



**TRANSFORMERS AND ELECTRICALS KERALA LTD  
(A JOINT VENTURE OF GOVT. OF KERALA & NTPC LTD)  
ANGAMALY SOUTH PO, ERANAKULAM DIST- 683 573**

**INVITATION FOR BIDS**

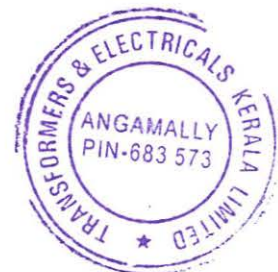
**BID DOCUMENT NO: TELK/C&M/ED/TU/150/2017**

We are pleased to invite competitive tenders in two cover system through Kerala Government e-tender portal <https://etenders.kerala.gov.in> for “Co-operation / Consultancy / Technology transfer/ up-gradation for Transformer and Reactor” strictly as per the “Scope of Work & Special Conditions of Contract” (SW & SCC), Qualifying Requirements (QR) and the “General Conditions of Contract & Instructions to Bidders (GCC & ITB) enclosed.

**Bid Synopsis**

1. Name and Address of Owner : Transformers and Electricals Kerala Ltd  
Angamaly South. P. O, Ernakulam Dist.  
Kerala State, India, PIN-683573
2. Scope of Work : Co-operation / Consultancy / Technology  
Transfer/ Up-gradation for Transformer and  
Reactor
3. Location : Angamaly, Ernakulam (Dt), Kerala
4. Nearest Airport : Cochin International Airport
5. Accessibility : Site is accessible by road, Rail & Air.
6. Security Deposit : **INR 20,50,000 /- or in equivalent currency\***
7. Contract Period : 3 Years & extendable for further 2 years
8. Tender document issuing & receiving authority : Deputy General Manger(C&M), TELK,  
Angamaly South P.O. Ernakulam Dist.  
Kerala State, India, PIN- 683573.

(\* ) An irrevocable Bank guarantee or Demand Draft from a first class bank for an amount of 20,50,000.00 INR or equivalent foreign currency drawn in favor of M/s. Transformers and Electricals Kerala Ltd, Angamaly shall be furnished by the bidders as security deposit towards opening the technical bid.





9. Last date and time for submission of Bids : 05/10/2018, Time up to 3 P.M.
10. Date and Time of Techno-Commercial Bid opening : 08/10/2018, Time at 3 P.M.
11. Bid Validity : 120 Days

Following are the tender documents :

**Cover-I**

- a. Scope of Work & Special Conditions of Contract (SECTION – SW& SCC)
- b. Annexure 1 : General Terms and Conditions of Contract (SECTION – GTC)
- c. Annexure 2 : Instructions to Bidders (SECTION –ITB)
- d. Annexure 3 : Technical particulars of 100 MVA, 220/33 kV Sub-Station Transformer
- e. Annexure 4 : Technical particulars of 250 MVA, 420/15.75 kV Generator Transformer
- f. Annexure 5 : Technical particulars of 315 MVA, 400/220/33 kV Auto Transformer
- g. Qualifying Requirements (QR) to bid document No. TELK/C&M/ED/TU/150/2017

**Cover –II**

- a. Bill of Quantity (Price Bid) to bid document No. TELK/C&M/ED/TU/150/2017

NOTES :

- 1) Pre-bid discussions, clarifications, factory visit etc if required shall be completed by the bidders before 15/09/2018
- 2) Price bid of those bidders who are found qualified as per the details furnished in Cover-I only will be opened.
- 3) Un-priced commercial terms & condition shall also be furnished by the bidders along with the technical bid

Yours Faithfully,  
For Transformers and Electricals Ltd Kerala

KALA. L.

DEPUTY GENERAL MANAGER (C&M)

Angamaly,  
03.09.18

**REVIEWED**



# SCOPE OF WORK & SPECIAL CONDITIONS OF CONTRACT (SW& SCC)

## 1.0 SCOPE OF WORK

Transformers and Electricals Kerala Ltd (**TELK**), a joint venture of Government of Kerala and NTPC Ltd. is looking to update and develop state-of-the-art Transformers & Shunt reactors up to and including 765 kV class and thereafter take up commercial manufacturing of the same.

Competitive offers are invited for Co-operation / Consultancy / Technology transfer / up-gradation for Transformer and Reactor technology from world class transformer manufactures / consultants having technology up to 765 kV class Transformers & Reactors.

