

Bharat Heavy Electricals Limited
Ramachandrapuram : : Hyderabad – 502032
M&S – DIVISION
SCOPE OF WORK (ANNEXURE-I)

Tender No.: M&S/P&S/2021/55, Dt.: 28.10.2021

Name of Work: Annual Cleaning, Minor repair for leaks and renewal of Certificates for 4TPH, 20TPH & 30TPH Boilers and connected steam lines.

DESCRIPTION OF WORK:

I. 4 TPH BOILER LICENCE RENEWALS: Boiler rating: 103 Square meters

Work connected with Annual inspection of Boiler. Internal and external cleaning of Boiler, DM water service tank cleaning, DM water storage tank cleaning, Condensate tank & pit cleaning, Furnace & Tubes cleaning, Cleaning of Burner, Connected equipment's, steam lines, FD fan Mountings, Refractory repairs if any, Water cleaning with high pressure water hose, Feed water strainers cleaning and cleaning in the following areas etc.

CLEANING WORKS TO BE CARRIED OUT IN LPG FIRED 4 TPH BOILER:

1. **Furnace(1st Pass):** It covers the Boiler furnace shell of dia 1016mm and surface area 12.93m².
2. **2nd pass Tubes:** OD 63.5mmX3.66mm Thk X4186mm length – 60Nos.
Surface Area: 49.56 Square meters.
3. **3rd pass tubes:** OD 63.5mmX3.66mm Thk X4956mm length – 34Nos.
Surface Area: 33.36 Square meters.
4. **Front smoke box:** Surface area: 1 square meter.
5. **IRC shell:** Surface area: 5.56 square meter.
6. **Connected Flue gas Duct.**
7. **Connected Chimney Bottom ash**

II. 20TPH BOILER LICENCE RENEWALS: Boiler rating: 817 Square meters

Work connected with Annual inspection of Boiler. Internal and external cleaning of Boiler Top and bottom drums internals, Economizer coils, Super Heater Coils and all pressure parts, Cleaning of Oil Burners, Connected equipment's and steam lines, FD fan Mountings, De-aerator internal and external cleaning, Refractory repairs if any etc. Removing, cleaning and refitting of drum internals.

CLEANING WORKS TO BE CARRIED OUT IN OIL FIRED 20TPH BOILER:

1. **Boiler (Furnace):** It covers the water wall tubes, primary and secondary super heater coils, Boiler bank tubes, Burner's etc.
2. **Super Heater:** Surface Area: 185 Square meters
3. **Upper drum:** Size=ID 1080X 60mmTHKX 6020 mm length.
4. **Boiler Bank:** Bank Tubes dia 60mm X 5mm THK X 245 Nos.
5. **Lower drum:** Size=ID 904x 48mm THK X 4900 mm length.
6. **Economizer:** Surface Area: 280 Square meters
7. **Air Pre Heater:** Surface Area=472 Square meters
8. **De-aerator (Internals)**

III. **30 T PH BOILER LICENCE RENEWALS:** Boiler rating: 1280 Square meters.

Cleaning work connected with Annual inspection of Boiler. Cleaning of Internal and external of Boiler, Top and bottom drums internals, Economizer coils, Super Heater Coils and all pressure parts, Cleaning of Oil Burners, Connected equipment's and steam lines, FD fan Mountings, De-aerator internal and external cleaning, Refractory repairs if any etc. Removing, cleaning and refitting of drum internals.

CLEANING WORKS TO BE CARRIED OUT IN OIL/LPG FIRED 30TPH BOILER:

