



Improve Efficiency



Reduce Downtime



Improve Safety

## ON-SITE SUBSTATION INSPECTION

### THERMAL IMAGING PROVIDES ESSENTIAL TEMPERATURE DATA TO ASSESS HEALTH OF LTC

#### THE CUSTOMER'S CHALLENGE

If a Load Tap Changer (LTC) fails, the entire transformer will go out of service. This outage has an adverse effect on numerous distribution circuits and the remaining power grid due to the need to reroute the load to supply the affected circuits. Maintenance personnel must routinely check for leaks and monitor nitrogen and oil levels, LTC count, and the temperature recorded by the hot spot and top oil gauges. This can be challenging because gauges are not always correct and sometimes difficult to view.

Improper contact pressure at the tap contacts can cause hot spots and result in thermal degradation of the switch. Overvoltages due to switching or lightning impulses produce voltage stresses at the tap connections and can cause insulation breakdown.

#### SOLUTIONS

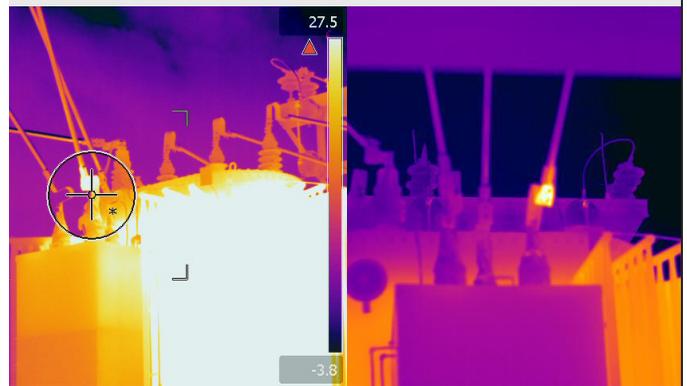
Thermal imaging technology can make it easier to assess the health of an LTC by quickly revealing hot spots. Using a thermal camera such as the FLIR T540, maintenance professionals can monitor LTCs and meet EPRI guidelines. These cameras allow the user to examine the tap changer and record temperature profiles in real time from top to bottom, as well as temperature differentials relative to the main tank. Maintenance professionals can use thermal imaging in combination with other instruments, including clamp meters, digital multimeters, and IR Windows, to ensure the substation is operating optimally.

#### THE RESULTS

Through regular inspections, maintenance professionals can rapidly detect and locate temperature issues of electrical components and equipment. Loose connections, bad contact, fuse issues, unbalanced loads, and stressed earth-leakage can be discovered using a thermal imager, providing the power to reduce the number of unexpected breakdowns by 90 percent. Improve safety by reducing risk of electrical fire; avoid unexpected breakdowns; reduces risk of unplanned electrical outages; and organize planned repair and preventative maintenance.



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