

Life Cycle Management of Substation Equipment and Apparatus Interest Group

The electricity industry is undergoing fundamental change in moving from a regulated monopoly to a competitive industry. Low load growth, over-capacity and uncertainty about the future shape of the industry are creating pressures on the availability of capital and the reduction of operating costs.

Now more than ever, there is a need to optimize the use of existing station plant assets and to develop new, lower cost, more efficient and reliable equipment applications. This new reality is complicated by the fact that a significant amount of station equipment in use today has already accumulated between 20 to 40 years of service. Maintenance costs will rise as the inherent reliability of aging plants starts an inevitable decline.

The objective of this Interest Group is to bring together interested parties to facilitate research that will optimize the life cycle management of substation equipment and apparatus and reduce costs through collaboration of methods, procedures, and practices.

Topics & Issues

Operational Optimization

- On-line Equipment Condition Monitoring to Aid in Predicting Pending In-Service Failures
- Equipment Diagnostics and Maintenance
- Equipment Condition Assessment
- Seek Out, Assess and Implement New Monitoring Technologies.
- Establish "Best Practices" from the Group Expertise

Life Optimization

- Insulation Aging/Deterioration Control
- Validating Tools for Predicting Remaining Life
- Validating Tools for Life Extension of Equipment
- Safety & Environment Preoccupations



Technology Coordinator

Mr. Jack Shaver, P. Eng. leads the Life Cycle Management of Substation Equipment and Apparatus (LCMSEA) Interest Group. Mr. Shaver has over 30 years of engineering experience with Manitoba Hydro in positions ranging from distribution design to apparatus maintenance. In his latest position as Senior Apparatus Maintenance Engineer, he was responsible for developing maintenance standards for substation equipment based on Reliability Centered Maintenance (RCM) in Transmission and Distribution Substations. A graduate of the University of Manitoba, he served as member and Chair of the Manitoba Hydro Professional Engineers Association Safety Committee and was Manitoba Hydro's representative to LCMSEA from 1996 until his retirement in 2003.



Projects for a complete project listing, please visit: www.ceatech.ca/lcmsea

- Optimal Management of Aging Substation Assets: Lifecycle Costs and Repair/Replace Strategies, Phase I
- Substation Equipment Asset Health Index: Breakers
- Substation Design Sharing
- Substation Equipment Failure/Save Database
- LTC Life Evaluation Ranking Factors
- Transformer Repair Facilities and Capabilities
- Review of the State of the Art in Passive and Active Noise Mitigation Technologies for Substation Transformers
- Telephone Zone of Influence Report – Translation of TransÉnergie Report
- Short Circuit Design Requirements for Power Transformers
- Spare Equipment Database
- Continuous On- Line Monitoring and Automated Expert Interpretation
- Total Ownership Costs of Equipment
- SF6 Byproducts- Safety and Clean-up Protocol
- Review and Summary of Key Standards and Guides for Substation Power Transformers
- Optimized Battery and Charger Condition Assessment and Life Extension Phase B
- Station Equipment Life Cycle Decisions, Phase II
- Vibro-Acoustical Condition Assessment and Condition Analysis of LTCs
- Luminol Oil Aging Evaluation
- Wireless Hardware and Software Applications and Requirements for Technologies in High Voltage
- Transmission and Distribution Substations
- Ground Grid Corrosion
- On-Line Condition Monitoring of Substation Power Equipment Utility Needs
- Life Extension of Substations
- Guide for Power Connectors
- End of Life Decision on Circuit Breakers
- Effective Monitoring Technology for Circuit Breakers



Annual Activities

3 Meetings

Technology Watch Workshop

5-7 Conference Calls

Weekly Information Exchange

Participation is open to:

Utilities

Independent Power Distributors

Project Reports

Over the years more than 1300 projects have been completed and published in the fields of:

**Generation; Transmission
Distribution; Utilization**

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