HEAT CYCLING TEST SYSTEM
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Application

Heat Cycling Test System is designed based on the testing theory of conductor induced current method and is mainly used for delivery test, type test and pre-qualification test of power cable and related accessories. The heating current is up to 8000A. We use special thermocouple to test the temperature of the test object. We can test the temperature of outer sheath, metal shielding layer and conductor of the cable and transmit the temperature signal to control & measuring system via optical fiber. The control & measuring system is in line with IEC 62067 and IEC 60840 standards. Paperless recorder or IPC is used for measuring and analysis. There are multiple temperature measuring points and we can increase or decrease the number of measuring points according to the customers’ needs.

Characteristics

- The feed through transformer uses the design of “13” shape iron core, one side of which can be open at 45° for the convenience of installation.
- The system uses LV reactive compensation device to decrease the capacity of power supply and save the energy.
- It has hardware and software protection to ensure the stability, reliability and safety of the long time (8760h) and combined test for test object.
- It uses optical fiber for communication, avoiding damage from over voltage on control system. The safety of equipment and test people is guaranteed.
- Equipped with Ethernet port for long-distance monitoring.

Components

- Switch cabinet
- Voltage regulator
- Reactive compensation device
- Feed through transformer
- Current transformer
- Temperature measurement device
- Control, measuring & recording system

Options

- HV cable connecting components
- Current transformer

Description

Feed through transformer

The feed through transformer is designed as “13” shape iron core, one side of the core can be open at 45°. This design makes it easy to install test object (cable). Considering the universality of the use of feed through transformer on site, the design for the capacity is in a unified and suitable range. Before testing we increase or decrease the quantity of feed through transformers according to different cross-section & length of the cable. There are two taps at the primary of feed through transformer.

After calculation and verification, we take consideration of the DC resistance, reactance value, number of turns and insulation of the coil in the design of feed through transformer to ensure the safety & reliability for the operation of multiple units in parallel.

The cross-section of the iron core which is leaning on one side is 1.4 times more than the area of iron core which is straight. This can decrease the magnetic resistance of magnetic circuit.
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Reactive compensation device

Single phase LV automatic reactive compensation system is used for the compensation of inductive load which will decrease the input power of regulator.

Control & measuring system

IPC control & measuring system

The system is based on IPC and PLC, the interface is as fig. 1:
PLC control & measuring system

PLC control & measuring system is used for control & measurement of the signals in simulation loop and testing loop. It displays the current of testing cable and simulating cable, also the temperature of core & surface of simulating cable. There is 0~5V signal from each display value for external computer. The heating time, cooling time and number of cycle can be set according to the requirement. There are two operation modes, manual and automatic which can be selected according to the requirement. And the theory is similar to IPC control & measuring system. The paperless recorder for measuring & recording can display the temperature signal which is acquired by temperature sensor after mathematical treatment and configuration programming. You can also store the relevant historical data according to your needs. If you need data processing and research, you can dump the relevant record to computer through CF card, and then process and research through software like EXCEL, ORIGIN, MATLAB, etc.

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Computer: Industrial control computer, wide-screen liquid crystal display, P4 CPU, 320G hard disk, 1G RAM;
Data acquisition module: resolution 12 bit, 8-channel (16-channel & 24-channel as option);
Isolation transformer: 3VA;
Optical fiber communication module: full duplex.

Printer

Computer console view (1650 x 750 x 750mm)

PLC console view (730 x 540 x 1050 mm)
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