

**Central Electricity Authority
Office of Member(Thermal)
9th Floor (South) Sewa Bhawan
Ram Krishna Puram New Delhi-110066**

No. CEA/TE&TD-TT/2010/D-12

02-Feb-2010

To all Central Sector/State Sector
Thermal Power Generating Cos. As per list

Sub: Sourcing of supercritical units from indigenous manufacturers

Dear Sir,

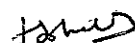
Improving the efficiency of coal fired units has been the main focus of our low carbon growth strategy for the power sector. Thus large thrust is being given for fast induction of more efficient super-critical units with a view to increase their share in electricity generation. Already about 38 supercritical units are under construction and some of them would be commissioned in 11th Plan itself. It is expected that Super-critical units would constitute about 60% of thermal capacity in 12th Plan. For 13th Plan, it is expected that the entire coal based capacity shall be based on supercritical technology.

Creating requisite indigenous manufacturing capacity for manufacture of super-critical units is considered vital for such a large induction of super-critical units with a view to ensure lifetime support for services and spares, specific problem solving and customization for trouble free operation of these units in the Indian conditions. Ministry of Power has taken steps to encourage indigenous manufacturing of supercritical equipment. As a result, BHEL and some other joint ventures are setting up manufacturing facilities in the country. Thus, there would be few more players in manufacturing, apart from BHEL.

In order to kickstart indigenous manufacturing of supercritical equipment, Government of India has approved a proposal to invite bids for boilers and turbine generators for five supercritical projects (comprising 11 units of 660 MW) of NTPC and DVC with mandatory condition of setting up phased manufacturing facilities in the country and bids for the same have already been invited. A copy of the conditions, in line with the stipulations contained in Government of India approval, is enclosed herewith at Annexure-1, 2, 3 and Table A&B.

Thus, with a view to encourage indigenous manufacturing of supercritical units, it is advised that you may also like to incorporate the condition of setting up of phased indigenous manufacturing facilities, in the bids to be invited in next three years (till October 2012) by Central/State sector power generating companies for boilers and turbine-generators of supercritical projects.

Yours faithfully



**(S. Seshadri)
Member(Thermal) CEA**

To,

1. **Chairman & Managing Director, NTPC Ltd., NTPC Bhawan, Scope Complex, 7, Institutional Area, Lodi Road, New Delhi-110003**
2. **Chairman, Damodar Valley Corporation, DVC Towers, V.I.P Road, Kolkatta- 700054.**
3. **Chairman and Managing Director, North Eastern Electric Power Corpn.Ltd.. Brookland Compound, Lower New Colony Shillong-793003**
4. **Chairman cum Managing Director Neyveli Lignite Corporation Ltd. Corporate Office, Block-1 Neyveli 607801 , Tamil Nadu**
5. **Chairman & Managing Director APGENCO, Vidyut Soudha, Hyderabad – 500049**
6. **Chairman Assam State Electricity Board Bijulee Bhawan, Paltan Bazar Guwahati 781 022**
7. **Chairman Bihar State Electricity Board Vidyut Bawan, Bailey Road Patna 800 001**
8. **Chairman Chattisgarh State Electricity Board Dangania CSEB Complex , Dangania, P.O. Sunder Nagar, Raipur 492 013**
9. **Managing Director, Durgapur Projects Ltd., Administrative Building, Durgapur-713201, West Bengal.**

10. Chairperson Gujarat State Electricity Corpn. Ltd. Sardar Patel Vidyut Bhawan, Race Course Vadodara 390 007
11. Chairperson Gujarat Urja Vikas Nigam Ltd. Sardar Patel Vidyut Bhawan, Race Course Vadodara 390 007
12. Managing Director. Haryana Power Generation Corpn.Ltd. Shakti Bhawan Sector-6 Panchkula Haryana - 1341009
13. Chairman Jharkhand State Electricity Board Engineering Building HEC, Dhurwa Ranchi 834 004
14. Managing Director Karnataka Power Corporation Ltd. 82, Shakti Bhavan, Race Course Road Bangalore - 560 001
15. Managing Director MAHAGENCO Plot G-9, Prakashgad, Bandra (East), MUMBAI-400051
16. Chairman & Managing Director M.P. Power Generation Co. Ltd. Shakti Bhawan, Vidyutnagar, Rampur, P.O. Jabalpur- 482008
17. Chairman Orissa Power Generation Corporation Ltd. Zone-A, 7th Floor, Fortune Towers Chandrasekharpur Bhubaneswar-751002, Orissa
18. Chairman Punjab State Electricity Board, The Mall, Patiala 147 001
19. Chairman & Managing Director Rajasthan Rajya Vidyut Utpadan Nigam Ltd. Vidyut Bhawan, R.C. Dvae Marg, Jyoti Nagar Janpath, Jaipur , Rajasthan - 302005
20. Chairman Tamil Nadu Electricity Board 10th Floor, NPKRR Maaligai, 800 Electricity Avenue, Anna Salai Chennai- 600002
21. Chairman & Managing Director UP Rajya Vidyut Utpadan Nigam Ltd. 7th Floor, Shakti Bhawan, 14, Ashok Marg, Lucknow- 226001
22. Chairman& Managing Director West Bengal Power Development Corporation Ltd., New Secretariat Building, 1, Kiran Shankar Roy Road Kolkata-700001

