

## Case Study:

# Transformer Oil Sampling & Switchgear Maintenance



## Scheduled Maintenance for Transformers and Switches Shows the Need for Regular Testing

### Objective

- Annual Preventative Maintenance Testing of Switchgear and Transformers.

### Solutions

- Tank pressure was checked; dry nitrogen was added if needed.
- Oil samples were retrieved from transformers.
- The switchgear was cleaned and then tested to NETA specifications.
- Minor miscellaneous issues, such as missing hardware, were fixed and noted.
- Recommendations were noted for issues unable or infeasible to be corrected during service.
- After the service, a full, detailed report was generated, highlighting issues that need to be corrected to ensure the transformer operates as expected.

### Results/Benefits

- Regular preventative maintenance, including minor repairs and testing, is essential to personnel safety and reliable equipment operation.
- Regular preventative maintenance allows the customer to estimate the remaining reliable service life of the equipment and make an informed decision on when it is nearing the end of life.

### Background

The Quad Plus Testing Team made a service visit to a food manufacturing industry to perform preventative maintenance services on six oil-filled transformers and 11 medium-voltage switches. All equipment was de-energized before testing. The nitrogen pressure of the transformers was corrected if necessary, and oil samples were collected from all units. The switchgear was cleaned and tested per NETA specifications.

### Quad Plus Solution

The team discovered several issues during testing. One of the transformers had oxygen displacement in the nitrogen blanket, and the high-temperature level indicator on the thermometer revealed it had run hotter than expected. Another unit showed signs of corrosion on the temperature gauge. Lastly, one of the switchgear lineups had signs of severe overheating, and multiple components had loose and missing hardware.

The service team recommended leaving the transformer with oxygen displacement off until it could be repaired correctly. Once the rest of the cleaning and testing was completed, all equipment meeting NETA specifications was surrendered to the customer for service.



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