

Title: Utility Cost Savings In Refineries & Chemical Plants

Potential PDH: 16

Code: BTT056

Description:

The program will cover proven design and operating practices for cost-effective retrofit measures to reduce fuel + power utility costs by 15-40%, typically by about \$1-1.50/bbl. The presentations begin with an overview of current trends in energy efficiency and refinery economics, followed by detailed discussions on how to optimize the efficiencies of fired heaters, boilers, gas turbines + HRSG's, steam turbines and cooling water systems. In addition, strategies for efficiently integrating sitewide utilities systems will be covered. Finally, case studies will be presented to illustrate the benefits that can be achieved through these upgrades.

The program will be presented by Mr. Jimmy D Kumana, who is an internationally recognized expert and published author in the field of practical process energy optimization, and who has led dozens of such training courses over the world. Illustrative examples are based on Mr Kumana's personal experience on real projects; spreadsheet software will be distributed on a flash drive for the working sessions.

Outline:

INTRODUCTION

- Industry Trends – Renewables, Electric Vehicles, Product Slates
- Refinery Economics

FIRED HEATERS

- Efficiency Calculation
- Efficiency Improvement Capacity Debottlenecking
 - Flue Gas O2 Control
 - Economizers>
 - Waste Het Boilers
- Capacity Debottlenecking

BOILERS

- Efficiency Calculation
- Efficiency Improvement
 - Integrated System Design
 - Optimized Operation

GAS TURBINES + HRSGs

- System Configuration Options
- Performance Analysis
- Performance Improvement Steam Injection
 - Inlet Air Cooling
 - Integration with Furnaces
 - Integration with Boilers
 - Network Load Management
- Steam Injection

STEAM TURBINES

- Configuration Options

Course Content

- System vs Machine Efficiency
 - Performance Analysis Performance Improvement
 - Mollier Diagram
 - Spreadsheet Simulation Model
 - Operating Constraints
 - Performance Improvement
- COOLING WATER
- Typical CW Networks
 - Optimized CW Network
 - CW Pump Driver Selection
- SITEWIDE UTILITY SYSTEMS INTEGRATION
- Composite and Grand Composite Curves
 - The Pinch Principle
 - Optimum Energy Integration of Utilities
 - Total Site Utilities Selection
 - Utility System Simulation Modeling
- CASE STUDIES
- Chemical Plant – Gulf Coast, USA
 - Oil Refinery – Southwest USA

Instructor:

Jimmy D. Kumana has over 40 years of experience in the areas of process design and energy optimization. He worked for both manufacturing and engineering design companies before establishing Kumana & Associates, specializing in optimization techniques for energy efficiency. He has been a consultant to Blue-Chip companies world-wide including Amoco (now BP), ConocoPhillips, Pemex, PetroChina, Tesoro (now Marathon), Saudi Aramco, Dupont, Ineos, Lubrizol, Monsanto, Solutia (now Eastman Chem), Union Carbide (now Dow), Mitsubishi Heavy Industries, SABIC, and SASOL. He has also been a consultant to energy utilities including EPRI, GRI, Southern Cal Edison, Xcel Energy, Southern Cal Gas and Dubai Supply Authority, as well as to the US Dept of Energy, Egyptian Ministry of Petroleum and Minerals, the World Bank (IFC), and UNIDO. He has authored or co-authored over 70 technical papers and book chapters and was the instructor for AIChE's course on Heat Recovery Optimization for many years. Mr. Kumana holds an M.S. degree in Chemical Engineering from the University of Cincinnati.