

MINUTES OF TECHNICAL PRE-BID MEETING HELD ON FEBRUARY 17, 2021 AT MITCON OFFICE, PUNE FOR 3 MW EXTRACTION CUM CONDENSING STEAM TURBINE GENERATOR SET & AUXILIARIES FOR M/S HPCL BIOFUELS LTD., SUGUALI & LAURIYA (BIHAR)
(Prepared by MITCON Consultancy & Engineering Services Ltd.)

A) General Points:

1. All bids to be submitted as per instructions provided in Commercial & Technical unpriced bid document on or before March 5, 2021 by 14:30 hrs at the address provided in the bid
2. Bidders to submit Authorization letter from Steam Turbine OEM including Supply, performance & after sales service guaranty of the STG
3. Bidders to submit no deviation letter as per the format provided in the tender
4. HBL advised that any bid which does not adhere to the required procedure in the tender document or does not contain the documents required as per the tender will be rejected.
5. Technical bid opening will be informed shortly
6. Date of financial bid opening will be informed to all eligible bidders.
7. As per tender, soft copies of all data sheets to be provided in word / excel format to MITCON (cpn@mitconindia.com) and HBL (AbhishekKumar.Singh2@hpcl.in). Soft copy of the data sheet is attached herewith
8. Autocad copy of plant layout for both Suguali & Lauriya site enclosed for reference only.

B) Additional Technical Points required to be considered by the bidders:

1. Replies to queries raised by bidders during and prior to the technical pre-bid meeting are provided in annexure enclosed herewith. These clarifications will be applicable to all bidders.

ANNEXURE

Sr. No.	Section no.	Clause No.	Tender specification/ requirements	Clarification/deviation	HBL replies
COMMERCIAL					
1	Section-I (I) Section-I (II)	1.1 1.13.5	Also, Purchaser wish to receive technical & operation support assistance for two years for the above EPC project. For two years and above, it will be based on PURCHASER prorogation. <u>Also, Bidder to deploy one technical manpower (either from bidder or OEM) after warranty period, to ensure smooth operation of the above plant. Within warranty period, it will be bidder's responsibility.</u>	Please clarify whether OEM's/Vendor need to deploy technical manpower on permanent basis at site for 2 years operation support. If yes, please confirm if price for this is to be filled in Price schedule serial no. D. Please Refer caluse 1.13.5	HBL informed all bidders to presently proceed as per commercial terms and conditions as per tender. Select bidder may raise request for minor
2	Section-I (I) Section-I (II)	1.1 1.13.5	In addition to the deployment of OEMs/ Bidders Engineer to ensure Guarantee run for 2 years post commissioning, <u>the bidder shall also provide technical, operational and troubleshooting support to the Purchaser, post commissioning for 2 years</u>	Technical, operational and troubleshooting support to the Purchaser, post commissioning for 2 years shall be provided on per manday basis. Expert shall be sent to site on call basis. Price for mandays shall be filled in Price schedule serial no. E	revisions with justifications for the same for consideration.
3	Section-I (I)	11.5	<u>EARNEST MONEY DEPOSIT (EMD) of Rs 4, 00,000 in form of account payee crossed Demand Draft,</u> drawn in favor of HPCL Biofuels Ltd. payable at Patna of any schedule bank (Co-operative not acceptable). Tender without the valid EMD, will not be considered for evaluation. SSI/NSIC/MSME registered vendor shall be exempted from EMD. However, vendor has to submit/enclosed the supporting documents	Please note that EMD shall be provided in form of BG as per Government norm.	
4	Section-I (I) Section-1 (III)	12.2 1.10.1 2.2.1	The prices quoted shall be for complete supply, inspection, packing and forwarding, freight and transit insurance, <u>port clearances, statutory fees payable, unloading at site,</u> erection, commissioning and testing of equipment which will include all the required procurement and allied activities for completion of the job in all aspect and handing over the same to the PURCHASER.	a) Port clearance is not applicable. b) All Statutory approval including fees shall be in Purchaser scope. OEM shall provide necessary document support. c) Unloading, handling	

				& storage at site shall be in Purchaser scope.
5	Section-I (I)	25.3 (a)2.2.5Appendix-IV	BIDDER's experience in manufacturing and supply of similar plants for the intended service on the basis of information provided by BIDDER. <u>Incineration Boiler &Aux. with BoP project</u> of similar or larger scope to that required by technical specification should have been in operation satisfactorily for a minimum period of two years in Sugars plant installation for project completed within the previous five years. Bid not fulfilling this requirement will not be considered technically acceptable.	Incineration Boiler &Aux. with BoP project shall be read as STG & auxiliaries.
6	Section-I (I)	25.3 (e)	Willingness to give shop drawings of spare parts and main equipment.	Drawings & documents which are proprietary in nature shall not be provided.
7	Section-I (I)	25.3 (f)	Confirmation from the sub-vendors that for future supply of spare parts for bought out items, the sub-vendors shall supply such spares directly to the PURCHASER as and when PURCHASER so requests.	Sub-vendors details shall be shared post order during execution.
8	Important		THE OFFER SHALL BE BASED ONLY ON THE TERMS AND CONDITIONS GIVEN IN THESE BID DOCUMENTS. THE BIDDERS ARE ADVISED TO PREPARE THE BIDS COMPLETELY IN LINE WITH THE TENDER REQUIREMENT WITHOUT ANY DEVIATIONS. IN CASE THE BIDDERS NEED ANY CLARIFICATIONS ON THE TENDER DOCUMENTS, THEY ARE ADVISED TO CONTACT THE PURCHASER & CONSULTANT OR GET THEIR POINTS CLARIFIED BEFORE THE SUBMISSION OF THE BIDS. <u>THE OFFER OF ANY BIDDER GIVING THEIR OWN SEPARATE SET OF TECHNICAL AND COMMERCIAL TERMS AND CONDITIONS WILL BE CONSIDERED-----</u>	a) Kindly refer to our comments on Terms & conditions of the tender. b) Technical proposal in bidder format shall be submitted along with bid for information.