The implementation of collaboration / tie up projects shall be in phases.

Phase 1: Power Transformers & Reactors up to 400 kV class.

Phase 2: Power Transformers & Reactors of 765 kV class

The implementation of Phase 1 requires only up-gradation of existing technology and the additions in infrastructure are minimal. However Phase 2 requires new plant and machinery for production, processing & testing. So, the Agency may now quote for Phase 1 only, as per the detailed scope below. However, the agency shall make an agreement with TELK that they will support TELK for the implementation of phase 2, as and when it requires, on mutually agreeable terms.

## 2.0 DEFINITIONS

- 2.1 TELK** shall mean Transformers and Electricals Kerala Ltd, a joint venture of Government of Kerala and NTPC Ltd.
- 2.2 AGENCY** shall mean the firm which is quoting for Co-operation / Consultancy / Technology transfer / up-gradation for Transformer and Reactor.
- 2.3 PRODUCT** shall mean the Transformers and Shunt reactors for which new designs / technology are to be developed by the Agency upon request of TELK.
- 2.4 TECHNICAL INFORMATION** shall mean the design documentation supplied by the Agency at preliminary design stage, detailed design stage and documents & technical inputs required for commercial manufacturing, assembling, testing, erection, commissioning, troubleshooting, repair & servicing of the **PRODUCT**.

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**2.5 TECHNICAL ASSISTANCE** shall mean the services rendered by the Agency upon request of TELK either by way of deputation of their experts to TELK or design services carried out in their facilities and shall include clarifications provided to TELK from time to time

**2.6 SOFTWARE** shall mean the software required for the design and development of the PRODUCTS and shall include any and all subsequent updates of the same by the Agency.

**2.7 IMPROVEMENT** shall mean modification and / or correction of TECHNICAL INFORMATION made by the Agency during the period of collaboration in respect of PRODUCTS.

**3.0 OBJECTIVES AND SCOPE:**

The objective of the Co-operation / Consultancy / Technology transfer / up-gradation project is to establish the design methodology, generate Engineering information, drawings and other necessary documentation which would enable TELK to commercially manufacture the PRODUCTS resulting in better performance and cost reduction. The Agency shall provide to TELK TECHNICAL INFORMATION and TECHNICAL ASSISTANCE as detailed in the hereafter to meet the objectives described herein.

**3.1 TRANSFER OF TECHNICAL INFORMATION :**

The scope includes TRANSFER OF TECHNICAL INFORMATION in the form of detailed design & calculations, customer drawings & manufacturing drawings, instructions for implementation of design, training for the engineers from design & production and supervision during manufacturing of PRODUCTS specified in the price schedule.

In addition to this, during the period of co-operation, the Agency shall upon request of TELK provide TECHNICAL INFORMATION to **TELK, at no** additional charge, for a total of 36 (thirty six) preliminary designs for PRODUCTS of various voltage classes & capacity of for tendering purpose. This includes the material estimation, technical parameters required to be furnished along with the offer, general arrangement drawing etc. in line with the technical specification provided by TELK.

Any additional requirement of preliminary and/or detailed designs of PRODUCTS, over and above those mentioned in the Price Schedule shall be provided by the Agency at additional charges in accordance with the rates quoted in the Optional Price Schedule.

Alternatively the Agency can quote with a total package rate for the Transformer / Reactor Designs specified in the Price Schedule.

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However, the payment schedule (in not less than five installments within the period of cooperation) shall be clearly brought out in the offer. All the designs to be furnished by the Agency to TELK shall comply with IEC 60076. During preliminary or detailed design stages of a PRODUCT, the Agency shall immediately upon request furnish to TELK any information as required by TELK to meet customer technical specification or as sought by a customer of TELK.

The Agency shall verify and ensure completeness and correctness of design data, documents and information generated before release to TELK for tendering or manufacturing, to ensure flawless offer preparation and/or manufacturing of the PRODUCT. Materials specified in preliminary design shall be retained at detailed design stage also for manufacturing as change of material (grade) and major reduction in quantities of raw materials at detailed design stage is not entertained by the customer. Care shall be exercised during detailed design to optimize the cost and for this reason a variation in PRODUCT weight of a maximum of  $\pm 3\%$  (three percent) is only permitted.

