

Non-Intrusive Maintenance



Non-intrusive maintenance techniques for switchgear and transformers are increasingly common owing to the development of testing devices such as partial discharge monitors and thermal cameras. Non-intrusive maintenance and inspections of your electrical plant cannot be used as a replacement to intrusive maintenance, but it is an increasingly essential activity.

Typical non-intrusive checks may include;

- Visual substation inspection
- Partial discharge assessment
- Earthing assessment
- Thermal surveys

Partial Discharge Testing

What Is It?

Partial discharge activity is an electrical discharge or spark that occurs within the insulation between two conducting electrodes. Partial discharge generally develops over a period of time and can eventually lead to a disruptive failure of a cable termination, high voltage (HV) switchgear, transformer or other component.

We will not need to shut the power down for these tests and will provide a report afterwards which details our findings and any recommendations. Partial discharge assessment is not a substitute for an on-going maintenance routine that incorporates intrusive (shutdown) and non-intrusive (no shutdown) maintenance, but it does give a very good indication of any potential areas of failure. The device that we utilise is portable, which means we can access any substation in any location. Our skilled team of engineers would be happy to give you a demonstration on site should you wish to know more.

Thermal Surveys

Thermal surveys involve the use of an infra-red camera to detect 'hot-spots' within a component (ACB / MCCB / contactor for example), cable, conductor or busbar connection. If a connection or conductor is operating at an increased temperature than standard recommendations, it is generally a sign that there is a potential loose connection or overloading of the circuit. If not rectified this 'hot-spot' can develop into a fault that could result in a loss of power to that circuit until a repair can be completed.

What Does The Survey Involve?

Lucy Electric's skilled team of engineers can attend site to complete a survey of your equipment. This would typically involve the completion of this survey during the daytime as the majority of sites operate at a higher loading profile during office hours. Once the survey is completed, you will receive a detailed report which will include thermal and standard images, detailing areas of concern. A table of recommendations will include any specific circuits / equipment that require further action. Lucy Electric's engineers can then assist you with any remedial actions where required. Following the visit we will analyse the results of all tests and surveys and provide a detailed report containing photographs with a list of recommendations for remedial actions.

Typical Report Content

Following the works on site our site team will upload the photographs to our specific software and review each image before providing a set of condition comments and a set of recommendations for remedial action.



Relevant Information

As well as being able to purchase the below documents, the Health & Safety Executive (HSE) publishes some very relevant guidance documents on their website.

- BS 6626:2010 (Maintenance of electrical switchgear and control gear for voltages above 1 kV and up to and including 36 kV. Code of practice)
- BS 6423:2014 (Code of practice for maintenance of low-voltage switchgear and control gear) and others regulatory standards.
- Electricity at Work Act
- Health & Safety & Work Act

If you wish to know more, need a survey or want to discuss our services, please contact our Energy Services team

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