9	Section-I (II)(1)	1.8.2	The Bank guarantee in respect of guaranteed performance of the plant and machinery supplied by the SUPPLIER in the form of the PURCHASER, after mutual discussions between PURCHASER and SUPPLIER, before eight (8) months of scheduled commissioning of the plant. This guarantee shall be valid for two years from the date of commissioning.	PBG shall be supplied before last despatch and shall be valid till warranty period.
10	Section-I (II)	1.13.1	For a period of two years from the date of commissioning of plant and machinery including the year in which the plant is commissioned (called the maintenance warranty period), the SUPPLIER shall remain liable to rectify / replace any machinery and equipment or part thereof, such as may be found to be defective or below the rated capacity under proper use and arising due to faulty design, material, workmanship.	Warranty shall be 12 months from date of commissioning or 18 months from date of supply whichever is earlier.
11	Section-I (II)	1.13.5	The SUPPLIER shall provide one supervisor at their own expenses for first one month of the first crushing season in order to assist the PURCHASER in the working and maintenance of said machinery and equipment.	Shall be quoted and dealt separately. Refer Price schedule sl. No. D & E.
12	Section-I (II) Section-I (III)	2.1 (s) 2.1 (q) 2.2 (z)	"THE ZERO DATE OF THE CONTRACT" shall be the date on which the Letter of Intent (LOI) is given or Contract Agreement is signed.	"THE ZERO DATE OF THE CONTRACT" shall be the date on which the Contract Agreement is signed along with first advance payment.
13	Section-I (II)	2.2.9	The SUPPLIER is responsible for packing (sea worthy wherever necessary) protecting and marking as per instructions to be given by the PURCHASER.	Sea worthy packing not applicable for domestic project.

14	Section-I (II)	2.3	Any additional equipment or material which are not specifically mentioned but are required to complete the equipment and system offered, in every respect in accordance with the technical specification and required for safe and reliable operation and guaranteed performance, shall also be deemed as included in the scope of work of this contract. The SUPPLIER shall not be eligible for any extra payment in respect of such mountings, fittings, fixtures, accessories, etc., which are needed for the safe operation of the equipment as required by applicable codes, though they may not have been explicitly spelt out in the contract. However if new equipment are to be added due to change of government rules, then such new equipment will come under additional scope of work.	Scope of supply shall be as per enclosed tender with agreed deviation.
15	Section-I (II) Section-I (III)	2.8.2 2.7.2	The following shall be the schedule for the completion of various milestone activities for this package. The SUPPLIER's time schedule shall strictly conform to this schedule.	The Completion dates are subject to timely inputs from purchaser (such as payments/sharing of information/drawing approvals etc.)
16	Section-I (II) Section-I (III)	2.9 (vii) 1.10.5	All Payments will be released by the PURCHASER only after 30 days from the date of certification of the SUPPLIER's bill by EIC & Consultant	All payment shall be made within 7 days from invoice submission.
17	Section-I (II)	2.10.1	The SUPPLIER shall provide such packing of goods as is required to prevent their damage or deterioration during transit to their final destination as indicated in the contract. The packingshall be sufficient to withstand, without limitation, rough handling during transit and exposure to extreme temperatures, salt and precipitation during transit and <u>open storage.</u>	For storing the TG set for longer period at site, closed storage is recommended as per OEM.

18	Section-I (II) Section-I (III)	2.14.1 2.10	The SUPPLIER is responsible for comprehensive risk, insurance including transit charges of all machinery and equipments, other consumables, directly dispatched to the PURCHASER Sugars plant site from the SUPPLIER / Sub-contractors or sub-SUPPLIER respective place of manufacture and despatch and the insurance policies in respect thereof shall be arranged by the SUPPLIER at such premium rates with such insurance companies as may be approved by the PURCHASER and kept in full force and effect until commissioning of the said plant.	shall be in Purchaser scope as per Clause no. 2.14.3
19	Section-I (II)	2.14.3	All goods supplied under this contract shall be fully insured by the PURCHASER on all risks basis against loss/damage during transit from the place of manufacture of the SUPPLIER and from the places of manufacture of their Sub-SUPPLIER to the site of installation	Noted
20	Section-I (II)	2.15.5 2.15.6	In the event of failure of any particular part of any equipment more than three times during the maintenance warranty period, it shall not be repaired but the complete part shall be replaced by the SUPPLIER and the warranty for this particular part shall be <u>extended by one year from the date of last replacement or the maintenance period of two crushing season, whichever is later.</u>	Replaced part warranty shall be limited to original equipment warranty period.
21	Section-I (II)	2.22 (d)	If the performance test could not be conducted within the five (5) months' period, owing to an intervening off-season, the test shall be conducted immediately after the starting and stabilization of the next cane crushing season, applying the internationally accepted ageing factors, failing which the conducting of performance test and any extension of performance bank guarantee will be mutually discussed.	Please clarify the chrushing season, this being distillery plant.