The TECHNICAL INFORMATION relating to the PRODUCTS, which are delivered by the Agency to TELK, will be developed based on and using state of the art design and production technologies and in line with latest test practices in accordance with international standards as being used by reputed transformer manufacturers. During the period of co-operation, any design/technological improvements made by the Agency shall be implemented for TELK projects also.

The TECHNICAL INFORMATION provided shall be complete to enable submission of compliant offers against customer tenders in case of preliminary design and for defect free manufacturing in case of detailed design and shall be as per the best international practices.

The zero date for beginning of the design work by the Agency shall be the date of receipt of input data from TELK and the completion date would be the date specified by TELK. A time schedule of 7 (Seven) working days for transfer of TECHNICAL INFORMATION relating to preliminary (tender) design and 60 (sixty) working days for transfer of TECHNICAL INFORMATION related to detailed design including related manufacturing information. The details for starting procurement action of materials like Copper conductor, CRGO, special copper items, Press Board items, etc and components like OLTC / OCTC, Bushings

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etc. that require high lead time shall be furnished within 21 (twenty one) working days from the zero date. The likely variance if any, shall be informed in advance to TELK and accordingly TELK shall consider their request based on complexity of work involved.

The TECHNICAL INFORMATION shall be delivered in English.

**The TECHNICAL INFORMATION shall be made in the metric system of measurements. All drawings will be to scale except some sketches for bringing out clarity. The Agency shall provide any clarifications / queries sought by TELK relating to the TECHNICAL INFORMATION in writing.**

#### 4.0 DESIGN PROGRAMS AND DESIGN MANUAL :

The scope includes installation of software for design & calculations (tender as well as final), optimization of designs, technical data required for preparation of drawings & bill of materials etc. for PRODUCTS (Transformers & Reactors up to 400 kV class). This also includes the handing over of keys, licenses, etc. whichever is applicable. The programs should be integrated type (One set of input will give outputs related to magnetic, winding, insulation, thermal, hydraulic, etc.), user friendly and shall be easily adaptable to TELK engineers. Proper implementation of change over to new technology includes training to TELK engineers and supervision during initial stages. SOFTWARE shall be transferred and installed by the Agency at the registered office of TELK namely

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The Agency shall provide all necessary licenses for use of the SOFTWARE at no additional charge. SOFTWARE installed shall be regularly updated, maintained, user and troubleshooting support provided by the Agency online. The Agency should assure that they will provide these services for a period not less than 5 years from the date of installation.

Along with software, the Agency should also provide a Design Manual for the PRODUCTS to enable TELK Engineers to design & manufacture similar PRODUCTS in future.

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Any information about the existing processes of manufacturing of testing equipment, materials used (properties, specification), characteristics of the component parts and other data that is required by the Agency to fulfill their obligations will be provided by TELK.

## 5.0 TRAINING AND SUPERVISION

### 5.1 TRAINING FOR PRODUCTS:

The Agency shall depute its technical experts to TELK for training / supervision of manufacturing, assembly, testing, etc. of PRODUCT. Thirty (30) working man-days of the Agency experts at TELK premises, for each detailed design of PRODUCT received from the Agency, spread over four visits, shall be provided by the Agency at no additional charge to TELK. Such visits shall take place upon the request of TELK.

### 5.2 TRAINING FOR DESIGN PROGRAMS AND DESIGN MANUAL:

The Agency shall also provide forty (40) working man-days of experts for training TELK engineers on the use of SOFTWARE & DESIGN MANUAL at no additional charge to TELK. The schedule of training will be mutually agreed upon.

The Agency shall quote rates in case of TELK requests additional services of experts over and above in the Optional Price Schedule. Such man-day rates shall be all inclusive (i.e including boarding, lodging and travel). These working man-day rates would remain valid for further period of three years after the termination of collaboration.

## 6.0 QUALIFYING REQUIREMENTS

- a. The Agency or the Chief consultants (at least 2 senior consultants) of the Agency should have at least 15 years of experience in the design & implementation of products defined above.
- b. The Agency should have implemented the proposed Technical Information of the Products, at least in 2 companies and they should produce performance certificate from such companies.

