

DESIGN, PROCUREMENT, INSTALLATION AND COMMISSIONING OF PLAIN TUBE ECONOMIZER FROM FINNED TUBE ECONOMIZER IN 4*600MW THERMAL POWER PLANT AT JHARSUGUDA, ODISHA ON EPC BASIS.

PROJECT SYNOPSIS AND GENERAL INFORMATION

Vedanta Limited is one of the world's leading diversified natural resources companies. The company's main businesses focus on zinc, lead, silver, aluminium, copper, iron ore, oil & gas and commercial power, while its operations span across India, South Africa, Namibia, Ireland and Australia.

Vedanta Aluminum and Power, a division of Vedanta Limited and leading producer of alumina, Aluminium and power in India, invites Expression of Interest from reputed Boiler pressure parts Manufacturer Company for Boiler Economizer replacement with design modification projects at Jharsuguda, Odisha, India.

The 4x600 MW, IPP situated in Jharsuguda, Odisha. The boilers are having capacity 600MW. The Boiler is designed by HBC and erected/commissioned by SEPCO III. The Economizer inline H-type finned type and now number of tube leakage in Economizer area is increasing due to high erosion. The frequent BTL in Economizer is mainly due to existing H-fin type Economizer. Now Vedanta limited propose to replace existing finned type Economizer to plain type Economizer.

ELIGIBILITY OF CONTRACTOR

1. Contractor should be either Boiler manufacturer with their own design institute to carry out the study of boiler combustion and design of boiler.

OR

Contractor must have associated with the renowned steel manufacturer for the manufacturing of the pressure parts along with the technological partnership with the design institute where the study of combustion optimization and design of boiler can be done.

2. Contractor must have experience in Engineering, Design and manufacturing and performance testing of the boiler for units operating at 500 MW and above.

2. SCOPE OF WORK

A.

2.1 Providing required manpower including supervision, and all the required Tools & Plants including all cranes (up to 90 MT crane or above) and consumables for doing the material management (receipt

,taking delivery , unloading, loading, verification, shifting, re-shifting, transportation, re handling , stacking, re-stacking, conservation & preservation as required.

2.2 Receipt & unloading of Material/equipment as stated above, pertaining to erection and commissioning of boiler after modification of finned tube economizer to plain tube economizer.

2.3 Reloading the materials/equipment received, wherever required, to Trucks/Trailors etc. and transportation to stores/storage yard/work site at IPP.

2.4 For storage of these materials, open store yard, covered and semi-covered store shed will be provided by VL. However, Contractor shall remove all types of vegetation e.g. trees, bushes, grass etc. from the land, construct fencing with barbed wire at open storage yard provided to him for open storage and the same is included in the scope of work (BOQ)

2.5 The contractor shall maintain computerised records for receipt of materials, issued to VL.

2.6 The contractor shall strictly abide by the state and central laws, statutory rules, regulations etc. In addition, the contractor shall have to comply with the PF regulations etc. for all his employees/workmen as per the local authorities / governing bodies' instructions. Compliance with statutory obligations as well as any other requirements/ provisions with respect to contractor's manpower, equipment including insurance, medical facilities, minimum wages, safety requirements, accommodations etc., are the responsibility of the contractor.

2.7 Verification of components, including opening of cases if required, re-packing and stacking them after verification as per instruction of VL Engineers at site & submission of detailed report. The scope of all handling during above activities and re-handling (restacking/re-shifting) and preservation is under scope of work of contractor.

2.8 Under the scope of this contract, it shall be the responsibility of the contractor to provide facilities to open the package in the presence of VL personnel, verifying the same, repacking wherever and whenever required, properly stacking them as may be directed by VL, so as to facilitate proper handling, receipt position, stock taking etc. The rate quoted by the bidder shall be deemed to have included such provisions.