22	Section-I (II)	2.25.1	<p>If considered necessary by the PURCHASER, the SUPPLIER shall undertake to train, the PURCHASER's engineering personnel (two persons) at their works / their sub-contractors' works without any additional liability to the PURCHASER. These engineering personnel shall be given special training in the shops, where the equipment will be manufactured and where possible, in any other plant where equipment manufactured by the SUPPLIER is under installation, operation or testing to enable these personnel to become familiar with the equipment being furnished by the SUPPLIER. The period of training shall be a minimum of 15-days.</p>	<p>Please note training of Purchaser's personnel shall be carried out during erection and commissioning at site. Separate training is not considered.</p>	
23	Section-I (III)	1.7	<p><u>Contract performance security (Retention money)</u> The CONTRACTOR shall cause contract performance security to be furnished to the OWNER for the amount of ten percent (10%) of the contract price by means of a Bank Guarantee. Such performance security shall be provided, in the form satisfactory to the OWNER, within fifteen (15) days after the CONTRACTOR's receipt of the notification of award of contract. The period of validity of the contract performance security shall be until the completion of work under the contract plus one year.</p>	<p>We shall provide 10% PBG before dispatch valid till warranty period. This PBG shall cover the defect liability also, hence no separate retention money is applicable.</p>	

24	Section-I (III)	2.5.1	<p>Statutory approval for work The application for submission to inspector, or any other authority required as per statutory rules and regulations of State / Central governments along with copies of required certificates complete in all respects shall be prepared by the CONTRACTOR. At the site the primary responsibilities for statutory approvals and liaison with government authorities for approvals shall be with the OWNER and the CONTRACTOR shall provide all necessary assistance to the OWNER in this regard. The PURCHASER shall pay the statutory inspection and other fees and charges payable under the terms of any act of Regulation in respect of the installation, operation or use of machinery and equipments. But the follow-up work for get the approval is to be done by the SUPPLIER at their cost. The PURCHASER will extend all co-operation in this respect.</p>	<p>All statutory approval including follow-up work for getting the approval shall be in Purchaser scope. Necessary document support shall be provided by Supplier.</p>
25	Section-I (III)	2.11	Licenses and permits	shall be in Purchaser scope
26	Section-I (III)	2.16.1	<p>After all the systems have been erected and commissioned and completely stabilized and proved safe, the CONTRACTOR in consultation with the OWNER / CONSULTANT shall offer concern equipment/ plant as a whole for continuous and safe operation as a <u>“trial run” for 7-days. A “reliability run” at rated design load for 24-hours of uninterrupted operation shall also be undertaken during such “trial run”.</u></p>	Trial run shall be for 3 days.
27	Appendix-I		<p>Note: Civil works, are excluded from scope. However, all structural steel, insert plates, pipe sleeves, foundation bolts, templates, fixtures, required to be embedded in RCC works, are in the bidders scope.</p>	Foundation bolts for for TG set shall be in vendor scope. All structural steel, insert plates, pipe sleeves, templates, fixtures, required to be embedded in RCC works, are in the Purchaser scope.

28	Appendix-II	1	<p>Total contract value will be divided as:</p> <ul style="list-style-type: none"> Ø Total Supply value shall be maximum 80% of the total contract value Ø Total E&C value shall be minimum 20% of the total contract value Ø All Payments will be released only after 30 days from the date of certification of the bill by EIC & Consultant 	<p>Total Supply & E&C value shall be as mentioned in price bid. There cannot be a cap on Supply value as percentage of the total value for STG package.</p> <p>All payment shall be released within 7 days of invoice submission.</p>	
29	Appendix-II	1 (Supply)	<ul style="list-style-type: none"> · 5% of contract value for supply on signing of supply contract and submission & approval of design basis report and plant equipment layout · 7.5% of contract value for supply on submission / approval of mutually agreed key drawings / information / documents/ civil load data (to be paid within 45 days of contract date) and against bank guarantee of requisite amount. · 7.5% of contract value for supply on submission of copies of unpriced purchase orders for mutually agreed major bought out items / equipment (to be paid within 90 days of contract date) and against bank guarantee of requisite amount. · 70% of contract value for supply against proforma invoice, payable pro-rata on receipt of material at site along with all test certificates, warranty documents & other relevant documents, if any , as per mutually agreed billing / delivery schedule (to be submitted within 30 days of signing of the contract), duly certified by Purchaser / Consultant · 10% of contract value for supply on receipt of all material at site duly certified by Purchaser / Consultant and on submission of performance bank guarantee of requisite amount and valid for Two year, after successful commissioning of the plant. 	<p>i) We request to kindly give us first 10%, Advance against ABG.</p> <p>ix) Balance 80% or 75% along with taxes & duties as per the given breakup against irrevocable LC.</p>	

