



2012 Symposium: Managing Plant Assets and Performance
Sheraton Sand Key Resort, Clearwater Beach, Florida
January 17-20, 2012

Tuesday Workshops

A. Heat Rate Assessment: “What do I look at today to improve plant performance?” – 8 hours

1. Instructor: Marcus Caudill, Scientech Principal –

Marcus has over twenty five years of mechanical engineering experience in plant performance assessment, testing and heat rate analysis, system process modeling, data validation, project management, and computer code development. He specializes in identification and quantification of efficiency and capacity losses for reducing heat rate, increasing power production and minimizing emissions.

Marcus has developed and implemented methodology for numerous performance optimization projects. The projects typically benchmarked plant performance using existing information, made recommendations for improvement based on a physical plant assessment, and then updated the benchmark after improvements were completed. This process was carried out successfully at approximately 15 generating facilities and resulted in significant gains in unit efficiency.

2. The Business Case

As the utilities continue to experience an increasing competitive environment; and, at the same time realize increasing energy costs and stricter clean air regulations, it is essential that best practices are implemented to optimize unit efficiencies and reduction of production costs. Since fuel cost is typically 75 to 90 percent of production costs, a small reduction in heat rate translates into a significant dollar saving. And a reduction in heat rate will have an equally corresponding reduction in greenhouse gases (GHG).

The workshop will provide knowledge that enables operational excellence with a sustainable increase in performance efficiency and asset utilization with minimal impact on current staffing.

3. Workshop Syllabus

The workshop is a one-day overview of a week-long class and will cover heat rate best practices for improved power plant efficiency and fuel cost reduction. The heat rate improvement training proposed is designed to teach engineers in the elements of heat rate and the impact their jobs can have on improving heat rate and reducing operating costs and emissions, e.g., "What do I look at today to improve plant performance?"

Included will be heat rate consciousness, process diagnostics, real-time performance monitoring and control, and operator support. The focus will be on developing an understanding of the heat rate effects of operating practices, unit optimization, and environmental compliance.

The one-day class is an overview of the performance assessment process that will cover how to analyze an existing power plant's performance and heat rate program as noted in the steps below. It will discuss the first level assessment methodology that leads to a more in-depth assessment.

- Component performance on operating costs
- Cycle Isolation,
- Instrumentation effects on heat rate,
- Controllable and non-controllable losses,
- Preventative maintenance,

4. Who Should Attend

This workshop is designed for power plant and corporate engineers, and operations supervision who have a direct impact on operating practices and procedures. The participants should have a working knowledge of the power cycle and power plant thermodynamics.

B. Asset Performance Management: Elements, Analytics and Tactics -- 8 hours

1. Instructors: Gary Johnston, Account Executive and Joel Barger, Project Director – Meridium

Gary Johnston is a senior staff member at Meridium, including the position as Vice President of Channel Solutions. Currently, Gary is an Account Executive responsible for sales in the utility industry as well as oil and gas and new market segments. Prior to joining Meridium, Gary worked at SAP America where he was solutions principal for the public services, utilities and telecommunications and discrete manufacturing sectors. He was responsible for defining and implementing solution strategies for the Supply Chain Management and Project Lifecycle Management solutions in the industries he served.

Joel Barger is Meridium's Project Director responsible for the Utilities market. A registered professional engineer with more than 28 years of experience, Joel's engineering consulting experience includes work in the chemical, oil and gas, pipeline, electronics, power, paper, textile, steel, machine tool and aerospace industries as well as work for the U.S. Navy and Air Force. His previous experience includes: Regional Mechanical Engineer for the Power Generation Service Division of the Westinghouse Electric Corporation; Manager of Power Plant Diagnostic Services for Computational System Incorporated; and Predictive Maintenance Leader for Houston Lighting and Power. He is the founding Chairman of EPRI's Predictive Maintenance Advisory Group and a former member of the Texas A&M Turbomachinery Advisory Committee. During his last ten years with Meridium, he has managed reliability and asset management projects for Chevron, DuPont, ExxonMobil Chemical, Luminant (formerly Texas Utilities) and Xcel Energy. He was co-designer of Meridium's first RCM/FMEA application and is the Product Manager for Meridium's new Generation Management solution.

2. Syllabus

This one day workshop will cover the basic elements for a successful Asset Performance Management (APM) initiative, beginning with asset criticality analysis, asset health indicators, on-line analytic and EAM interfaces, and essentials for good recommendation management. With a number of interactive exercises, the workshop will then focus on failure elimination and cover how to tactically identify and solve existing asset performance problems, setting up proper metrics and scorecards, using input from Scientech solutions (PdP, PEPSE and PMAX), and how root cause analysis is employed to quickly and effectively resolve issues.

Attendees will learn how asset strategies should be focused on proactive plans that are risk-based and optimized. Lectures will discuss how proven strategy-development methodologies must be employed to assess asset failure risks and balance resource investments to effectively mitigate those risks. The resultant strategies should then be integrated to work management systems and condition based systems for both condition and time-based activities, including mobile surveillance of asset condition. Attendees will learn how asset performance should be evaluated to determine the overall

effectiveness of the program, thus enabling a continuous improvement loop.

3. Who Should Attend:

Asset Managers and system engineers responsible for asset management and condition based monitoring who are involved with proactive planning to achieve improvements in power plant performance and availability using advanced technology and practices.

C. Asset Management Program: An Implementation at Nova Scotia Power – 4 hours

1. Instructor: Rob McNeal, Nova Scotia Power

Rob is Senior Technical Advisor of Technical & Construction Services at Nova Scotia Power and responsible for the Generation Fleet Management Program.

NSP owns and operates over 2,300 megawatts of generation fueled by a mix of renewable energy sources and fossil fuels. The generating fleet includes five thermal, one tidal and 33 hydro generating facilities, as well as seven combustion turbines, one combined cycle unit and a growing fleet of wind turbines.

2. Course Syllabus

The half-day workshop will describe the asset management program at NSP that includes strategy, principles, key elements and hierarchy, education, staff functions and responsibilities, status and lessons learned. An opportunity will be given for workshop attendees to discuss with Rob the asset management program at NSP as it pertains to change management and the staff: engineering, operations, maintenance and management. A history of the program will be presented with the implementation methodology to date with future plans for sustainability and moving ahead.

The asset management program at NSP is a management system, including:

- Initiate prescriptive actions across the fleet, e.g., activities, roles, measures and KPIs
- Set asset classes for the reliability program
- Establish asset performance and condition monitoring to guide activities
- Invoke continuous improvement as inherent

Key elements include:

- Asset life planning, i.e., regular condition assessment, long range planning (investment and outage); integrates planning across asset classes; and is business strategy informed.
- Consistent and transparent approach, i.e., prescribed activities must be completed (PMs, Routines, LCM.....) and measures to regularly monitor compliance are built in to process.

The asset management program leverages emerging technology

- Advanced technology plays an increasing role in monitoring asset performance and condition
- Initiates work activities and advises operations
- Determines asset health
- Assists condition assessment and risk rating

The Work Management and Asset Management are integrated processes

- Work activities are defined by Asset Class Plans (PM,LCM, Operations Routines, CBM,M&D)
- Asset Planning relies on information from work activities

3. Who Should Attend:

Management, including asset managers and system engineers responsible for asset management and condition based monitoring who are involved with proactive planning to achieve improvements in

power plant performance and availability using advanced technology and practices.