2.9 All materials/equipment shall be stacked and stored above ground level by the use of concrete or wooden sleepers. No materials shall remain on ground at any time. Materials shall not be stacked in low lying areas where it is likely to get flooded during rain. **All concrete or wooden sleepers and tarpaulins required for stacking the materials shall be provided by contractor within the quoted price at his cost.**

2.10 All the necessary lifting tackles, tools and plants including cranes (up to 90 T) with operator, tractors, trailers, Lorries, trucks, Pulley blocks, jacks, winches, wire rope etc. of suitable capacities and other equipment incidental to carry out this work shall have to be arranged by the contractor himself at his cost. VL Engineer reserves the right to inspect lifting tackles and equipment before allowing their use. Such approval however, shall not relieve the contractor of his responsibility to ensure safe handling of equipment taking due precautions to avoid any accident and damage to other equipment and personnel. In this regard Contractor must abide with the Vedanta safety guidelines and the life saving rules and regulations.

2.11 All hardware such as rails, sleepers, max puller etc., required for dragging or for any other connected works shall be arranged by the contractor at his own cost.

2.12 The contractor shall execute the work in the most substantial and workman like manner. The store shall be, handled with care and diligence. Any loss to VL due to contractor's lapses shall have to be made good by the contractor. All surplus, damaged, unused materials, package materials/containers, gunny bags etc. shall be returned to VL

2.13 If the contractor or his workmen break, deface, injures or destroy any part of building, road, kerbs, fence enclosures, water pipes, drains, electric/telephone poles or wires, trees or any other property or damage any part of erected stores, stored components etc. the contractor shall make the same good at his own expenses (of Which VL site Engineer's decision shall be final) failing which the site Engineer shall get the same rectified by other agencies at the risk and cost of the contractor and the same shall be deducted from the contractor's bill that may be due then or at any time thereafter become due to the contractor or even from his security deposit.

2.14 All the Riggers, foreman etc engaged for the work should have adequate experience, which should be supported by documentary evidence, if called for

2.15 Up keepment, maintenance and conservation of material shall be included in the contractor's scope as broadly explained below:

- a) Wherever end caps are found missing, these pipes /tubes are to be cleaned with compressed air and replacement of protective pellets and end caps to be done. Contractor shall provide end caps and protective pallets required for pipes.

B.

- 2.0 Complete design of Economizer including its size, no of tubes required, layout of tubes, header size and relocation of header, hanger and associated structural system foundation and structure load facility/bearing capacity for the modification design.
- 2.1 The Economizer tube size, material, no of banks, tubes per bank, including complete design and BOQ of tube material required.
- 2.2 The contractor needs to evaluate and design the best suited type of Economizer for our Boiler to give best result, availability and maintainability.
- 2.3 The design study must include combustion optimization, CFD, heat transfer and velocity of flow to find the best suited type Economizer. Also, issues pertaining to improper flow imbalance and heat transfer in boiler (first pass & Second pass) to be studied and accordingly correction to be taken in the pressure parts of the boiler. (The data of operation and structure are available shall be shared for design purpose.)
- 2.4 There shall not be any degradation in boiler performance (boiler capacity, boiler efficiency & boiler operating parameters etc) due to its modification.
- 2.5 The approach and pinch point temperature should be within limit.
- 2.6 The scope shall include design, supply, erection, commissioning of Economizer and boiler performance guarantee of boiler performance parameters.
- 2.7 Complete dismantling of 87numbers Old Finned Economizer coil and send to the designated place in the scope of contractor.
- 2.8 All necessary statutory clearance requirement including from factories of boiler, central boiler board are in the scope of vender.
- 2.9 All the T&P, load lifting device/equipment/machine shall be in the scope of contractor.
- 2.10 The detailed schedule, QAP, welding procedure, safety plan should be approved by owner before starting of project.
- 2.11 The design must ensure that no extra load should be put on Economizer hangers and associated structural system.
- 2.12 The necessary soot blowers if required must be considered and to be included in supply, erection and commissioning of the project.
- 2.13 In modification if any relocation of header, soot blower is enlisted, then same should be carried out by contractor.
- 2.14 Necessary modification i.e. addition of platform/staircase, relocation of platform/staircase etc. shall be in the scope of contractor.