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- c. The agency should confirm that, more than 2 Nos. of Products with the proposed design philosophy is successfully Short Circuit tested and should submit the details of the same.
- d. The agency should confirm that the proposed Design Program shall be an integrated one for the entire design requirements.
- e. The agency should submit major raw material content for 3 transformers Designs coming under the category specified in 2, 5 & 7 of I A of Price SCHEDULE. The technical specification for 100 MVA, 250 MVA & 315 MVA transformers are attached as Annexure 3, 4 & 5 and the agency should provide all the technical details as specified.

**7.0 SITE VISIT**

Since the PRODUCTS as per the designs furnished by the Agency would be manufactured at existing facilities (plant) of TELK, an assessment of the existing infrastructure in such facilities shall be carried out by the Agency for their appropriateness to manufacture the PRODUCTS and the Agency shall then advise any necessary modification/ augmentation for consideration by TELK.

**8.0 NON-PERFORMANCE OF PRODUCTS**

Technical assistance / services / support to analyze any non-performance (during field operations/demonstrations) of PRODUCTS and suggested remedial actions shall be provided by the Agency at no additional charge to TELK.

**9.0 PROVISIONS**

TELK will provide office space with required amenities within the premises of TELK office to the experts of the Agency visiting TELK for Technical Assistance / Training at its cost. However, it would be the responsibility of the Agency to obtain necessary entry visas from the authorities for its experts deputed to TELK works. TELK shall provide necessary support by way of required documentation.

**10.0 RIGHTS**

The Agency should transfer and grand to TELK the following royalty free rights:

- a) An exclusive right during the collaboration period to design, manufacture, assemble, test, erect, commission, troubleshoot, repair and service the PRODUCTS using the TECHNICAL INFORMATION provided by the Agency.

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b) A non-exclusive perpetual license to use the SOFTWARE installed at TELK

c) The TECHNICAL INFORMATION, prepared by the Agency upon the request of TELK shall be the exclusive property of TELK. The Agency shall not transfer nor make available the TECHNICAL INFORMATION to a third party during the period of collaboration.

### 11.0 PRICE SCHEDULE

Sl. No.	DESCRIPTION				QUANTITY
<b>DESIGN PROJECTS</b>					
I A	<b>TRANSFORMER DESIGNS</b>				
	Capacity	Voltage Class	No. of Phases	Type of Transformer	No.
1	Below 100 MVA	220 kV	3	2/3 Winding	1
2	100 MVA & Above	220 kV	3	2/3 Winding	1
3	100 MVA to 250 MVA	220 kV	3	Auto Transformer	1
4	100 MVA to 250 MVA	400 kV	3	Auto Transformer	1
5	Above 200 MVA	400 kV	3	G T	1
6	Above 200 MVA	400 kV	1	G T	1
7	315 MVA	400 kV	3	Auto Transformer	1
8	500 MVA	400 kV	3	Auto Transformer	1
I B	<b>REACTOR DESIGNS</b>				
1	400 k V Class Single / Three Phase Reactor Designs				2
II	DESIGN PROGRAMS for Transformers & Reactors up to 400 kV class				
1	Design & Calculations for Transformer				1
2	Design & Calculations for Reactor				1
III (1)	<b>DESIGN MANUAL</b> for Transformer				1
III (2)	<b>DESIGN MANUAL</b> for Reactor (if any)				1

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## 12.0 OPTIONAL PRICE :

In addition to the above price schedule, price for Optional items as per below table shall also be quoted to meet any additional requirements, if arises during the actual execution of the project.

### PRICE SCHEDULE (OPTIONAL) :

Sl. No.	DESCRIPTION				QUANTITY
DESIGN PROJECTS					
TRANSFORMER DESIGNS					
	Capacity	Voltage Class	No. of Phases	Type of Transformer	No.
1	Below 100 MVA	220 kV	3	2/3 Winding	1
2	100 MVA & Above	220 kV	3	2/3 Winding	1
3	100 MVA & Above	220 kV	3	Auto Transformer	1
4	100 MVA & Above	400 kV	3	Auto Transformer	1
5	Above 200 MVA	400 kV	1 or 3	G T	1
6	Additional training / Supervision during implementation of Design Projects				Per Man Day (8 hours)
DESIGN PROGRAMS					
1	Additional training during implementation of Design Programs				Per Man Day (8 hours)

## 13. PAYMENT

The payment terms for Design Project is :

1. 15% of the total price of released project along the order of release. All advance payment shall be made against irrevocable Bank Guarantee in the format acceptable to TELK.
2. 50% of the total price released project on completion of manufacturing Drawings.
3. 35% of the total price released project on successful completion, final testing, including Short Circuit Test if specified, of Transformer / Reactor.