30	Appendix-II	2.7	<p>SECURITY DEPOSIT: Successful bidder has to submit security deposit of 1% of the Purchase Order Value in form of Demand Draft / Bank guarantee of any Scheduled (Other Than Cooperative Bank) Bank drawn in favor of HPCL Biofuels Ltd, Patna, and Payable at Patna. Security deposit will be acceptable in the form of Demand draft upto Rs. 50,000/- and in the form of Demand draft / Bank guarantee beyond Rs. 50,000/-. Composite Performance Bank Guarantee (CPBG) valid upto a period of 3 months beyond the expiry of defect liability period. Demand Draft/ BG should be drawn on Scheduled Banks, other than co-operative bank</p>	<p>We shall provide 10% PBG before dispatch valid till warranty period. This PBG shall cover security deposit also, hence no separate security deposit is applicable.</p>	
31	Appendix-II	2.8	<p>RETENTION MONEY- Retention Money under Defect Liability Period should be 10% of PO value and will be released after one year from the date of commissioning & handover. Bidder may submit BG of equivalent amount or this 10% will be deducted from his bills against retention money</p>	<p>We shall provide 10% PBG before dispatch valid till warranty period. This PBG shall cover the defect liability also, hence no separate retention money is applicable.</p>	

Sr. No.	Section no.	Clause No.	Tender specification/ requirements	Clarification/deviation	MITCON replies
TECHNICAL					
1	Section-II	1.1 (a),Appendix II	Recommended spare parts, as per Appendix II.	We do not recommend 2 yrs spares to be kept as inventory. Offered STG shall be under warranty, we don't recommend any other spares for STG set to be stored at site, the same shall be provided from our inventory as and when required.	Optional price may be provided in the commercial offer.
2	Section-II	1.1 (b)	Inspection and expediting, handling, packing, forwarding, port clearance , transporting (including transport insurance), technical inputs for obtaining statutory approvals and documentation to be provided by the Bidder.	Port clearance is not applicable.	Agreed.
3	Section-II	1.1 (b)	Preparation of necessary drawings and documents and technical assistance in obtaining approval and safely clearance certificate from the Chief Electrical Inspector to the Government (CEIG) of Bihar for the trial runs and commercial operation of the plant.	All statutory approvals shall be in Purchaser scope. TTL shall provide necessary document support for getting approval.	Agreed.
4	Section-II	1.1 (c')	Unloading, handling and storage at site , pre-fabrication/assembly if any, erection, testing, commissioning, trial operation, final painting and guarantee performance testing of one (1) No. Steam Turbine & Generator	Unloading, handling and storage at site shall be in Purchaser scope. We request that a locked storage space be given only for critical equipment of TTL. Final painting at site shall be carried out wherever touch-up is necessary and colour shade shall be as per OEM standard.	All unloading and handling at site in bidders scope.
5	Section-II	1.1 (d)	Providing warehousing, testing facilities, facilities for Contractor's personnel, obtaining approvals from statutory authorities and providing required documentation, data etc. All Equipment and instruments required for erection, start-up, initial filling , commissioning and performance guarantee tests.	Providing warehousing, testing facilities, facilities for Contractor's personnel, obtaining approvals from statutory authorities and providing required documentation, data etc. including first fill & flushing oil shall be in Purchaser scope.	First fill & flushing oil shall be in Bidders scope.

6	Section-II	1.1 (e)	Training of technical personnel in O&M of STG package. Training will be for a period of 2 weeks after commercial synchronisation.	Training shall be provided at site during erection and commissioning activities.	As per tender.
7	Section-II	1.2.1 (a)	Microprocessor based Electro-Hydraulic or Electronic governing..... <u>Governing console to be provided.</u>	Governing console is part of TCP.	Accepted.
8	Section-II	1.2.1 (a),1.12 (b)	One shell and tube horizontal surface condenser with integral hot well and <u>atmospheric relief valve</u> and sacrificial anodes for the water boxes, <u>butterfly valves, RE joints, bellows,</u> control valves, level control station etc.	Atmospheric relief valve is not required for such small condenser capacity and TG rating.Rupture disc shall be provided instead of atmospheric relief valve. Butterfly valves, rubber expansion bellow for condenser shall be in Purchaser scope.	Accepted, one spare rupture disc to be provided.
9	Section-II	1.2.1 (a)	Main ejector of two stage, single element type, with surface type <u>inter and after condensers. (2 x 100%),</u> with silencer.	There shall be 2x100% Main ejectors with 1x100% inter & after condenser for the proposed Ejector system.	Accepted.
10	Section-II	1.2.1 (a)	Gland sealing steam system consisting of gland steam condenser, steam jet air ejectors, valves, etc. GSC to have CS tube sheet, SS / tubes with shell, water box, foundation bolts, sole plates, primer coating, <u>2 x 100% SJAЕ water relief valve,</u> stand pipes, isolation and drain valves	Please note 1 x 100% GVC blower motor shall be provided. Water relief valve is not applicable for GVC.	To be discussed during detailing.
11	Section-II	1.2.1 (a)	Two 100% oil filters for the lube and control oil. <u>Oil mist fan</u>	1 x 100% oil vapour extractor shall be provided.	Accepted.
12	Section-II	1.2.1 (a)	One main oil pump driven by the low speed side <u>Jacking oil pump with AC motor.</u>	Jacking oil pump not applicable for this rating of TG set	Accepted.
13	Section-II	1.2.1 (a),1.3 (a)	Main hydraulic stop & emergency valve suitable for remote opening & emergency shutdown, with internal strainer. Flow meters in throttle, extraction and condenser lines, temperature & pressure transmitter, safety valves, QCNRV, <u>control valve in controlled extraction, DSH in extraction line, expansion bellows</u> to be supplied loose.	Extraction control valve shall be integral part of turbine. Controlled extraction is provided hence DSH for extraction line is not required. Expansion bellows for extraction line is not applicable.	DSH will be required if extraction temperature is 10 Deg C or more, above saturation temperature.

