

# Scope of Work

## **REFORMER DETAILS:**

NFL Panipat, AMMONIA PLANT, Primary reformer tubes has arranged in two rows of 60 tubes each and located AB chamber in South & CD in North. Tubes are counted from East to West direction.

### **Reformer Data :**

Plant Designed Capacity : 900 TPD Ammonia  
Design By : M/s Haldor Topsoe, Denmark  
Furnace type : Vertical, Side fired  
Feed Stock : Natural Gas  
Commissioned in : 2013  
No Of burners : 216

### **Catalyst Tube Data:**

No of tubes : 120 (60 tubes in each chamber)  
No of Rows : 2  
Size : 152mm OD x 10.5 mm thk x 12.0Mtr.  
Material : KHR35CT  
Design Skin Temp : 901 deg. C  
Design Pressure : 38 Kg/Cm2  
Operating Pressure : 34 kg/Cm2  
Operating Skin Temp : 882 deg. C  
Tube supplier : M/s KUBOTA CORPORATION CANADA  
Position of Tubes : Vertical

### **(1) The following inspection (mimimum) are to be carried out:**

#### **a. Visual Inspection**

- b. **Automatic Ultrasonic Inspection** of all the 120 catalyst tubes of Primary Reformer on both the firing sides of the tubes for full length of tubes. You will have to make special probe holder to suit our Primary Reformer catalyst tubes dimensions. The inspection should be carried out with graphical recording of Decibel level etc. An interim report will have to be submitted after completion of the work and final report within 30 days. Your final report should contain the data of decibel level of each individual tube. As we do not have standard tube piece for the Automatic Ultrasonic inspection job of Primary Reformer catalyst tubes, you will have to arrange the same. In case of necessity if personnel (inspection team) are required to continue the job after 5 Pm, No Overtime will be admissible. No extra charges for idle time will be payable (if any).
- c. **BOW Measurement:** Entire job of testing of tubes from two locations (minimum) shall be carried out as per standard engineering practices and as per program given by Engineer-In-Charge in NFL.
- d. **Creep Measurement:** Entire job of testing of Reformer Catalyst Tubes, from 06-08 locations per tubes/ headers as per standard engineering practices and as per program given by Engineer-In-Charge in NFL.
- e. **Any other essential test in addition of above mentioned tests.**

### **(2) Contractor's Obligation:**

- a) To make arrangement for all instrument, accessories, consumables etc. required for the inspections.
- b) To provide 03 copies of final report within 15 days after completion of the job but preliminary report shall be conveyed to the NFL on the spot.
- c) All consumables like cleaner, the contractor, at his own cost, shall arrange cotton waste, cleaning agents, oil & grease etc. and safety equipment for contractor's staff on the job.
- d) All such material required to be used by the contractor shall be brought in with proper gate passes.
- e) No charges for idle time will be payable
- f) Supervision of entire job shall be in contractor's scope.
- g) Contractor shall arrange transport for his supervisor and staff at his own cost.

**(3) NFL's Obligations**

- a) NFL shall handover the job with proper safety work permit after opening manhole cover etc.
  - b) Water, Power, Air required for job shall be given free of cost.
  - c) DM water supply from 200 liter drum fitted with tap on the top of the furnace.
  - d) NFL shall provide free of cost a small space for storing material near the work site, however, safe custody of that material shall be in contractor's scope
- (4) The party has to employ highly skilled manpower having minimum **Level II qualification from ISNT/ASNT** or equivalent for executing the job and maintain high standards of workmanship.

**TESTS & INSPECTION.**

- a) The work is subject to inspection at all times by the Engineer-in-Charge. The contractor shall follow all instructions given during inspection and shall ensure that the work is being carried according to the technical specifications of the Tender and the Technical Documents furnished to him from time to time during the performance of the work and also in accordance with relevant codes/practices.
- b) For inspection by Engineer-in-Charge or his representative, contractor shall provide all facilities and access.
- c) Any work not conforming to execution drawings/ instructions, specifications and/or codes shall be rejected forthwith and the contractor shall carry out rectification/replacement of such work at his own cost. The contractor will record all results of inspection/ test in approved Performa. These reports shall form part of the completion document.
- d) Inspection and acceptance of work by the owner shall not defray the contractor from any of his responsibility under this contract.
- e) Contractor shall provide evaluation results of the inspection on the spot for immediate action; however, three copies of final report shall be handed over to Engineer-in-charge for record within 15 days after completion of the job, but before submission of bill for payment, which shall be entertained only after completion of all the obligations on contractor's part.