Annex 1

Categories of eligible bidders for bidding for boilers and STGs

- i. A '**qualified**' supercritical boiler manufacturer (or a supercritical turbine manufacturer, as the case may be). Such bidder, however, should have registered a Subsidiary / JV company for manufacturing of supercritical boilers (or turbine) in India. The bidder in this case must maintain an equity participation of minimum 51% in the Subsidiary or minimum 26% in the JV company during lock in period of 7 years from the date of incorporation of the Subsidiary / JV company or upto the end of the Contract warrantee period, whichever is later.
- ii. An Indian Subsidiary company of a **qualified** supercritical boiler (or turbine) manufacturer as per (i) above holding minimum 51% equity in the Indian Subsidiary. This equity will be maintained for a minimum lock in period of 7 years from the date of incorporation of the Subsidiary or upto the end of the Contract warrantee period, whichever is later.
- iii. An Indian Joint Venture (JV) company for manufacturing of supercritical boilers (or supercritical steam turbines) in India between an Indian company and a **qualified** supercritical boiler manufacturer (or a **qualified** supercritical steam turbine manufacturer, as the case may be). The **qualified** supercritical boiler (or turbine) manufacturer shall maintain a minimum equity of 26% in the JV company during lock in period of 7 years from the date of incorporation of the JV company or upto the end of the Contract warranty period, whichever is later.
- iv. The Indian partner of JV at (iii) above having experience in execution of large turnkey projects and holding minimum 51% equity in the JV Company during lock in period of 7 years from the date of incorporation of the **subsidiary/JV** company or upto the end of the Contract warrantee period, whichever is later.
- v. An Indian manufacturing company who has experience of 500 MW subcritical boiler (or 500 MW subcritical steam turbine, as the case may be). Such a bidder should have a valid ongoing collaboration and technology transfer agreement, including license to manufacture and supply in India, with a **qualified** supercritical boiler manufacturer (or a **qualified** supercritical steam turbine manufacturer, as the case may be), for the type, size and rating of the boiler / turbine specified, valid minimum up to the end of the warranty period of the contract.

Notes: The bidders participating through any of the five routes as above shall furnish, along with the bid, a deed of joint undertaking (DJU) as per format (to be enclosed in the bidding documents) in which all the executing parties (i.e. the bidder, the technology provider, the Indian manufacturing company and the Indian promoter of the JV - as applicable) shall be made jointly and severally liable to the Procurer for successful performance of the Contract.

Annex 2

Other pre-requisites for participation in the bulk tender

- a) Before submission of the bid, the Subsidiary / JV company as mentioned at (i) to (iv) of Annex 1 should be registered in India under the Companies' Act 1956 for manufacture of supercritical boilers / turbines and should have obtained Certificate for Commencement of Business in India, as applicable.
- b) Promoters / Partners of the Subsidiary / JV company will be required to employ a minimum subscribed and paid up capital of Rs 500 million in the Subsidiary / JV company prior to submission of bids. In case the bidder is selected for award of contract, a minimum subscribed and paid up capital of Rs 1000 million in the Subsidiary / JV company will have to be ensured by the Promoter / Partners by the date of award.
- c) The bidder shall give firm commitment to indigenize manufacturing of supercritical boiler (or turbine) in India in a phased manner as per Phased Manufacturing Program (PMP) (to be clearly identified and elaborated in the bidding documents) and submit an on demand bank guarantee depending on number of units.
- d) Major part (minimum 75%) of the land required for setting up the manufacturing facility should be in possession with clear title, prior to submission of bid in the name of the Subsidiary/JV company (or in the name of the Indian promoter but pledged/leased to the Subsidiary/JV company).
- e) The subsidiary or the JV, as the case may be, should have a valid technology transfer agreement, including license to manufacture and supply in India, with a **qualified** supercritical boiler manufacturer (or a **qualified** supercritical steam turbine manufacturer, as the case may be) for the type, size and rating of the boiler / turbine specified, valid minimum up to the end of the warranty period of the contract. The technology transfer agreement shall necessarily cover transfer of technological know-how in the form of complete design dossier, design softwares, drawings and documentation, quality system manuals and imparting relevant personnel training to the Subsidiary / JV company. Such technology transfer agreement must have provision that the transfer of technology to the Indian manufacturing company shall be complete by the time eighth 660/800 MW supercritical unit is supplied by the bidder.
- f) The Indian bidder as per (v) of Annex 1 should have a technology transfer agreement, including license to manufacture and supply in India, with a **qualified** supercritical boiler manufacturer (or a **qualified** supercritical steam turbine manufacturer, as the case may be) which shall necessarily cover transfer of technological know-how in the form of complete design dossier, design softwares, drawings and

