

## Utility Boilers Z TPU-02

### Duration

Five days 25 Hours

### Who should attend?

Plant operators and graduated engineers with no or little experience in operation of utility boilers

### Language

Arabic , English



### Overview

This course will discuss the theory how a boiler works and the principles how a boiler is operated and controlled (normal operation modes as well as start-up and shut-down procedures, troubleshooting of emergency and malfunction situations) Participants will be able to control and operate a generic model of a typical drum-type boiler widely used in oil refineries and petrochemical plants for steam generation in a simulated control room environment (DCS) and will be able to solve problems when confronted with typical malfunction and mal-operation incidents (troubleshooting)

### Topics

- Application of boiler :
  - Types of boiler
  - Boiler components: Detractor and feed
  - water system
  - Drum, water circulation and heating system
  - Superheated and heat recovery system
  - Combustion system
  - Draft system
  - Steam distribution system
- Boiler performance :
  - Burner characteristics
  - Combustion air
  - Damper and air registers
  - Fuel characteristics
- Boiler control system :
  - Three elements level control
  - Steam temperature control
  - Steam pressure control
  - Fuel control
  - Total calorie (BTU) control
  - Combustion air control

- Oxygen control ;Cross limit control
- Normal operation
- Start-up and shutdown operations
- Purge, trips and interlocks
- Troubleshooting
- Combustion condition
- Leakage
- Soot
- Instrument errors
- Simulator exercises will include:
  - Control Exercises
  - Boiler Outlet Steam Pressure Control
  - Boiler Steam Drum Level Control
  - Operating Procedures
  - Start-up Operations
  - Shutdown Operations
  - Load Changes
  - Troubleshooting and Emergency Operating Procedures
  - Feed Water Flow Control Valve Fail Open
  - Boiler Inlet Air Flow Transmitter Failure