



STEAM SYSTEM Assessment

Course Introduction:

Steam systems often constitute a large portion of an industrial site's utility bill but on many sites, little attention is paid to how efficiently these systems are run. There are various optimization opportunities which exist within a steam system that can lead to large financial savings. Some of these options do not even require significant investments to be made.

This training aims to provide delegates with a fundamental understanding of steam systems and their components, as well as the thermodynamic principles that govern their operation. Using these principles and a "systems" approach, optimization opportunities within the system can then be identified and quantified.

Course Objectives:

Upon successful completion of this course, the delegates will be able to:

- ✓ Understand steam system fundamentals and assessment
- ✓ Analyze steam generation and steam distribution
- ✓ Explain steam end use and cogeneration
- ✓ Describe condensate recovery

Who Should Attend?

This course is designed for all engineering and technical personnel who wish to gain a better understanding of steam systems and the optimization opportunities which exist within them.

Course Outline:

Day 1:

- Steam System Fundamentals
- Overview of energy
- The systems approach
- Steam system fundamentals:
 - Steam system components
 - Thermodynamics of steam
 - Conservation of mass o Conservation of energy
 - Fuels o Steam system optimisation opportunities

Day 2:

- Steam Generation
- Steam generation costs
- Steam generation efficiency
- Shell losses (radiation and convection)
- Blowdown loss
- Stack loss
- Best practices in generation

Day 3:

- Steam Distribution
- Losses in distribution
 - Steam leaks
 - Heat transfer losses – insulation
- Best practices in distribution
- Steam End-Use & Cogeneration
- Steam end-use o Steam demands
 - Heat exchangers
 - Thermocompressors
 - Absorption chillers
- Steam turbines
- Best practices in end-use and cogeneration

Day 4:

- Condensate Recovery
- Steam traps
 - Types of steam traps
 - Steam trap management programme
- Condensate recovery
 - Introduction
 - Evaluation of condensate recovery systems
- Best practices in condensate recovery

Day 5:

- Conclusions
- Steam system energy assessments
- Key points/take-aways
- Tools & resources for steam system evaluations

- Assessment Terms
- Group Discussion

Post Test

End of Course

Course Certificate:

International Center for Training & Development (ICTD) will award an internationally recognized certificate(s) for each delegate on completion of training.

Course Methodology:

A variety of methodologies will be used during the course that includes:

- (30%) Based on Case Studies
- (30%) Techniques
- (30%) Role Play
- (10%) Concepts
- Pre-test and Post-test
- Variety of Learning Methods
- Lectures
- Case Studies and Self Questionnaires
- Group Work
- Discussion
- Presentation

Course Fees:

To be advised as per course location. This rate includes participant's manual, hand-outs, buffet lunch, coffee/tea on arrival, morning & afternoon of each day.

Course Timings:

Daily Course Timings:

08:00 - 08:20	Morning Coffee / Tea
08:20 - 10:00	First Session
10:00 - 10:20	Recess (Coffee/Tea/Snacks)
10:20 - 12:20	Second Session
12:20 - 13:30	Recess (Prayer Break & Lunch)
13:30 - 15:00	Last Session