

Syllabus For BOILER OPERATOR(RPL)

Course Name	BOILER OPERATOR(RPL)
Sector	CONSTRUCTION
Course Code	CON/2021/BOOP/035
Level	4 (RPL)
Occupation	BOILER OPERATOR
Course Duration	Total Duration 60 Hrs (T-12 , P-48)
Trainees' Entry Qualification	Class VIII Pass with 5 years experience in the relevant field
Trainers Qualification	ITI in relevant trade from a recognized institute with 5 years experience in boiler operations or Degreee / Diploma in Mechanical Engg. with 3 years experience in boiler operations

SYLLABUS:

THEORY

MODULE 1

INTRODUCTION:-

04 HRS.

**DEFINITION OF BOILER,
CLASSIFICATION OF BOILER:- FIRE TUBE AND WATER TUBE BOILERS.
STUDY THE DIAGRAM OF A WATER TUBE BOILER, SHOWING THE DIFFERENT PARTS.**

MODULE 2.

04 HRS.

STUDY OF THE DIFFERENT PARTS OF A BOILER (LOCATIONS AND FUNCTIONS):-

1. WATER LEVEL INDICATOR;
2. PRESSURE GAUGE;
3. SAFETY VALVE;
4. STEAM STOP VALVE;
5. FEED CHECK VALVE;
6. FUSIBLE PLUG;
7. BOILER FEED PUMP;
8. ECONOMISER;
9. SUPERHEATERS;
10. AIR PREHEATER.
11. FORCED DRAFT FANS.

MODULE 3.

04 HRS.

WORKING PRINCIPLE OF BOILER:-

STEAM GENERATION PRINCIPLE i.e. CONVERSION OF WATER TO STEAM. WORKING PRESSURE AND TEMPERATURE OF STEAM GENERATION. PROPER MONITORING OF STEAM PARAMETERS; FUEL FEEDING AND FUELS USED.

PRACTICAL

48 HRS.

MODULE 4.

40 HRS.

- A) START UP OF BOILERS AND SHUT DOWN OF BOILERS.
SEQUENTIAL STARTING OF BOILERS.
PLANNED SHUT DOWN AND EMERGENCY SHUT DOWN PROCEDURE.

B) TROUBLESHOOTING:-

SL. NO	TROUBLE/ABNORMALITIES	CAUSES	REMEDIES
1.	LOW DRUM WATER LEVEL (WATER LEVEL INDICATOR WILL SHOW)	BOILER FEED PUMP NOT WORKING PROPERLY/ANY INTTERUPTION OF FEED WATER SUPPLY.	CHECK THE DISCHARGE PRESSURE OF BOILER FEED PUMP. ANY LEAKAGE IN THE FEED WATER LINE. IF THERE IS ANY PROBLEM IN FEED PUMP;STANDBY PUMP SHOULD BE STARTED.
2.	HIGH DRUM WATER LEVEL.	SUUDEN CHANGE IN STEAM GENERATION RATE, FEED PUMP DISCHARGE TOO HIGH	DRUM DRAIN VALVE SHOULD BE OPENED IMMEDIATELY. FEED PUMP BY PASS VALVE SHOULD BE OPENED IF PUMP DISCHARGE IS TOO HIGH.
3.	FURNACE INSTABLE.	FURNACE DRAFT IS POSITIVE i.e. THE FAN DISCHARGE IS TOO HIGH. PROPER BURNING & FEEDING OF FUEL IS NOT DONE	FURNACE DRAFT TO BE MAINTAINED SLIGHTLY NEGATIVE. FORCED DRAFT FANS TO BE CHECKED PROPERLY i.e. DISCHARGE PRESSURE. FEEDING OF FUEL SHOULD BE CONTINUOUS. COMBUSTION OF FUEL SHOULD BE COMPLETE.
4.	FUEL FEEDING PROBLEM	THE HOPPER & THE DUCT LINE FOR FUEL FEEDING GETTING JAMMED;	HOPPER AND THE RELATED PIPELINES SHOULD BE CLEANED AT REGULAR INTERVALS.

5.	COMBUSTION INCOMPLETE	CONTINUOUS FEEDING GETTING INTERRUPTED.	FEEDING SHOULD BE CONTINUOUS.
		AIR SUPPLY INCREASES.	EXCESS AIR SHOULD BE CONTROLLED PROPERLY.
6.	FORCED DRAFT FAN TRIPPING	FAN BEARING TEMPERATURE TOO HIGH. FAN MOTOR OVERLOAD	BEARING TEMPERATURE TO BE CHECKED AND LUBRICATION TO BE DONE AT REGULAR INTERVALS. MOTOR OIL TO BE CHECKED AND ELECTRICAL FAULT SHOULD BE DETECTED.
7.	BOILER FEED PUMP TRIPPING	PUMP BEARING TEMPERATURE TOO HIGH.	LUBRICATION TO BE DONE AT REGULAR INTERVALS.
8.	BOILER TUBE LEAKAGE	FLUE GAS TEMPERATURE TOO HIGH. DUST PARTICLES DEPOSITION OVER TUBE SURFACES.	FEEDING OF FUEL TO BE CONTROLLED. SOOT BLOWING TO BE DONE TO REMOVE DUST DEPOSITION OVER TUBE SURFACES TO INCREASE HEAT TRANSFER RATE.

MODULE 5

SAFETY:-

04 HRS.

SAFETY PRECAUTIONS TO BE ADOPTED DURING BOILER OPERATION. DIFFERENT SAFETY EQUIPMENTS USED BY THE OPERATOR– HELMETS, GLOVES, BOILER SUITE, SHOES ETC.

SAFETY DEVICES IN BOILER- TYPES OF SAFETY VALVES, WATER LEVEL INDICATOR, PRESSURE GAUGE, TEMPERATURE GAUGE.

FIRE FIGHTING EQUIPMENTS- FIRE EXTINGUISHERS i.e. DRY TYPE, FOAM TYPE, CO2 TYPE ETC.

SAFETY TRAININGS TO BE CONDUCTED FOR THE OPERATING PERSONNEL AT REGULAR INTERVALS