- 2.15 The necessary cutting and welding to restore the backpass steam wall tubes to facilitate modification job are in its scope of contractor.
- 2.16 Extra hanger if required shall be supplied and executed by contractor.
- 2.17 Any relocation of header, piping, connecting tubes, backstay, structure, junction, header along with stubs, access doors are in the scope of contractor.
- 2.18 Removal, supply, refixing of necessary insulation and cladding/sheeting are in the scope of contractor.
- 2.19 Supply and erection of hardware (structure, beam, buck stays, staircase, grating, plate, handrail) for cutting any existing pressure parts and non-pressure parts to carry out modification.
- 2.20 Supply and erection of any access doors if required are in the scope of contractor.
- 2.21 The new flow velocity after design shall be preferably less than 9 m/s.
- 2.22 The boiler modification to be executed in 40 days.
- 2.23 All load lifting & moving device (crane, hydra, dumper, traylor, winch, hoist, chain block etc) required for shifting of material from storage yard to site, erection of material (Economizer tube) are in the scope of contractor.
- 2.24 Shifting of material from designated space/store yard to execution site shall be in the scope of contractor
- 2.25 Any platform erection (permanent/temporary) for the project shall be in the scope of contract. That is supply and erection of material.
- 2.26 Submission of Forms as per IBR need to be submitted by the Contractor with due certification from the IBR certified third party.
- 2.27 QAP , ITP to be made and submitted by the contractor
- 2.28 Necessary requisite legal and lesioning approval from the DFB, Bhubaneswar, Odisha will be in the scope of Contractor.
- 2.29 Contractor should submit the complete methodology and action plan based on EPC basis

3. NOTE

3.1 The contractor will make his own arrangement for his communication needs at his site office or residential area/labour colony.

3.2. It may be required to keep crane as per requirement at various receipt points for loading /unloading of materials specially for materials received by Rail. All T&Ps, lifting tackles and pulling

devices to be deployed by the contractor must bear valid/latest test certificates for their suitability and the documents shall be preserved at site.

3.3. The contractor shall submit a list of various tools, plants, material handling equipment etc. being provided by them, to the project manager , VL before taking up the work in hand. The contractor shall deploy the above items after taking prior approval of the project Manager with respect to their suitability and quality.

3.4 In event of any failure on the part of the contractor in providing necessary T&P etc., VL may at its discretion also terminate the contract on this ground and take out any or whole amount of the contract from the scope of the contractor. Decision of VL in this regard will be final and binding on the contractor.

3.5 The contractor at his own cost shall provide all consumables required for the work. The consumables supplied by the contractor shall be subject to prior approval of VL

3.6 The contractor shall provide necessary first aid facilities for all his employees, representatives, and workmen working at site.

3.7 During the period of contract the contractor shall be responsible for keeping the entire area allotted to him clean and free from rubbish debris etc. to entire satisfaction of VL . The contractor shall provide proper sanitary arrangement in the work area & office.

3.8 Work procedures that are to be used during the work shall be such, as to minimise fire hazards to the extent practicable. Combustible materials, waste and rubbish shall be collected and removed from the site, at least once in every week.

3.9 All contractor's supervisory personnel and sufficient number of workers shall be trained for firefighting and shall be assigned specific fire protection duties.

3.10 Contractor shall provide & maintain enough fire protecting equipment of the types and number for their office & work premises and BHEL office & stores. Access to such fire protection equipment is to be given at all times. Compliance of the above requirement under fire protection shall in no way relieve the contractor of any of his responsibility and liabilities to fire accident occurring either to his materials, man and equipment or to those of other's working in the area.

3.11 The contractor shall have total responsibility for all materials in his custody, and shall ensure protection of all materials from theft, fire, pilferage and any other damage and loss. The contractor shall make suitable security arrangement to ensure the above.

