

# Asset Condition & Maintenance Management

Today's utility environment includes expectations of higher reliability, lower costs and increased earnings, increased investment in environmentally friendly technologies, rapid fuel price escalation, and the challenge of aging in both the workforce and the utility infrastructure. One result of these issues is the pressure to extend the life of existing power delivery assets through better understanding of condition of the assets, knowledge of operational issues that significantly impact the remaining life of the assets, and implementation of maintenance practices to support the operating objectives. Quanta Technology experts provide services to evaluate the current condition of power delivery assets such as power transformers, circuit breakers, and other substation infrastructure to assist utilities in their decision processes around capital equipment operations, refurbishment, and replacement. Our experts can conduct comprehensive evaluations and tests of existing equipment to quantify current levels of risk to continued operation and assist companies in developing a comprehensive equipment strategy.



**Transformer Analysis.** Comprehensive analysis of operating and test data on transformers can provide a wealth of information on the remaining life of the unit as well as any imminent risk of failure. We can perform the analysis to evaluate and define the condition of the unit. This work includes:

**Loading Analysis:** Loss of life calculations based on various test results and performed in compliance with IEEE standard C57.91-1995 can provide clients with remaining life of insulation information to help in the assessment of overall transformer condition and loading capability. Our expert testing and analysis in this area has helped companies with asset investment planning as well as saving units from early failure.

**Predictive Testing:** In order to fully assess transformer condition, Quanta Technology can conduct a number of field tests, the results of which will be used in the comprehensive loading and risk of failure analyses. The typical tests conducted include:

- Visual inspection
- Ultrasonic/Partial Discharge analysis
- Vibration analysis of main tanks and pumps
- Infrared thermography
- Acoustic emission and noise analysis
- Cooling system analysis

**Maintenance Management.** The limited resources, both financial and human, that companies have to dedicate to infrastructure operation and maintenance no longer support the traditional time-based inspections and overhauls of major equipment. More efficient programs based on equipment condition and reliability are required to ensure reliable performance with optimal service intervals. Using our industry and equipment knowledge we can assist our clients in defining and implementing a maintenance program that is based on current equipment condition, age, duty, and other operational factors that define the maintenance requirement.

**Training.** Our instructors have taught courses throughout the industry on all aspects of equipment testing and condition analysis. Training courses can be tailored to the specific needs of each utility, but commonly include one or more of the following topics: maintenance program management, key performance indicators for equipment operation, maintenance systems and processes, root causes of failure, major events, aging infrastructure analysis and impacts, equipment life extension, and cost-to-benefit analysis.



**About Quanta Technology.** Quanta Technology LLC provides expert-based management and technical consulting for utilities, heavy industry, and related entities. It is a wholly-owned subsidiary of Quanta Services (NYSE: PWR). Quanta Services, employs about 18,000 people and is both the largest union contractor and non-union contractor for the electric utility industry in North America.

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