Revised Apprentice for Lead Operator – Second Class Power Plant Engineer

STATIONARY ENGINEER
DOT CODE: 950.382-026
AIMS CODE: 0536

DESCRIPTION:
Operates and maintains turbines and mechanical equipment, such as steam turbines, gas turbines, air compressors, generators, heat recovery steam generators and steam boilers to provide utilities, such as light, heat or power for buildings and industrial processes: Reads meters and gages or automatic recording devices at specified intervals to verify operating conditions. Records data, such as temperature of equipment, hours of operation, fuel consumed, temperature for pressure, water levels, analysis of flue gases, voltage load, and generator balance. Adjusts manual controls or overrides automatic controls to bring equipment into recommended or prescribes operating ranges, switch to back-up equipment or systems, or to shut down equipment. Visually inspects equipment at periodic intervals to detect malfunctions or need for repair, adjustment or lubrication. Maintains equipment by tightening fittings, repacking bearings, replacing packing glands, gasket, valve recorders, and gages and cleaning or replacing burners or other components, using hand and power tools. Will be required to obtain a Second Class Engineer license issued by State of Massachusetts according to CMR 146. Will be required to obtain a 2I Full Active Waste Water certificate. May oil and lubricate equipment. May perform water titration tests and pour chemical additives, such as water softeners, water deminerlizers, water RO units, into treatment tank to prevent scales build-up and to clean boiler lines. May record operation and maintenance actions taken during shift in operator's logbook.

WORK PROCESS SCHEDULE:
The apprentices shall be rotated through the following work processes, with the sponsor making work assignments based on the target hours specified in each of the work processes. The work assignments will consist of rotating shift assignment. The term of apprenticeship shall be based on the apprentice's comprehension of the occupation with a minimum of 6000 and a maximum of 8000 hours of supervised on-the-job training.

ON-THE-JOB TRAINING APPROXIMA TE HOURS
MINIMUM MAXIMUM

A. Plant Equipment Operations 3800 hrs

Boilers – 400 hrs
Heat Recovery Steam Generators – 200 hrs
Continuous Emission Monitoring - 200 hrs
Air compressors – 100 hrs
Feed pumps – 100 hrs
Fans motors – 100 hrs
Gas Compressor – 150 hrs
Regulation water and steam pressure – 200 hrs
Water Treatment Systems – 250 hrs

Gas Turbine – 500 hrs
Steam Turbine – 400 hrs
Fuel Oil Storage and Transfer Systems – 100 hrs
Natural Gas Supply Train – 100 hrs
PLC Control Systems – 250 hrs
Ammonia Injection system – 250 hrs
Electrical Systems – 500 hrs

B. Lubrication 1400 hrs

Diesel Engine – 200 hrs
Turbines – 200 hrs
Pumps – 200 hrs
Gas Compressor – 200 hrs
Generators – 100 hrs
Motors – 200 hrs
Air compressors – 100 hrs
Dampers – 200 hrs

C. Inspection 900 hrs

Bearing on all moving parts of equipment Valves Gages Temperatures Pressures

D. Maintenance – (Minor Repair) 900 hrs

Boiler Refractory – 100 hrs
Motors – 100 hrs
Air compressors – 100 hrs
Feed Pumps – 100 hrs
Gas Compressor – 100 hrs
Fuel Oil Storage and Transfer Pumps – 100 hrs
Water Treatment Systems – 100 hrs
Steam Lines and Traps – 100 hrs
Welding and brazing – 100 hrs

E. Cleaning 500

Boilers – 100 hrs
Gas Turbine Air Pre Treatment Filter System – 100 hrs
Fuel Oil Centrifuge – 100 hrs
Storage Tanks – 100 hrs
Deminerlizer Regeneration – 100 hrs.

F. Reports 500

Fuel consumption – 100 hrs
Power & heat output – 100 hrs
Emissions – 100 hrs
Water Treatment – 100 hrs
Environmental – 100 hrs

MINIMUM MAXIMUM TOTAL 6500 hrs - 8000 hrs

RELATED TECHNICAL Instruction:

The commonwealth of Massachusetts requires 150 hours each year of related technical instruction which must be mastered by the apprentice in order to successfully complete the program. The following is a general list of instruction topics for this trade. For further information, please call the Division of Apprentice Training at (617) 626-5409.

- Practical Mathematics, formulas, areas, volumes
- Types of steam boilers – A.S.M.E. & O.S. codes
- Boiler mounting and details
- Pipe fitting, Flow of Steam and water
- Boiler furnaces, stokers, and fans
- Super heaters, Economizers, waterwalls
- Reciprocating and centrifugal pumps
- Heat, properties of water & steam, tables
- Feedwater heaters and evaporators
- Combustion elements of fuels
- Boiler management and inspection
- Furnace efficiency and flue-gas analysis
- Steam engines, valves gear and valve setting
- Steam turbines
- Condensers
- Power plant economics
- Air compressors
- Feedwater and feedwater treatment
- Heat balance of complete power plant
- Lubricating systems
- Electricity and electrical machinery

Required Schools

1. National Association of Power Engineers Second Fireman Course (meets once a week at night for six months)
2. National Association of Power Engineers First Fireman Course (meets once a week at night for six months)
3. National Association of Power Engineers Third Engineer Course (meets once a week at night for six months)
4. Peterson School Second Engineer Course (meets twice a week at night for nine months)
5. New England Interstate Pollution Control Commission 2I Waster Water License Preparation Course (meets once a week during day for six weeks)

Massachusetts Dept. of Labor and Workforce Development Division of Apprentice Training
165 Liberty St.
Springfield, MA 01103-1118
Tel: 413.732.1139
Fax: 413.784.1144
e-mail:
moonefrankr@yahoo.com