documentation, quality system manuals and imparting relevant personnel training to the Indian bidder. Such technology transfer agreement must have provision that the transfer of technology to the Indian manufacturing company shall be complete by the time eighth 660/800 MW supercritical unit is supplied by the bidder.

Annex 3

'Roadmap' proposed for ensuring absorption of technology and indigenization of manufacturing

- i. Firm commitment for, first, establishing manufacturing base in India and secondly, technology transfer from the technology provider to the Indian manufacturing company, shall be sought from the bidders in the bid in the form of an undertaking supported by a Board Resolution.
- ii. The phased manufacturing program will be clearly specified in the tender with provision of liquidated damages (LD) for failure to meet various milestones of manufacturing. The total LD to be levied on this account will be upto 5% of the total contract value. This 5% amount will be distributed over various major milestones.
- iii. The bidders will be required to submit an on demand Bank Guarantee in case of award as security for default against specified PMP. In case the bidder does not implement the PMP even by the overall completion date, the Procurer will encash the bank guarantee.
- iv. LD for each milestone shall be proportionate to weightage factor assigned to various manufacturing processes.
- v. Total LD for a milestone shall be recovered within 10 weeks delay from the respective milestone target dates. LD to be calculated for each week delay or part thereof.
- vi. Various major milestones identified for the phased manufacturing program, their completion schedule and the weightage factor for the purpose of levying LDs in case of delay in completion are as per Table A (for boilers) and Table B (for STGs).

Table A of Annex 3

Sl. No.	Equipment	Indicative Facilities Requirement	To be established latest by (Months from Date of Award)	Weightage factor (%age) for LD
1.	Pressure Parts (straight water wall & spiral water wall)	<ul style="list-style-type: none"> • Straight tube butt welding facility • Automatic welding facility for panel processing • NDT facilities • Hydro testing • Continuous heat treatment furnace • Gang/panel bending facility (for straight water wall & spiral water wall tube panels) 	36	35
2.	Pressure Parts (economiser, superheater and reheater coils and panels)	<ul style="list-style-type: none"> • System bend facility • Welding facility for coils • NDT facilities • Hydro testing • Continuous heat treatment furnace • Jigs & fixtures for assembly and layout checking facility • Portable equipment for material/grade identification 	42	30
3.	Pressure Parts (headers)	<ul style="list-style-type: none"> • Welding • Machining & drilling • Heat treatment • Hydraulic testing • NDT facilities • Pressing facility for end caps & tees • Material identification facility • Facility for high alloy (P5 and above) continuous welding 	42	20
4.	Separator (shell and dished ends)	<ul style="list-style-type: none"> • Rolling facility / pressing Facility • Machining & drilling • Welding • Heat treatment • Hydraulic testing • NDT facilities • Pressing arrangement for dished ends 	48	15

Table B of Annex 3

Sl. No.	Equipment	Indicative Facilities Requirement	To be established latest by (Months from Date of Award)	Weightage factor (%age) for LD
1	Turbine Casings and Valves machining	<ul style="list-style-type: none"> • LP outer Casing fabrication • HP / IP / LP Casing Machining & blading • Heat Treatment / Stress Relieving • Turbine valve machining & assembly testing 	36	20
2	Turbine Rotor machining	<ul style="list-style-type: none"> • Rotor machining including grooves & Fir Tree machining, • Rotor assembly and balancing • Turbine assembly 	42	20
3	Rotating blades machining	<ul style="list-style-type: none"> • Rotating Blade machining & finishing 	52	20
4	Generator Core and stator manufacturing	<ul style="list-style-type: none"> • Core stamping, fabrication facility, Heat Treatment / Stress Relieving. • Generator Stator Fabrication and Core building facility • Stator bar manufacturing and heavy machining facility for fabricated items. 	40	20
5	Generator Rotor	<ul style="list-style-type: none"> • Rotor machining including slotting • Rotor assembly and balancing • Exciter manufacturing & testing • Rotor winding facility 	42	15
6	Generator Assembly	<ul style="list-style-type: none"> • Generator assembly and testing 	48	5