

Hydraulic Plant Life Interest Group

The highly competitive environment in which hydro-electric utilities find themselves places increased emphasis on the need for reduction of both capital investments for equipment and parts replacement, as well as outage time for equipment repair and maintenance.

Return on investment will be protected and enhanced in part by supply side efficiency improvements such as:

- the refurbishment of old, inefficient units resulting in new high efficiency turbines and generators
- the improvement of intake, flow passage and tailrace hydraulics
- the development of better tools and procedures for measuring actual improvements achieved with planned initiatives

Further reduction of capital outlay and the production of low cost energy will require the development of improved maintenance and repair techniques. These techniques will use processes and materials that can extend the life of equipment, procedures that can speed the repair process to reduce outage times and equipment diagnostics and monitoring that can optimize "just in time" maintenance.

Topics & Issues

Intakes/spillways and all manner of generating facility structures and equipment

Plant modernization guidelines and methods

Diagnostics and monitoring of equipment and structures

O & M cost reduction techniques and experiences

Turbine and generator development studies

Plant personnel policies

Risk management



Technology Coordinator

Mr. Alastair Wilson has over 35 years of experience in the operation and maintenance of hydro-electric generating stations. During his career with Ontario Hydro he was responsible for a wide range of technical and asset management work programs including mechanical maintenance, electrical maintenance, water management, the upgrading of turbine generators, development of diagnostic monitoring, performance tests, a reliability outage system and automation of remote plants. As the director of business support for the hydro-electric group, he took charge of business and life cycle planning, as well as benchmarking performance assessment. In the area of environment, he was responsible for implementing due diligence and compliance reporting and obtaining ISO 14000 for OPGI's hydro-electric stations.



Projects

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

- Surface Deterioration and Effect on Performance
- Optimum Timing for Generator Rewinds
- Life Cycle Management of Hydro Plant Assets
- Development of the Exit Stay Apparatus for Francis Turbines
- Low Head Flow Measurement Working Group
- Hydro-Electric Turbine Generator Units - Guide for Erection Tolerances and Shaft System Alignment

Technology Review Program

2005 Initiatives

- CFD For Environmental Impact Assessment
- Technology Applications to Reduce Operation and Maintenance
- Effectiveness of Condition Based Maintenance to Improve Asset Availability
- Life of Digital Equipment
- Innovative Approaches to Staff Management
- Site Security – Technology/Safety/Booms/Signs/Fencing/Regulatory Programs
- Fire Protection and Suppression
- Guidelines for the Preparation of Reservoir Debris Management Plans

Risk Management

- Alternate Approaches in the use of Risk Management for Life Extension and Modernization of Hydro Plants
- Risk Management – A Snapshot of Industry Practice
- Hydro Plant Management Key Performance Indicators
- Strategic Vision for Hydro Generation

Turbine Oils

- Industry Survey of Turbine Lubrication Oils in Hydro Plants
- Operating Requirements for Biodegradable Oils and Greases in Hydro Plants
- Use of Biodegradable Oils and Greases in Power Plants

Technology

- State-of-the-Art of CFD Based Feasibility Studies for Water Turbines
- Hydro-Electric Coating Strategies for Corrosion Prevention
- Teflon-Coated Thrust Bearing Pads
- Maintenance Measures for Intake Gates and Penstocks
- On-Line Monitoring for Hydro Units
- Penstocks and Turbine Water Passage Hydraulic Smoothing
- Reliability of Discharge Facilities
- Self-Lubricating Materials for Hydraulic Turbines
- Methods to Assess Equipment Condition
- Innovative Ways to Get More Value from Existing Hydro Plants

Ancillary Services

- Cost of Start-Stop Operations
- Cost of Producing Ancillary Services



Annual Activities

2-3 Meetings

1-2 Workshops

5-7 Conference Calls

Weekly Information Exchange

Participation is open to:

Hydro-Electric Utilities

Independent Power Producers

Agencies that possess hydro-electric generating facilities

Project Reports

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

Generation; Transmission Distribution; Utilization

For a complete listing, please consult our website.

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