14	Section-II	1.2.1 (a)	Adequate system of drainage from all steam spaces within the unit to the flash tank . Flash tank for connecting all high & low pressure steam drains	All continuous turbine drain shall be connected to condenser flash pipe. Hence separate flash tank is not provided. All other drain shall be terminated at nearest drain trench.	Condensor flash pipe has been termed as flash tank. Accepted.
15	Section-II	1.2.1 (a),2.6.16	Acoustic hood, required minimum for gear box. In any case, bidder to meet norms of noise pollution. Present norms is less than 75 dB(A) during day time and 75 dB(A) during night time, within the premises.	Noise level shall be 90 dB(A) at 1 meter distance. It is same as 75 dBA at 3 mtr as per standard and meeting your tender reqt. Acoustic hood is not required.	Accepted.
16	Section-II	1.2.1 (b)	The closed air circuit water (CACW) cooling system for the generator with ducting and coolers. Side mounted coolers to be provided.	2 x 60% CACW cooler with top mounted arrangement shall be provided for generator air cooler.	Accepted
17	Section-II	1.2.1 (b)	The complete excitation system consisting of the brush less exciter with PMG	PMG not applicable for this rating of generator.	Excitation transformer to be provided.
18	Section-II	1.2.1 (b),2.7.4	MCC's for all TG auxiliaries and all loads of TG island alongwith starters and turbine speed indicator and raise / lower buttons & local control stations. 415V, 3ph, 50Hz, power will be given at all MCC incomers. MCC to have interconnectivity to DCS. MCC to have potential free dry contacts for DCS signals with clear identification. Incomer to be ACB and all outgoing to be either ACB / MCCB	turbine speed indicator and raise / lower buttons is provided in TCP placed inside control room. Aux.supply should be at MCC. MCCB shall be provided at MCC panel incomer since the incomer rating is less than 200A and outgoing shall be MPCB/MCCB.	Accepted.
19	Section-II	1.2.1 (b)	All power and control cabling within the battery limit and cable trays.	Noted for cables within TTL supplied panel. Any cables between TTL supplied to Purchaser panel shall be in Purchaser scope.	Accepted as per terminal points of tender.
20	Section-II	1.2.1 (b)	Special tools for the Generator and accessories and sling for lifting .	Sling for lifting shall be in Purchaser scope.	If required, in bidders scope.
21	Section-II	1.2.1 (b)	Earthing upto earth-mat / pit for equipment supplied under this package.	Only above ground earthing shall be provided for item under TTL scope of supply	Accepted as per terminal points of tender.
22	Section-II	1.2.2 (c')	Complete I&C system upto marshalling cabinet of DCS (DCS by others) for the STG & auxiliary package.	Noted & DCS is considered to be placed in TG control room.	Yes.

23	Section-II	1.2.2 (d)	However, supply of all consumables required for initial filling is included in the scope and shall be supplied by the successful bidder at appropriate time.	First fill of oil & flushing oil shall be in Purchaser scope.	As per tender, in bidders scope.
24	Section-II	1.2.2 (e)	Two sets of special tools and tackles required for operation maintenance, inspection and repair neatly packed in steel boxes	Only one set of tools & tackles shall be provided	As per tender.
25	Section-II	1.3 (a) (4)	Cooling water for auxiliary equipments To be drawn and returned to the auxiliary inlet & outlet headers (headers will be provided by others and located in power house). CW will be at 2.5 kg/cm2g.	Shall be terminated at inlet & outlet of auxiliary equipment (mating flange shall be provided by TTL).	Terminal points as per tender.
26	Section-II	1.3 (a) (6)	All steam drains & other drains To be taken to flash tank. The supply of tank is in the scope of the TG supplier. Other drains will be terminated at drain channel at 0m level	All continuous turbine drain shall be connected to condenser flash pipe. Hence separate flash tank is not provided. All other drain shall be terminated at nearest drain trench.	Accepted.
27	Section-II	1.3 (a) (7)	Safely valve exhaust and vents To atmosphere at safe elevation.	Noted for GVC & ejector. However extraction line FFRV shall be supplied as loose item.	Accepted.
28	Section-II	1.3 (b)	DC power: Entire DC system including battery charger, DCDB, cabling, etc. in bidder's scope	For TG set only	Accepted as per terminal points of tender.
29	Section-II	1.3 (c')	Complete I&C system upto marshalling cabinet of DCS for STG & auxiliaries	Noted & DCS is considered to be placed in TG control room.	Yes.
30	Section-II	1.3 (c')	Power, Control & Signal cables: Complete within battery limits	Noted for cables within TTL supplied panel. Any cables between TTL supplied to Purchaser panel shall be in Purchaser scope.	Accepted as per terminal points of tender & including cabling from TG JB to DCS.
31	Section-II	1.7.3	Data on turbine design to include casing and rotor type, over speed device type, construction of rotor (solid / build Up), no. of exhaust flows, detailed governor specifications, details of auto governing and extraction valves, blade design data , material of construction of various components of turbine, details of bearings, packing, gland sealing, base plates and soleplates.	Blade design data is proprietary document and shall not be furnished.	Accepted.

