safety.

Keywords: insulation: elekr, test work, insulation breakdown, electrical device.

Insulation is the use of equipment, as well as blocking structures of buildings and structures, etc.Insulation is the use of equipment, as well as blocking structures of buildings and structures, etc.at protection against harmful effects of the atmosphere; set of measures to prevent the loss of electrical or thermal energy, to ensure the safe use of energy using electrical devices, electrical devices used in fasting, to ensure the noise-free operation of equipment. For example, in order to prevent unnecessary issychic alma-strain of buildings, issychic devices, cooling chambers and oysters with the environment, objects are wrapped in one or more layers with issychic isolating materials.

The problem of the insulation of electrical equipment in energy is the main factor that leads to the failure of electrical equipment. The quality of insulation work also affects the service life of electrical equipment.he problem of the insulation of electrical equipment in energy is the main factor that leads to the failure of electrical equipment. The quality of insulation work also affects the service life of electrical equipment. Therefore, insulation resistance testing is an important task in the inspection of electrical equipment. Insulation resistance is an important indicator for evaluating the performance of insulation. For any type of electrical equipment, ensuring its resistance to sufficiently high levels of insulation between phases and the floor is one of the important indicators for the safe operation of electrical equipment.

Test methods for insulation of electrical equipment:

1. Insulation resistance test of distribution transformer.
2. High voltage and low voltage surge arrester insulation resistance.
3. Insulation resistance of the insulator.
4. Electrical wire shaking test.
5. Measurement of phase-variable capacitors.

When testing the insulation resistance of a distributor transformer, attention is paid to:

a) after the distribution transformer is started after installation or overhaul and put into long-term use, the resistance of the winding insulation must be measured with a rocker with a voltage of 1000 ~ 2500v.) after the distribution transformer is started after installation or overhaul and put into long-term use, the resistance of the winding insulation must be measured with a rocker with a voltage of 1000 ~ 2500v. The measured value and oil temperature during the measurement should be recorded in the transformer file. The measured value is compared to the value of the insulation resistance measured during the operation of the distribution transformer to determine the insulating state of the transformer. If the insulation resistance of a distribution transformer suddenly drops to 50% or less of its initial value, it should be replaced with a major overhaul;

b) the accuracy of the resistance to measured insulation is closely related to the measurement method and weather conditions. When measuring, the following should be taken into account: measurement conditions.) the accuracy of the resistance to measured insulation is closely related to the meat;

c) Measure the voltage.) Measure the voltage. The resistance of the insulation of the Shake test transformer should use a 1000V or 2500v oscillator, when comparing the insulating resistance of the transformer, there should be a voltage level from the shae;

d) elements of measurement. The insulating resistance value of the primary winding to the secondary winding, the ground to the primary winding (with transformer core or housing) and the ground to the secondary winding is measured;

e) Measurement safety.) Measurement safety. Before and after measurement, the output ends of the primary and secondary sides of the distribution must be individually grounded and discharged, and a neutral line must also be separated so that the residual static charge in the coily.

When testing the resistance of high-voltage and low-voltage arrester insulation of the vibration test, it is worth paying attention to:

a) shake the resistance of the high voltage valve type arrester insulation, use 1000V or 2500v when shaking the table; for low voltage 380V artery wobbling, it is necessary to use 500V or 1000V wobble, connect the two Test wires of the shaker to the upper and lower terminals;

b) the insulation resistance of the low voltage 380V meter should not be less than 1MΩ.

When testing the insulation resistance of an insulator, the following should be considered:

a) use a 500 ~ 1000V meter to measure the insulation resistance of the low voltage insulator. The value should not be less than 1MΩ;

b) needle insulators. Connect the shaker (-) to the base of the Iron. The connecting wire (+) is attached to the metal wire of the screwdriver.) needle insulators. Connect the shaker (-) to the base of the Iron. The connecting wire (+) is attached to the metal wire of the screwdriver. The controller carries insulating gloves and h) needle insulators. Connect the shaker (-) to the base on;

c) Spool and butterfly insulators.) Spool and butterfly insulators. When measuring, a circle of copper wire can be connected to the circumference of the Middle Neck, and one wire of the oscillating clock is connected to the copper wire, and another vibrating clock is connected to the iron framn;

d) it takes time to separately measure the new spool type insulator.) it takes time to separately measure the new spool type insulator. When measuring, touch one wire of the rocker table to the outer surface of the insulator, connect another test wire to a long metal wire in a large screwdriver, a) it takes time to separately measure the new spool type insulator. When measuring, touch one wire of the rocker table to the outer surface of the insulator, connect another test wire to a long metalme.

When conducting a cord shake test, the following should be noted:

a) under the test and on all external connections, remove the power supply of the cable. At the same time, connect the core wires of the tested cable to the ground and loosen them for 1 minute;

b) wipe off dirt from the surface of the cable terminal;

c) determine the properties of the Shaker. Use a 1kV vibrator for 1kV or lower voltage cables and a 2500v oscillator for 1kV or higher cables;

d) When testing a three-core wire, one core (+), the other two cores should be connected to ground along with the lead set.) When testing a three-core wire, one core (+), the other two cores should be connected to ground along with the ld;

e) shake the table to the nominal speed (1200R / min). Insulation resistance should be an indicator when the resistance value is stable after 1 min of shakingke the table to the nominal speed (1200R / min). Insulation resistance shonominal speed;

f) after the core wires of the cable are tested, completely discharged, other core wires are tested in the same way.

When measuring phase variable capacitors, attention should be paid to:

a) the Phase variable capacitor should be periodically checked for insulation resistance during Operation.) the Phase variable capacitor should be periodically checked for insulation resistance during Operation. The insulation resistance is divided into the insulation) the Phase variable capacitor should be periodically checked for insulation resistance during Operation. The insulation resistance is divided into the insulation resistance between the two poles and theor;

b) the low voltage capacitor can be measured with 500V vibration, and the resistance of its insulation should not be less than 20mω.) the low voltage capacitor can be measured with 500V vibration, and the resistance of its insulation should) the low voltage capacitor can be measured with 500V vibration, and the resistance of its insulation should not be less tha) the low voltage capacitor can be measured with 500V vibration, and the resistance of its insulation should not be less than 20mω. The capacitor must be emptied before rinsing. When to shake, first shake the vibrator to the specified speed. Once the indicator is balanced, connect the vibration wire to the two poles of the capacitor and continue turning the table. At the beginning, due to the charging of the capacitor, the indicator goes down and then gradually rises to a stable value, which is the resistance of the inter-electrode insulation of the capacitor. After taking the reading, first remove the shaker line and then stop shaking. Otherwise, the meter will burn out due to the discharge of the capacitor.fter taking the reading, first remove the shaker line and then sto;

c) since the capacitor consists of a sequential or parallel capacitor element, the breakdown of the individual element's insulation does not significantly reduce the insulating resistance of the entire capacitor, so it is difficult to find defects in the polar insulation resistance.) since the capacitor consists of a sequential or parallel capacitor element, the breakdown of the individual elemee capacitor.

In addition to these methods, you can also choose appropriate options depending on your workplace.

Sources used:

1. https://srcyrl.electric-test.com/info/necessity-of-insulation-resistance-test-48219568.html
2. https://srcyrl.ahelek.net/info/method-for-electrical-equipment-insulation-38335184.html
3. https://staff.tiiame.uz/storage/users/351/presentations/E5VqbQrVVtETZthHAtodrZHYXJSjG4YVfQrFZ58L.pdf
4. http://srcyrl.scotech-electrical.com/info/preventive-test-of-electrical-equipment-can-be-75848074.html