The payment term for Design Programs & Design Manual :

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1. Payment of 50% of the total price within 15 working days from the date of confirmed order. All advance payment shall be made against Bank Guarantee.
2. Payment of balance 50% of the total price within 30 working days from the completion of training.

## 14.0 WORK COMPLETION PERIOD

The project completion period shall be 3 years and can extend up to 5 years from the date of execution of the Co-operation agreement. The design project implementation period shall be as per the mutual agreement between the party & TELK at the time of release of order for the same.

**15.0 SUBMISSION OF BIDS** : Bidder must have a clear understanding of all the tasks/scope to be accomplished by him before submission of the bid. TELK will not be responsible for incorrect bidding arising out of misconception of tender document.

**16.0 BIDS** (Techno-commercial and price bids separately) should be submitted separately in presentable formats through e-tendering. TELK will not assume any responsibility for errors, omissions or misinterpretations resulting from incomplete downloading of tender documents. The bids and documents submitted to TELK shall be in English language. All prices quoted shall be fixed for the duration of the contract.

**17.0 CLARIFICATION OF BIDS** : To assist the examination, evaluation and comparison of bids, TELK may ask the bidders for clarification of their bids. The request for clarification and the response shall be by fax or e-mail, but no change in the prices or substance of the bid shall be sought, offered or permitted except as required to confirm the correction of arithmetic errors discovered by TELK during the evaluation of bids.

**18.0 ENGINEER IN CHARGE** : The Engineer in charge will act in all matters pertaining to this contract on behalf of TELK. Further correspondences and communications with regard to the clarifications on tender details and execution of contract shall be done with the Engineer in charge. Contact details of the Engineer in charge is given below :

Mr. REJI JOHN  
Deputy General Manager (Design/Engineering)  
TELK, Angamaly  
Email id : [mrtd@telk.com](mailto:mrtd@telk.com)  
Mob : 9388167227

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**Tender Ref No : TELK/C&M/ED/TU/150/2017**

**Work : Co-operation / Consultancy / Technology transfer/ up-gradation for Transformer and Reactor**

**Qualifying Requirements**

<b>Sl. No.</b>	<b>Criteria</b>	<b>Status by the Bidder</b>
1	The Agency or the Chief consultants (at least 2 senior consultants) of the Agency should have at least 15 years of experience in the design & implementation of products defined above.	
	The Agency should have implemented the proposed Technical Information of the Products, at least in 2 companies and they should produce performance certificate from such companies	
2	The agency should confirm that more than 2 Nos. of Products with the proposed design philosophy is successfully Short Circuit tested and should submit the supporting documents for the same	<b>Yes/No (Supporting documents shall be furnished)</b>
3	The agency should confirm that the proposed Design Program shall be an integrated one for the entire design requirements	<b>Yes/No (Supporting documents shall be furnished)</b>
4	The agency should submit major raw material contents for 3 transformer Designs coming under the category specified in 2, 5 & 7 of I A of Price Schedule (Clause 11.0). The technical specification for 100 MVA, 250 MVA, 315 MVA transformer are attached as Annexure-3, 4 & 5 and the agency should provide all the technical details as specified.	<b>Yes/No (Supporting documents shall be furnished)</b>

**Notes :**

**1. Supporting documents in respect of the details furnished by the bidders shall accompany with Cover -1 (Technical bid)**

**2. Price bid of those bidders who are found qualified as per the details furnished in Cover-I (Technical bid) only will be opened.**

**3. Un-priced commercial terms & conditions with details of applicable taxes & duties shall be furnished along with Cover 1 (Technical bid)**

Authorized signatory

## **GENERAL TERMS & CONDITIONS OF CONTRACT**

### **1. DEFINITIONS.**

The following words and expressions shall have the meanings hereby assigned to them:

- 1.1 **COMPANY / OWNER** : Shall mean the TRANSFORMERS AND ELECTRICALS KERALA LIMITED, herein after shall be called as TELK, incorporated under the Companies Act 1956 with its registered office at Angamally, Angamally South PO, Ernakulam (District), Kerala State, India and shall include its lawful successors and assigns.
- 1.2 **TENDERER / BIDDER** : Shall mean the person, firm, company or corporation to whom the tender documents have been officially issued by the company and who have duly submitted the same to the company.
- 1.3 **TENDER DOCUMENTS** : Shall mean the comprehensive set of documents issued by the company to the Bidder/ tenderer comprising of the invitation to tender, instruction to the Bidder, General conditions of contract, Special Conditions of the Contract, Technical specification with scope of work, information and instructions issued by the company from time to time, other documents, drawings, applicable standards etc.
- 1.4 **CONTRACTOR** : Contractor means the person or persons, firm or company whose tender has been accepted by the company and with whom the company has entered into an agreement for execution of the work and shall include their executors, successors, administrators and permitted assigns.
- 1.5 **CONTRACT** : Contract means the agreement between the company and the contractor for the execution of the work and shall include all the documents such as invitation to tender, the Instructions to the Bidder, Special Conditions of the Contract, General Conditions of Contract, Technical Specification with scope of work, drawing etc.
- 1.6 **CONTRACT PRICE** : Contract price means lump sum amount specified in the contract as payable by the company for the work done by the contractor including the amount payable for the agreed deviations if any.
- 1.7 **WORKS** : Works means the works to be executed in accordance with the contract and includes all services and activities to be performed by the contractor under the contract.
- 1.8 **SPECIFICATION** : Specification shall mean the Technical Specifications forming a part of the Contract and such other schedules and drawings as may be mutually agreed upon.
- 1.9 **SITE** : 'Site' shall mean and include the land and other places on, into or through which the specified equipments / system are to be erected and commissioned and any adjacent land, path, street which may be allocated by the Company for the performance of the Contract.
- 1.10 **ENGINEER** : Shall mean the officer appointed by the Owner to act as Engineer from time to time for the purpose of the Contract.
- 1.11 **DATE OF CONTRACT**: Shall mean the date on which Notice of Award of Contract / Letter of Award has been issued.

**2.0 SCOPE OF CONTRACT.**

- 2.1 The scope of the Contract shall be the design, manufacture, supply and erection including testing, commissioning and successful handing over of the equipment in accordance with the specifications and documents forming part of the contract.
- 2.2 The contractor will also carry out any modification of design / addition or substitution of any work which may be required to be done for the desired functioning of the equipment/ system in discussion with TELK.
- 2.3 The General Terms and Conditions shall form a part of the specifications and documents.

**3.0 AWARD OF CONTRACT.**

- 3.1 If the company desires the intimation of intention to award the contract will be made in writing to the successful tenderer by the company/ Consultant initially in the form of letter of intent / fax of intent which will be formalized by a Work order/ letter of award and an agreement to be signed by the tenderer and the company.
- 3.2 The contractor on receipt of the Work order/ Letter of award will sign on the Original copy of the Letter of Award and send it to TELK within Fifteen (15) days as a token of acceptance of the Work order/ letter of award.
- 3.3 The company after issue of the Work order/ letter of award shall send to the contractor a copy of an agreement as indicated in Clause No. 20 of Instruction to Bidder for his signature. The agreement shall be signed within 60 (Sixty) days of receipt of Work order/ Letter of award in the office of TELK at Angamally.

**4.0 GENERAL OBLIGATION.**

- 4.1 The Contractor shall design, manufacture (including associated purchases and/or subcontracting), install and shall execute all work with due care and diligence, following good engineering practices and within the time frame for completion of the work. The Contractor shall also adhere minutely to the approved drawings, specifications and other written instructions if any issued, relating to the work which may be issued from time to time by the Company or Company's Engineer authorized in this behalf.
- 4.2 The contractor shall also comply with all applicable laws in the execution and performance of the work under the contract.
- 4.3 The contractor shall be available at site or shall keep a competent and fully authorized representative available at site and a letter intimating the posting of authorized representative shall be given to the owner. The authorized representative shall also supervise the work under the contract. The orders given by the company to the Contractor's representative shall be considered to have the same effect as if they have been given to the Contractor himself. Such representative shall be authorized to represent the contractor in all matters related to the contract.
- 4.4 The works under execution shall always be open to the Inspection and Supervision of the Company' Engineer or its authorized representative.
- 4.5 On all questions relating to the meaning of drawings and specifications and to quality of workmanship and materials used on the work, the TELK's decision shall be final and conclusive.