3.12 The contractor shall be responsible to ensure that none of the personnel move beyond the areas marked out for his operation. In case of a need for the contractor's personnel to move beyond the area marked for him, the same shall be done with a written permission of the Project manager.

4. SITE ORGANISATION

The contractor shall maintain a site organisation of adequate strength in respect of manpower, T & P and other implements always for smooth execution of the contract. This organisation shall be reinforced from time to time, as required, to make up for slippage from the schedule without any commercial implication to VL. A competent manager having sufficient authority to take decisions at site shall head the site.

On award of contract, the contractor shall submit to VL a site organisation chart indicating the various levels of personnel to be deployed on the job. VL reserves the right to reject or approve the list of personnel proposed by the contractor. The persons, whose biodata have been approved by VL will have to be posted at site and deviations in this regard will not generally be permitted.

The site-in charge once approved and posted at site, should not be changed throughout the contract period as far as practicable.

The contractor shall also submit to VL for approval a list of T&P, tackle etc., prior to commencement of site activities. These tools & tackles shall not be removed from site without written permission of VL.

5. WORKING HOURS

For payment of manpower deputed by the contractor for work as above, the months shall be computed as comprising of number of days worked at TPP site, which at present are 6 days a week and 8 hours per day. However, work may continue round the clock, or may continue Sundays/holidays for which availability of above manpower should be ensured if required by VL. However, no extra payment will be made for working beyond normal hours in such cases and contractor has to quote accordingly.

6. PROGRESS OF WORK

During the course of work, if the progress is found unsatisfactory, or in the opinion of VL, if it is found that the skilled workmen like fitters, operator's technicians employed are not sufficient, VL will induct required additional workmen, to improve the progress and recover the cost incurred on this account including VL overheads from the contractor's bill.

The contractor shall submit daily progress reports to the project Manager. Manpower reports, material reports, consumables reports, and other reports considered necessary by the Engineer will also have to be submitted.

7. INSURANCE

Arrange insurance coverage for the material covering the risks during storage, erection and commissioning. It is the entire responsibility of the contractor to insure his workmen against accident and injury while at work as required by the relevant rules and to pay compensation, if any, to their workmen as per workmen's compensation act. The contractor has also to insure his staff against accident/injury. The contractor has to take insurance cover for his tools and plants, assets etc.

These insurance covers have to be taken prior to start of his work at the subject project and he shall make available the Policy to VL Site in-charge for necessary verification before commencement of work. However, irrespective of such verification/acceptance, the sole responsibility to maintain adequate insurance cover for his workmen, T&P, assets etc. at all times during the period of contract shall lie with the contractor. Regarding the aforesaid insurance cover, the contractor shall directly deal with the Insurance Company for all matters regarding the insurance in his scope.

8. TIME SCHEDULE

8.1 The contractor shall mobilise his T&P etc. to start the work within 10 days from the date of issue of LOI.

8.2 The entire work under this contract shall be deemed to be completed in all respect only when so certified

9. GUARANTEE:

9.1 The guarantee period (24 months) shall start from the date completion of total work under the contract as certified by VL Engineer at site.

9.2 The performance guaranteed test of boiler to be done with design and worst coal.

10. TERMS OF PAYMENTS

The contractor shall submit his bills with duly furnishing the following information:

- i) Work order No. and date
- ii) Challan no. and date

- iii) Truck/Trailer/Wagon no.
- iv) Consignment no. and date
- v) Work completion report w. r. to challan.
- vi) Description of materials
- vii) No. of packages as per shipping docs/ Challan/ consignment note.
- viii) Gross weight (MT) as per shipping docs/ Challan/ consignment note.
- ix) Location of material
- x) Amount claimed
- xi) Recoveries such as hire charges, demurrage, fine/penalty etc. if any.
- xii) Certified man-hour regarding upkeep, maintenance