

General asset management model in the context of an electric utility: application to power transformers

J.L. Velásquez Contreras; M.A. Sanz Bobi; S. Galcerán Arellanos

Abstract-

GAMMEU1 constitutes an integrated approach that covers the different elements related to the asset management of power transformers in the environment of a utility. GAMMEU harmonizes and interrelates all the relevant subsystems of the asset management that normally are studied as individual entities and not as a system. Concretely, GAMMEU consists of a platform for data integration, an intelligent system for detection and diagnosis of failures, a failure rate estimation model, a module of reliability analysis and an optimisation model for maintenance scheduling. In this work, a brief description of the elements of GAMMEU is presented and the implementation of the intelligent system for detection and diagnosis as well as the failure rate estimation model is exemplified using data of measurements performed in real power transformers. A robust anomaly detection module using prediction models based on artificial intelligence techniques was developed for top oil temperature monitoring and the use of decision trees as classifiers for the assessment of FRA2 measurements is also illustrated. For failure rate estimation, the use of a model based on hidden Markov chains is presented using data of dissolved gas analysis tests. The experience obtained from the implementation of part of the modules of GAMMEU using real data has demonstrated its feasibility.

Index Terms- Asset management; Power transformers; Detection; Diagnosis; Failure rate; Maintenance

Due to copyright restriction we cannot distribute this content on the web. However, clicking on the next link, authors will be able to distribute to you the full version of the paper:

[Request full paper to the authors](#)

If your institution has an electronic subscription to Electric Power Systems Research, you can download the paper from the journal website:

[Access to the Journal website](#)

Citation:

Velásquez Contreras, J.L.; Sanz-Bobi, M.A.; Galcerán Arellanos, S. "General asset management model in the context of an electric utility: application to power transformers", General asset management model in the context of an electric utility: application to power transformers, vol.81, no.11, pp.2015-2037, November, 2011.