

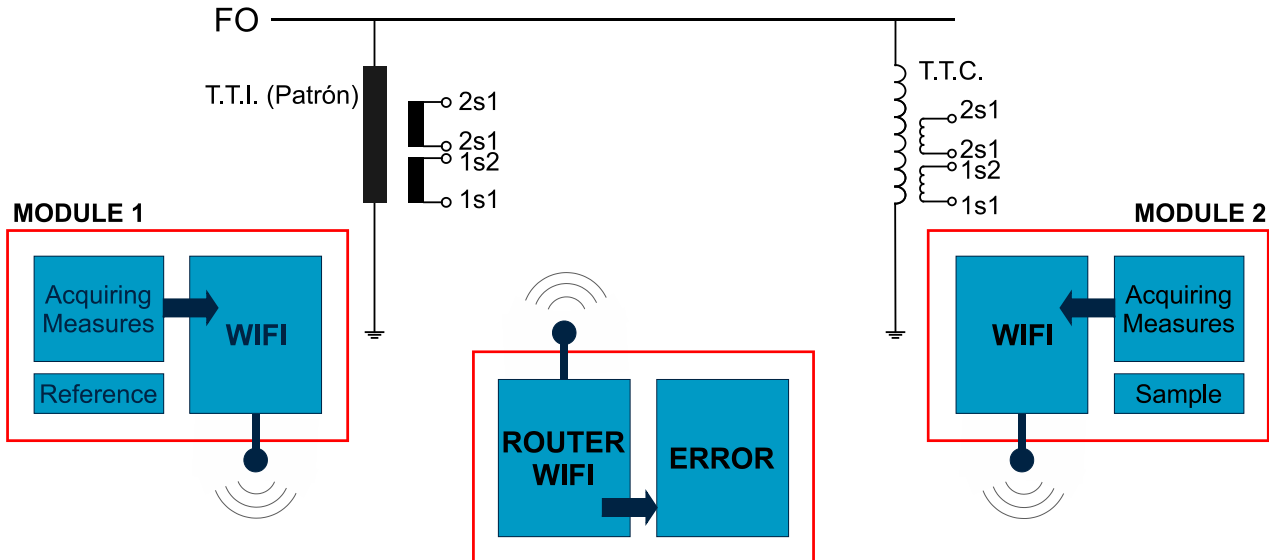
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Diagnosis of capacitive voltage transformers in service



1. What is it?

This new diagnosis method for capacitive voltage transformers in field determines the insulation status of the capacitive voltage transformers in service, using lightweight portable equipment without the need to use pattern transformers.



› Diagram of the method

2. Why?

The electrical transmission system operators conduct a maintenance plan for all their installations in the transport network, with the aim of guaranteeing the correct operation and reliability of the lines.

There is an inherent need to extend and maximize the service life of the equipment, minimizing costs and only investing in equipment where it is really necessary. To do so, we need a system that enables us to detect the first stages of the ageing process with absolute reliability and with the least possible impact on the normal operation of the transmission network.

3. How?

In the event that the insulation of the capacitor voltage transformers begins to deteriorate, an error will appear in the electrical measurement. If this deterioration is ignored, the failure speed may increase exponentially, accelerating the end of the service life of the equipment.

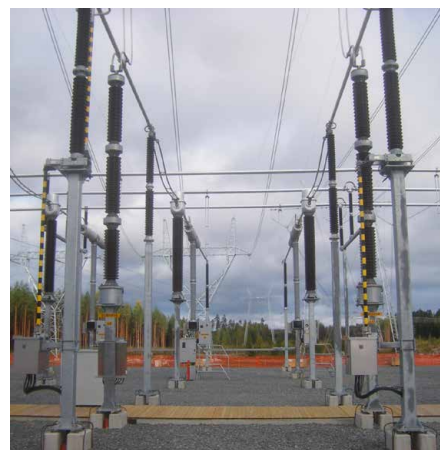
The Artech diagnosis method responds to this need by identifying which capacitor voltage transformers need to be replaced and which do not, thus optimizing costs and maximizing the equipment service life.



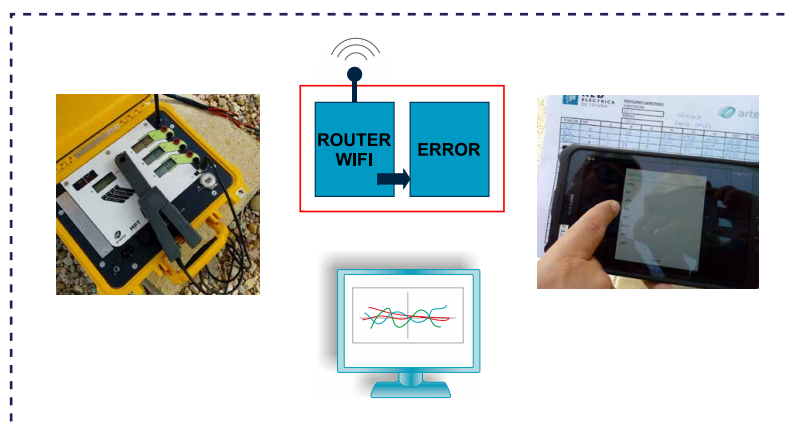
› Compact measurement device

4. Principal advantages of the capacitive voltage transformer diagnosis carried out by Arteche

- › This is conducted in the field while the transformers are in service, that is, without disconnection of the line which affect the normal operation of the electrical transmission service.
- › No risks for personnel as they are not handling loads in the secondary.
- › High reliability in the error measurement, the method has been compared to laboratory results for the analysis of accuracy, capacitance, partial discharges and DGA.
- › Immediate results which allow the service life of the equipment to be estimated and detection of premature ageing.
- › Significant reduction in the cost of maintenance and labour: does not require pattern equipment or line disconnection.



› Access to the Marshall box



› Measurement at substation

5. This method has been verified

This method generates a large database, which permits a better statistical analysis of the results. It determines the ageing of the capacitive voltage transformers and analyses their evolution over time.

The method has been successfully verified with the analysis in more than 95 different substations of almost 3000 transformers and laboratory tests conducted by Arteche for those equipments with presented problems during diagnosis.

6. Conclusion

Arteche offers an alternative to diagnose the insulation status of the capacitive voltage transformers using a reliable, simple method without need of disconnection.

This method enables management of the service life of the capacitive voltage transformers optimizing the costs allocated to maintenance.



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