1. **Boiler (Furnace):** Size: 2896x7303 mm, Volume: 67 Cubic meters
2. **Super Heater:** Horizontal Primary Heater-Surface Area: 72.5 Square meters, No. of coils: dia 51x2880x12 Nos.
Horizontal Secondary Heater-Surface Area: 68.8 Square meters, No. of coils: dia 51x2880x9 Nos.
Spacer Coils: dia 51x2880x2Nos (Total Heating surface area- 142 Sq.Metres)
3. **Upper drum:** Size=ID 1219x135mm THK X7861 mm length.
Removing, cleaning and re-fixing of corrugated sheet baskets: 31 no's
4. **Lower drum:** Size=ID 762x 80mm THK X 7660 mm length.
5. **Boiler Bank:** 621 tubes, dia 63.5mm.
60 tubes, dia 51mm.
6. Baffle wall Tubes -dia 76.1mm X64Nos
Furnace Side wall Tubes - dia 76.1mm X60Nos
Rear wall tubes - dia 76.1mm X15Nos
Corner wall tubes - dia 76.1mm X33Nos
Boiler side wall tubes- dia 76.1mm X90 No's
Boiler bank tube @ soot blower area- dia 76.1mm X60Nos
Boiler shielded tubes- dia 76.1mm X38Nos
7. **Economizer:** Total Surface area=521 Square meters
(C.I. Gilled tubes), Tube dia 38.1mm each 2438mm length, 12 coils each having 11 and ½ No's U- Tubes.
8. **De-aerator (Internals)**
9. **Connected Chimney Bottom ash**

Work Includes the following:

1. The above work is required to be carried out by the Qualified Class-1/category-1 Boiler repairers/Erectors/Steam pipeline installation organization under Indian Boiler regulations 1950.
2. The agency should adhere to safety norms as per IBR, insurance and other statutory formalities.
3. Arranging cup lock scaffolding to BHEL for 4TPH, 20&30TPH Boilers inspection **(should cover 200 square meter area with an elevation up to 10 meters height)** on Returnable basis.
4. The agency is required to provide wire brushes, coconut brooms, soft brooms, painting brushes, 24V transformers-3nos, 24v bulb holders with guards-6nos, 24v bulbs-12nos, Safety belts-5nos and tools etc required for the above cleaning and inspection work and agency is completely responsible for total quality of work.

5. The agency is required to arrange required manpower for completing the work and should be completed within stipulated time i.e. for

- a) 4TPH, 20 TPH & 30TPH boilers cleaning
- b) Connected steam pipe lines cleaning
- c) Offer for open inspection of 4TPH, 20&30 TPH Boilers and connected steam pipe lines after cleaning
- d) Offer for hydraulic and steam test of 4TPH, 20&30 TPH Boilers and connected steam pipe lines
- e) Painting of all boilers and auxiliaries Excluding chimney
- f) Erection and dismantling of Suitable scaffolding & Support System as required by the Boiler Inspectorate, Government of Telangana State and as per the annual inspection dates for 4TPH, 20TPH & 30TPH Boilers.

6. The boilers should be thoroughly cleaned, cup lock scaffolding should be erected, hydraulic test and steam test should be shown to IBR officials. IBR welding for any required pressure part repairs for leaks would be in the scope of contractor for successful hydraulic test before and during boiler inspection by Joint director of Boilers.

7. The work should be started 15 to 20 days before the expiry date of the certificate/License of each boiler and should be completed within [following schedules for each boiler. Total three boilers scope of work and License renewals should be completed as per the following schedule.](#)

- a) 4 TPH Boiler scope of work and License renewal should be completed by 16/12/2021.
- b) 30TPH Boiler scope of work and License renewal should be completed by 30/01/2022.
- c) 20TPH Boiler scope of work and License renewal should be completed by 16/07/2022.

8. Entire liaisoning with Director of Boilers for issue of 4TPH, 20 & 30TPH Boiler Licenses along with connected steam pipelines with a validity of one-year period from the date of issue of certificates, will be in the scope of contractor and [these licenses should be submitted as per the above schedule.](#)

Payment to the contractor will be made as follows:

- a) 6% of the contract value will be paid after completion of 4TPH Boiler scope of work and license renewal
- b) 68% of the contract value will be paid after completion of 30TPH Boiler scope of work and license renewal
- c) 26% of the contract value will be paid after completion of 20TPH Boiler scope of work and license renewal

9. Penalty Clause: [Penalty clause is applicable in case of delay in execution of work beyond 7 days from the above scheduled dates for each boiler and in case of Non-submission of Boilers & steam line licenses within above scheduled dates. Rate of penalty applicable is 0.5% per week or part thereof to a Max of 10% of total contract value.](#)