32	Section-II	2.6.5 Note.1	Condenser to be designed for maximum 8 TPH and minimum cooling steam flow requirements of 10 to 12% of rated throttle flow as per bidders design.	Minimum exhaust steam flow shall be 30% of design flow.	30% of maximum steam flow to condenser is accepted.
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34	Section-II	2.7.3	Auxiliary steam To be taken by the bidder from one point near the TG	Auxiliary steam shall be at the inlet of motive steam ejector and gland sealing at turbine skid.	As per terminal points of tender.
35	Section-II	2.7.4	A C Power (Single point supply will be provided by the Purchaser	At the in-comer of TG MCC panel.	As per terminal points of tender.
36	Section-II	2.9.7 (ii)	A 125% capacity A.C. motor driven auxiliary oil pump arranged to cut in automatically if the oil pressure falls to a preset value. This pump shall also meet the requirements during the start up and shutdown.	AOP shall be 100%.	AOP & MOP to be designed for 125% of requirement.
37	Section-II	2.9.7 (ii)	Oil storage tank with adequate reservoir capacity, settling tank , if applicable, duplicate strainers, level indicators with float switches and alarm contacts, vent and oil mist eliminators.	Please note oil tank shall be integral to turbine base. And 1 x 100% oil vapour extractor shall be provided. Separate settling tank is not required.	Accepted.
38	Section-II	2.9.7 (ii)	Overhead oil tank for gravity flow to the system in case of emergency.	DC operated EOP is provided. Turbine oil system is with triple redundancy hence OHT is not applicable and not required.S	Please provide as per tender.
39	Section-II	2.9.7 (ii)	Flow indication for oil from every bearing by sight glasses.	MOT is integral type and oil is returned internally into MOT. Hence flow indication for bearing drain shall be provided wherever possible.	Accepted.
40	Section-II	2.9.7 (iv)	Full flow oil filters shall be used downstream of the coolers and shall be piped in a parallel arrangement with a continuous flow transfer valve. Filtration shall be 25 microns nominal for lube oil and 10 microns for control oil.	Filtration shall be 10-15 microns for both lube oil filter & control oil filter	Accepted.
41	Section-II	2.10.3	Over Loading The system offered shall be suitable for an over load. The overload capacity to be clearly indicated by the Bidder.	10% overload for 1 hour in every 12 hours.	Accepted.

42	Section-II	2.10.4	No load and Minimum load operation The turbine shall be capable of operating under home load condition (only auxiliary load of power plant of 8% of generator capacity) during loss of grid.	TG can be operated at minimum load of 20% of MCR capacity.	Accepted.
43	Section-II	2.10.5	This guaranteed specific steam consumption / heat rate shall be for a load range of 80 to 100 percent of rated capacity and the testing shall be as per IEC Publication 46, DIN 1943, Recommendations or ASME PTC-6-S.	Please note only one operating condition shall be guaranteed specific steam condition and testing shall be as per IEC-953 part-II code	Accepted, with correction curves.
44	Section-II	2.10.12	Minimum two nos. vibration probes to be provided at each bearing of turbine, generator and gearbox.	High speed vibration monitoring system shall be provided (total 10 nos. probes).FS train is not possible for such small rating TG set .	Accepted.
45	Section-II	2.12 (b)	The pressure drop on CW side not to exceed 6 mwc.	The pressure drop on CW side not to exceed 10 mwc.	Accepted.
46	Section-II	2.12 (b)	The tubes shall be expanded into the tube sheets at both the ends and <u>flared at the cooling water inlet side.</u>	Flaring shall not be done. Roller expanded shall be provided.	Roller expansion is accepted.
47	Section-II	2.12 (g)	Cooling medium in the inter and after condensers (2 x 100%) in the ejector system shall be condensate from CEP discharge.	There shall be 2x100% Main ejectors with 1x100% inter & after condenser for the proposed Ejector system.	Accepted.
48	Section-II	2.13	The pumps shall be of centrifugal, <u>vertical, multistage type</u> and shall be supplied complete with all valves, inlet and discharge piping with manifolds.	Such small rating Vertical CEP's are not manufactured by pump suppliers as standard ,since volume is very less. Spares and after sales service also is real problem. CEP shall be horizontal type	CEP will be horizontal.
49	Section-II	2.16 (a)	<u>Normal start-up operation should also be accomplished through the DCS, except for manual drain valves.</u> Hence, start / stop of all drives, speed regulation where required, operation of actuators / dampers / solenoid valves, <u>operation of all motorised valves,</u> operation of all subsystems, changeovers of filters, coolers, etc. should be interconnected through the DCS with appropriate & required I/Os.	All isolation valves within battery limit shall be manual type.	Accepted.

