T E N D E R S P E C I F I C A T I O N

No.-BHE/PW/PUR/NTPRT/BLADE-ANGLE-CHANGE/ACC-1/277

FOR

Scope of Work: CHANGING THE BLADE ANGLE OF AIR COOLED CONDENSER(ACC) FAN AT PVUNL-PATRATU U#1 AT 3X800MW BHEL-PATRATU PROJECT

VOLUME I – TECHNICAL BID

THIS TENDER SPECIFICATION CONSISTS OF:

Notice Inviting Tender	
Volume-IA	**Technical Conditions of Contract**
Volume-IB	**Special conditions of Contract**
Volume-IC	**General conditions of Contract**
Volume-ID	**Forms & Procedures**
~~**Volume-IE**~~	~~**Technical Specifications**~~
Volume II	**Price Bid**

Bharat Heavy Electricals Limited
(*A Government of India Undertaking*)
Power Sector - Western Region
3X800 MW PVUNL Patratu-829119

2.0 SCOPE OF WORK:

- Changing the blade angle of all 72 ACC fan impellers in Unit #1 to the specified angle as directed by BHEL / OEM
- Verification of blade stem collar seating, torque tightening of all blade stem bolts, and bolt-end length check.
- Measurement and verification of tip clearance of all blades after repositioning.
- Submission of detailed inspection/completion reports
- Ensuring all safety, HSE, and statutory requirements are complied with throughout execution.

2.2 GENERAL REQUIREMENTS

2.2.1 Supervisors / Engineers, consumables etc., required for the scope of work shall be provided by the contractor. All the expenditure including taxes and incidentals in this connection will have to be borne by him unless otherwise specified in the relevant clause. The contractor's quoted rates should be inclusive of all such contingencies.

2.2.2 It shall be specially noted that the contractor's labour and staff may have to work round the clock to meet the completion schedules / plans, which may involve payment of considerable overtime. The contractor's quoted rates should be inclusive of all such contingencies.

2.2.3 The work shall conform to dimensions and tolerances given in various drawings and quality manuals provided by BHEL. If any portion of work is found to be defective in workmanship not conforming to drawings or other stipulations, the contractor shall dismantle and redo the work duly replacing the defective materials at his cost, failing which the job will be carried out by BHEL by engaging other agencies / departmentally and recoveries will be effected from contractor's bill towards expenditure incurred including BHEL's overhead charges.

2.2.4 Contractor has to work in close co-ordination with other erection agency at site. BHEL engineer will co-ordinate area clearance. In a project of such magnitude, it is possible that the area clearance may be less/more at a particular given time. Activities and erection program have to be planned in such a way that the milestone events like boiler light up, steam blowing, SV Floating etc., are achieved as per schedule/ plans. Contractor shall arrange & augment the resources accordingly.

2.2.5 Necessary drawings for completion of work are enclosed with the BOQ/ Tender Document.

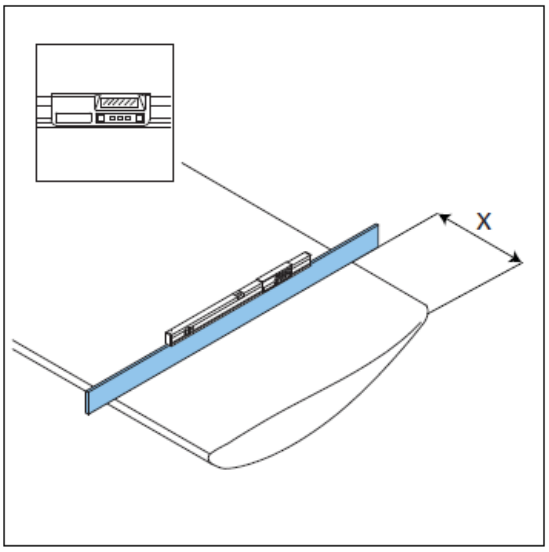
2.2.6 The Work Shall be carried Out as per BHEL HSE Plan. In addition, the contractor shall follow the PVUNL Safety Rules as issued from time to time with respect to safety in construction & erection. The Contractors shall ensure proper safety of all the workmen, materials, plant and equipment belonging to him or to the Employer or to others, working at the Site.

2.2.7 The Contractor shall provide safe working conditions to all workmen and employees at his workplace including safe means of access, railings, stairs, and ladders, scaffolding, work platforms, toe boards etc. The scaffoldings shall be erected under the control and supervision of an experienced and competent person. For erection of scaffolds, access, work platforms etc. shall be good and the contractor shall use standard quality of material.

Adjustment of the blade angle

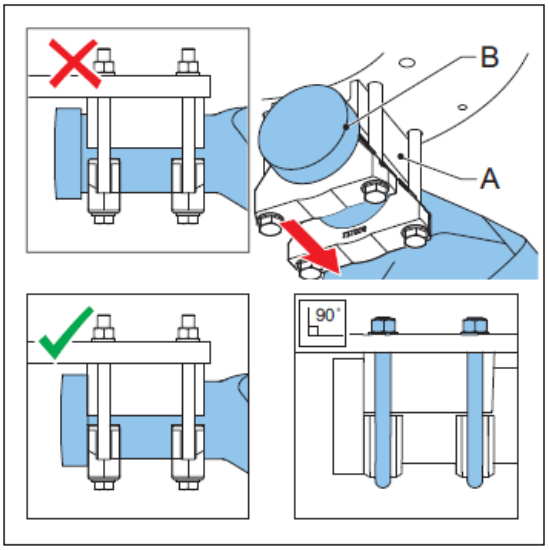
Adjust blade angle

1. Place a straight edge, which is at least as long as the profile width, on top of the discharge side of the blade at about 50 mm (2 inches) from the blade profile end (distance X).
2. Place the inclinometer on top of the straight edge.
3. Lift the blade at the tip and rotate the blade around its axis until the desired angle is set within a maximum tolerance of ± 0.5 degrees.



Tighten blade stem

1. Check if the blade stem collar (B) is flush against the lower clamping piece (A).
2. Tighten the bolt nuts evenly to full torque **425 Nm/313 lb ft (M24)**.



Check bolt ends

1. Check if the lengths of the threaded bolt ends (X) differ less than 3 mm.