



STEAM SYSTEMS

Single Class Capacity: 12
Duration: 3 Days - 24 Hours

A steam system uses steam boilers to generate steam within a heat system to do industrial work such as turning a turbine to produce electricity, processing materials like food or fiber, or heating a building.

This course covers steam as a system and process. Recognizing that a boiler is a step in the process and not the whole process, students will learn about traps, distribution systems, steam system joints, common maintenance issues and how to diagnose them, steam system safety. Students learn how to audit and document the steam system to maintain optimal safety, performance, and energy efficiency.

WHAT THIS COURSE COVERS

- Understand Steam within a "SYSTEM \ Process"
- Understand that a Boiler is a "step in process", not the whole process
- Concepts and Terminology
- Component parts and the functionality of the parts:
 - Traps
 - Distribution systems
 - Steam vessels and rotary steam joints
 - Heat distribution
 - Transfer to condense\condensation
 - Return condensate to boiler for re-use
- Steam System Safety Theory
- Steam System Safety Audit
 - Traps
 - High Pressure Vessel

COURSE OUTCOMES

- Student will understand the different types of Steam Systems.
- Students will describe Steam System
- Students will be able to perform a Steam System Safety Audit

WHO SHOULD TAKE THIS?

- Boiler Operators
- Anyone who has a daily use of a steam system.



Every NTT course is eligible for CEUs (or Continuing Education Units) with your governing board approval or your states

STEAM SYSTEMS

Single Class Capacity: 12
 Duration: 3 Days - 24 Hours

COURSE AGENDA

PRETEST

UNDERSTANDING THERMODYNAMICS OF STEAM

- What is steam.
- Def of BTU
- Entropy – Steam table
- Heat Transfer
- Superheat

BOILER OVERVIEW

- What is a Boiler
- Boiler Types
- Controls – Overview
 - Flame safeguard
 - Water level

STEAM SYSTEM APPLICATIONS and SYSTEM COMPONENTS

- Oil & Chemical Refinery
- Food - Heat Exchangers - Cooking
- Facility general - Heat for building
- Major Metro Cities and Airports - STEAM Distribution Systems
- Industrial Laundry
- Animal Feed Mill

STEAM TRAPS

- Types and Design
 - Inverted bucket
 - F and T
- Thermostatic
- Pumping

TEMPERATURE MEASUREMENT

- Equipment used

COMPONENTS

- Rotary Steam Joints
- Steam Shower
- Pipes and Valves
- Temperature control valves

CONTROL VALVES

- Types and Design

STEAM SYSTEM AUDIT

- Check List Report

ENERGY IMPROVEMENT

- Activities to improve energy use
- Equipment to improve energy use

POST TEST

- Course Evaluations

*** REQUIRES CLIENT SUPPLIED EQUIPMENT AND MATERIALS**

OPTIONAL - HANDS ON LAB EXERCISES

- Rebuild steam traps
- Thread pipes

STEAM SYSTEMS

Single Class Capacity: 12
Duration: 3 Days - 24 Hours

EQUIPMENT & MATERIALS

NTT TO PROVIDE

- 3-days (24 contact hours) of on-site instruction
- Textbooks and lab manuals
- Classroom consumables
- Completion certificates
- Shipping, instructor fees and travel expenses

CLIENT TO PROVIDE

- Classroom, with easy access, of 900 square feet or greater.
- Projection screen, white board and/or flip chart(s).