50	Section-II	2.16.1	Turbine Control System	Hard wired, self protected, automated turbine control system is considered along with monitoring of critical parameters in purchaser's DCS system. Instrumentation cables up to JB including JB in TTL scope. Further hookup to marshalling cabinet in purchaser's scope.	As per terminal points of tender.
51	Section-II	2.16.2 (a)	Over speed protection with 100% redundancy with 2/3 logic	For overspeed safety we provide mechanical OST which is reliable. In addition, electronic tripping thru governor is set with 2 MPU's for speed measurement. Additional redundancy is not required for this rating of TG.	Accepted, based on 2 / 3.
52	Section-II	2.17	KW, pf, frequency	Shall be provided in Metering cum synchronizing panel located in control room	Accepted.
53	Section-II	2.18.1	The supervisory instruments to measure the following shall be provided, with provision of all signals to DCS : Speed, load, inlet & extraction steam pressures & temperatures, turbine wheel case pressure, <u>emergency and control valve lift</u>	Open/ closed limit switch shall be provided for emergency stop valve. Turbine Control valve lift/opening shall be realized through electronic governor-Woodward.	Accepted.
54	Section-II	2.20	Pressure transmitter after CPC	Not applicable	If part of actuator, then accepted or to be provided.
55	Section-II	2.22	Vortex type flow meter to be provided for CEP return.	Orifice type flow meter shall be provided	Provide as per tender.
56	Section-II	2.24	Illuminated sight glasses shall be provided to inspect the lube oil drain from each individual bearing.	Since gearbox is mounted on turbine base & oil tank is integral to turbine base, sight glass is not provided for lube oil drain due to design constraint	Accepted for direct flows without any bends or valves. To be provided for alternator.
57	Section-II	2.27.2	API 614 - Lubrication and sealing.	Lubrication and sealing shall be as OEM standard.	As per applicable IS standards.

58	Section-II	2.27.3 (c)	Unit shall be capable of continuous operation at overload subject to permissible temperatures of the windings.	Generator shall be overloaded for 1 hour in every 12 hour.	Accepted.
59	Section-II	2.27.3 (j)	j) The maximum line charging capacity at rated voltage that can be obtained without negative excitation and with stable operation of the generator may be indicated, which shall not be less than 38 % of rated KVA.	The unsaturated / saturated direct axis transient reactance of generator as per IEC-60034 tolerances and OEM recommendation.	As per applicable standards subject to consultant / purchaser approval.
60	Section-II	2.27.3 (k)	The unsaturated / saturated direct axis transient reactance of generator should be with IEC tolerance and shall be around 34% to 38.6%, as per IEC.		
61	Section-II	2.27.6 (b)	Measurement of temperature shall be made as specified in IEC. The maximum temperature of ambient air shall be taken as 40 Deg. C and the maximum cooling water inlet temperature as 35 Deg .C and the guaranteed temperature rises in the windings for the rated and 110 % loading shall be furnished. These shall be within the Class 'B' insulation Temperature rise limits.	Noted however for overloading is designed for 1 hour in every 12 hour operation to limit the temperature rise within the limit.	Accepted.
62	Section-II	2.27.7	Guaranteed maximum temperature rise, for the stator and rotor windings of the machine above the inlet temperature of the cooling air at 40 0C, when operating under rated load conditions with all coolers in service shall be as follows:i. Stator winding by embedded temperature detectors : 85 Kii. Rotor winding by resistance: 90 K	Guaranteed maximum temperature rise shall be limited to Class B	Accepted.
63	Section-II	2.27.11 (c')	The insulation between turns of field winding shall consist of special epoxy impregnated asbestos paper / equivalent.	All windings shall be VPI treated.	Accepted.
64	Section-II	2.27.22 (c')	LA – 3 nos, 11kV grade, surge capacitors – 11kv low resistance grounded, PT's for protection, metering & AVR sensing – 11kV, ratio: <u>11kV $\sqrt{3}$/132kV $\sqrt{3}$</u> , PT for generator protection	11kV $\sqrt{3}$ /110V $\sqrt{3}$	Accepted.
65	Section-II	2.27.25 (A)(i)	Type test	Test certificate conducted on similar kW rating machine shall be provided.	OC/ SC and other alternator tests to be carried out. Same will be provided in the QAP approval.

66	Section-II	2.27.25 (A)(ii)	Stator winding capacitance and tan delta measurement.		
67	Section-II	2.27.25 (A)(ii)(ii)	Additional Test:- 10% over voltage on open circuit excitation for five (5) minutes, voltage recovery test after fault clearance over speed of 30% for two (2) minutes		
68	Section-II	2.29.4	The connection between generator neutral and NGR shall be done by means of single core XPLE armoured cable, having aluminium conductor. Size of the cable shall be as suitably selected and approved by PURCHASER/CONSULTANT.	Complete HT cables in Purchaser scope.	As per terminal points of tender.
69	Section-II	2.32.1	Condenser BHEL / BDT // L&T	BHEL/L& T/BDT do not supply such small condenser.Chem Process Systems / Mazda / New Field / C Doctor make are required.	Mazda / C Doctor accepted.
70	Section-II		Gate, Globe & Check Valve CI 600 and below: BHEL / KSB / Crane/ Forbes Marshall Gate, Globe & Check Valve CI 600 and above: BHEL / KSB / Crane/ Forbes Marshall	Please include Micon Valves / Cesare Bonetti / Valtech / Expert / GM Engg / Xomox sanmar(Pacific Valves)	Micon / Xomox / Valtech accepted.
71	Section-II		Insulation Lloyds / Minwool	Please include Rock wool industries / Murugappa Group	Additional makes will be discussed with select bidders during KOM along with technical justification of the requirement
72	Section-II		Miscellaneous valves Audco / KSB / BDK Non IBR valves BDK / L&T / KSB	Please include Micon Valves / Fluidline Valves / Cesare Bonetti / Valtech / Expert / GM Engg / Xomox sanmar(Pacific Valves)	Additional makes will be discussed with select bidders during KOM along with technical justification of the requirement.
73	Section-II		Pumps KSB / Sulzur / Beacon Weir/ Micri finish / Crane	For CEP only	Additional makes will be discussed with select bidders during KOM

