



Heat Rate: Optimizing Your Power Plant

Heat rate is the common measure of system efficiency in a power plant. The heat rate is a measure of the combined performance of the gas turbine cycle, steam turbine cycle, and any other associated auxiliaries. This two and one-half day course introduces the basic characteristics of heat rate and provides instruction on how to calculate heat rate and describes the fundamentals of heat rate and the impact of changing heat rate on operating costs.

I. Heat Rate Basics

- A. What is Heat Rate?
- B. Plant Heat Rate
- C. Conversion Factors for Standard Cubic Foot (scf) to Pounds Mass (lbm)
- D. Why is Heat Rate Important?
- E. Heat Rate Deviation
- F. Cost of Heat Rate Deviations

II. Gas Turbine

- A. Gas Turbine Theory
- B. Gas Turbine Components
- C. Air Inlet Equipment
- D. Compressor
- E. Combustion Section
- F. Turbine Section

III. Boiler

- A. Boiler Efficiency
- B. Boiler Degradation
- C. Fuel Issues
- D. Environmental Concerns
- E. Maximizing Boiler Efficiency

IV. Heat Recovery Steam Generator

- A. HRSG Cycling
- B. HRSG Thermodynamics
- C. HRSG Design
- D. Steam Generation
- E. Duct Burners
- F. Stack Temperature
- G. Selective Catalytic Reduction (SCR)

V. Steam Turbine

- A. Steam Turbine Types
- B. Turbine Efficiency
- C. Turbine Cycle Heat Rate
- D. Steam Turbine Degradation
- E. Controlling Turbine Efficiency

VI. Miscellaneous Major Equipment

- A. Feedwater Heater
- B. Condenser
- C. Cooling Tower (Heat Rejection)
- D. Miscellaneous Equipment
- E. Optimizing Heat Rate and Efficiency