

Study Committee B3 “Substations”

Terms of Reference Working Group B3-12

Title: Obtaining value from Substation Condition Monitoring

Convenor: A J Mackrell

Members: to be nominated

Background

In recent years there has been an increase in the availability of condition monitoring devices, both stand alone and integrated in protection and control devices, and many claims made for the advantages of condition based maintenance over time based maintenance. However the right choice will vary according to the voltage and other plant factors as well as from one utility to another. The objective of this Working Group is to investigate the technology currently available and to analyse the factors which need to be considered to determine the degree of application which will provide the optimum solution for an individual Utility, taking into account the improved reliability and availability of modern plant.

Scope

The scope will be limited to condition monitoring of conventional substation plant and will exclude monitoring of cables, overhead lines and specialist plant such as SVCs.

The Working Group will:

1. Identify the condition monitoring devices which are currently available
2. Detail the benefits claimed for these in terms of reduced cost of maintenance, reduced forced outages, extended life of assets etc.
3. Gather data from Utilities and Solution Providers on their experience to date, probably by a well constructed questionnaire document.
4. Identify the factors which need to be considered in answering the question -Will this device be cost effective for my network? This is expected to include:-
 - choice of most suitable form of monitoring devices (by using numerical protection and control devices, by purpose designed monitoring equipment)
 - initial cost of monitoring devices
 - cost of labour used for maintenance activities
 - cost of forced outages
 - cost of planned outages
 - life cycle cost of the monitoring devices themselves
 - data analysis tools to avoid data overload
 - training of staff to use the new technology
5. The objective would be to derive an algorithm combining the various factors to assist utilities in making the decision on what aspects of condition monitoring will provide real benefits as opposed to those which simply can be monitored.
6. Disseminate the results through a report and/or paper(s) and through presentation during relevant events
7. Co-operate with other study committees if considered useful and desirable.

Deliverables/time schedule

- Position paper on the output from the initial research and questionnaire: mid 2006

- Comprehensive Report on the factors to be considered and the methodology of combining these to assess the most cost effective solution for individual Utilities, probably as a Technical Brochure: early 2008

Customers

The anticipated customers for the output of this work are Utilities to enable them to make the right decisions for improving the performance of their networks and Solution Providers to assist them in deciding where future development will be more effective. Industrial Plants with critical process controls, and Generators.

Approval by TC Chairman : Aldo Bolza

Date : August 25, 2005