					along with technical justification of the requirement.
74	Section-II		Rupture disc FMC Sanmar	BS&B / FIKE	Accepted.
75	Section-II		Safety valves BHEL / L&T / Anderson Greenwood	Fainger/TYCO for FRV	Accepted.
76	Section-II		Vibration system Bently Navada / Provibtech	Please include Shinkawa	Accepted.
77	Section-II		Additional vendor	Expansion bellow: India flex / Metallic bellows/ Precise / FLEXICAN /Athulya Bellow & Engg / MB Metallic Bellow	Additional makes will be discussed with select bidders during KOM along with technical justification of the requirement.
78	Section-II			QCNRV: Bonnetti/ Armatury-Czech / Circor / Sea land	Additional makes will be discussed with select bidders during KOM along with technical justification of the requirement.
79	Section-II			Butterfly Valves: Delval flow controls / Cesare Bonetti / Micon Engineers/ Advance Valves /Hawa Valves / Fouress Group/ Intervale	Additional makes will be discussed with select bidders during KOM along with technical justification of the requirement.
80	Section-II			Rubber Bellow: Cori Engineers / Precise	Additional makes will be discussed with select bidders during KOM along with technical justification of the requirement.

81	Section-II	2.32.2	Battery Exide / Panasonic/ V-Guard	Please include Amararaja /HBL	Additional makes will be discussed with select bidders during KOM along with technical justification of the requirement.
82	Section-II		Battery Charger BCH / Trittech / Sab Nif / Universal / Masstech / Servilink	Please include Green Secure / Amararaja	Additional makes will be discussed with select bidders during KOM along with technical justification of the requirement.
83	Section-II		Busduct C&S / Elpro / Power gear / Enpro / General Engineering/ Spaceage	Godrej (BUSBAR SYSTEMS) / Spearhead/ Vee Vee Controls / NIE Powerr & Engineering	Additional makes will be discussed with select bidders during KOM along with technical justification of the requirement.
84	Section-II		Cables CCI / Universal / Finolex / RPG / Polycab	Please include Sbee Cables/ Thermo cables	Additional makes will be discussed with select bidders during KOM along with technical justification of the requirement.
85	Section-II		Control Cables CCI / Universal / Finolex / RPG / Finecore / TCL / KEI / Udeypyro	Please include Sbee Cables/ Thermo cables/ Polycab	Additional makes will be discussed with select bidders during KOM along with technical justification of the requirement.

86	Section-II		DC Distribution Board & EOP starter: Alstom / GE Power Controls / L&T / Siemens / ICA / BCH / BHEL	Vee Controls/Nikitech/ABM Energo/ powergear	Vee Lotus	Additional makes will be discussed with select bidders during KOM along with technical justification of the requirement.
87	Section-II		DC Motors IEC / KEC / Rotodel	CGL		Additional makes will be discussed with select bidders during KOM along with technical justification of the requirement.
88	Section-II		Digital Meters AE / Enercon / L&T / Siemens	El measure/ Schneider (formerly- Enercon/consezerv) / Rishab Make in for Battery Chargers/ Mecro for AVR only		Additional makes will be discussed with select bidders during KOM along with technical justification of the requirement.
89	Section-II		Instrument Transformers 11kV & 415V: AE / Intrans / Kappa	Please include Kalpa/ Pragati		Additional makes will be discussed with select bidders during KOM along with technical justification of the requirement.
90	Section-II		LT Panels ABB / Alstom / GE Power Controls / L&T / Siemens / EIC / CPRI approved	Vee Controls/Nikitech/ABM Energo/ powergear	Vee Lotus	Additional makes will be discussed with select bidders during KOM along with technical justification of the requirement.

91	Section-II		NGR Panel Ampcontrols / Narkhede / Essen / National switch gear / Ohmark Control / EIC	Vee Controls/Nikitech/ABM Energo/ powergear	Vee Lotus	Additional makes will be discussed with select bidders during KOM along with technical justification of the requirement.
92	Section-II		Transducers ABB / Siemens	RISHAB		Additional makes will be discussed with select bidders during KOM along with technical justification of the requirement.
93	Section-II	2.32.3	Control valves MIL / Fisher Xomox	Pneucon / Marshall / Circor / Emerson	Forbes Inditech/	Additional makes will be discussed with select bidders during KOM along with technical justification of the requirement.
94	Section-II		Flow nozzles / Orifice Starmech / Sankalp	GIC-Minco India / Engg / Starmech	Delta	Additional makes will be discussed with select bidders during KOM along with technical justification of the requirement.
95	Section-II		Additional vendor	Turbine Control Panel & Turbine Gauge cum Pressure Switch cum Transmitter Panel(panel integration): Syspro Automation/ Vee Vee /VRL/ Chemin Controls		Additional makes will be discussed with select bidders during KOM along with technical justification of the requirement.

96	Section-II		Additional vendor	LPBS/JUNCTION BOX/ VMS JB: Vega Switch gear / Vee Vee control/ Hensel/Rittal	Additional makes will be discussed with select bidders during KOM along with technical justification of the requirement.
97	Appendix-III		PLANT LAYOUT FOR SITE	Auto cad format shall be provided to us for our reference along with tender document.	Will be provided.