

Effective use of Online Partial Discharge Test (Astute HV Monitor)

The Customer

Dak Lak PC, Vietnam

Background

In December 2021, Dak Lak PC was equipped with an online partial discharge monitoring device (Astute HV Monitor) by EVNCPC.

The company has completed training and with effective application in practice, significant improvement can be seen in labor productivity and technical management activities.



Dak Lak High Voltage Grid Operation Management Team inspects discharge at 110kV Ea H'leo substation

Partial discharge (PD) is the phenomenon of incomplete discharge shorting the electrodes. It breaks down the local dielectric of a small part in the insulation system under the action of high voltage (HV).

This phenomenon takes place inside the device and is not noticeable to the naked eye. It can cause the insulation of the equipment to gradually degrade, leading to the complete breakdown of the insulation block, causing problems for the equipment and the power grid. To ensure early detection of faults, EVNCPC equipped Dak Lak PC with an online PD monitoring device that operates 24/7.

Process

Astute HV Monitor is designed to detect PD sources in HV plants, medium voltage switchgears (boxes, RMUs) and medium cable positions. The device is equipped with sensors (TEV, Ultrasonic, Cable PD, HFCT) that help testers easily detect discharge phenomena on cables, 22kV medium-voltage cabinets and other electrical equipment. A variety of sensors are used for better identification of discharging patterns.

The discharge signal is measured by the meter with an alarm value assigned. On the other end, operating staff uses graphical analysis to detect discharge patterns more accurately and reliably. Each type of sensor has different technical uses and test signals. Each type of PD also has its own unique characteristics which help in determining the severity of discharge. PD analysis allows users to detect serious failures and assess the health of insulation systems.

Therefore, the operator must be familiar with the specifications of the sensors, follow the manufacturer's instructions for use and maintenance and abide by safety measures when working with the equipment.

To equip operators with the necessary knowledge, EVNCPC coordinated with the equipment supplier to organise training for employees of the High Grid Operation Management Team at Dak Lak. The unit was trained by experts on equipment theory and use at the 110kV Buon Ma Thuot substation. This ensures technicians are able to operate the equipment proficiently and effectively apply their learnings in operation management.

Conclusions

Till this date, Dak Lak PC has used Astute HV Monitor to test for PD in 22kV assemblies for fourteen 110kV substations. The average time taken to perform a test is approximately 7 days. During inspection, the unit detected 2 cabinets with PD phenomenon and promptly handled it, ensuring safe operation of the power grid.

After 6 months of using Astute HV Monitor and achieving favourable results, Dak Lak PC will continue to promote the use of existing equipment. Regular inspections will also be carried out at substations to ensure timely detection of PD issues and enhance the reliability of power supply to customers.

Reference:

<https://cpc.vn/Tin-tuc-su-kien/Tin-tuc-chi-tiet/articleId/54970>



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