**5.0 ENGINEER'S DECISION.**

5.1 In respect of all matters which are left to the decision of the Engineer including the granting or with-holding of the certificates, the Engineer shall, if required to do so by the Contractor give in writing a decision thereon.

5.2 If in the opinion of the Contractor, a decision made by the Engineer is not in accordance with the meaning and Intent of the Contract, the Contractor may file with the Engineer within fifteen (15) days after receipt of the decision, a written objection to the decision. Failure to file an objection within the allotted time will be considered as acceptance of the Engineer's decision and the decision shall become final and binding.

**6.0 CONTRACTOR TO INFORM HIMSELF FULLY.**

6.1 The Contractor shall be deemed to have carefully examined all Contract Documents to his entire satisfaction. If he shall have any doubt as to the meaning of any portion of the Contract Documents and in case need any clarification shall, before submitting the tender, he may submit those points to TELK in writing, in order that such doubt may be removed. TELK will provide such clarifications as may be necessary, in writing, to the Contractor. Any information otherwise obtained from any source shall not in any way relieve the Contractor of his responsibility to fulfill his obligations under the Contract.

6.2 By submitting the tender, he is also deemed to have visited site and gathered information so as to submit his valued offer considering the site conditions, local conditions, labour conditions etc and these factors also give an idea of the problems he may face during the execution of the contract. The Owner shall not entertain any request for clarifications from the bidders, regarding such local conditions.

**7.0 CO-OPERATION WITH OTHER AGENCIES.**

7.1 Company is getting various other Civil, Structural, Mechanical, Electrical works executed at the same time directly or through other agencies/ contractors within its factory campus where the works under this tender also have to be executed. It is the responsibility of the contractor to co-operate with other working agencies / contractors within the campus so that others works are not affected / damaged due to his site activities.

**8.0 LIABILITY FOR ACCIDENTS AND DAMAGES TO TELK STRUCTURE.**

8.1 The Contractor shall be responsible for loss or damage to the equipment / system which are under the contract till the equipment/ system is taken over by TELK.

8.2 Contractor should also ensure that no damage is made to owner's existing structures/ equipments due to his site activities. In case any such damages incurred, same should be rectified at the cost of the contractor.

**9.0 DEDUCTIONS FROM CONTRACT PRICE.**

All costs, damages or expenses which TELK may have paid, for which under the Contract the Contractor is liable, will be claimed by TELK. All such claims shall be billed by TELK to the Contractor regularly as and when they fall due. Such bills shall be supported by appropriate and certified vouchers or explanations, to enable the Contractor to properly identify such claims. Such claims shall be paid by the Contractor within fifteen (15) days of the receipt of the corresponding bills and if not paid by the Contractor within

the period, TELK may then deduct the amount, from any money due or becoming due to the Contractor under the Contract or may be recovered by actions of Law or other-wise, if the Contractor fails to satisfy TELK of such claims.

#### **10.0 INSURANCE.**

The contractor shall arrange, secure and maintain insurance as may be necessary and for all such amounts to protect his interest and the interest of TELK, against all risk. The form and the limit of such insurance, as defined herein together with the under-writer thereof in each case shall be acceptable to TELK. However, irrespective of such acceptance, the responsibility to maintain adequate insurance coverage on comprehensive all risks basis at all times during the period of Contract shall be that of the Contractor alone. The Contractor's failure in this regard shall not relieve him of any of his contractual responsibilities and obligations.

Any loss or damage to the equipment during handling, transporting, storage and erection till such time the equipment / system is taken over by TELK shall be to the account of Contractor. The Contractor shall arrange, secure and maintain insurance as may be necessary and for all such amounts to protect his interests and the interests of TELK, against the risks that are to be covered under the insurance like fire, lightning, earth quake, pilferage, theft, damage in transit etc.

#### **11.0 CONTRACT AGREEMENT AND CONTRACT PERFORMANCE GUARANTEE**

The Contractor shall enter into a Contract Agreement with TELK within **Sixty days (60)** days from the date of acceptance of 'Notice of Award of Contract. The Performance Bank Guarantee for the proper fulfillment of the Contract shall be furnished by the Contractor in the prescribed form within forty five (45) days of 'Notice of Award of Contract'. The Performance Guarantee shall be as per terms prescribed in clause 22, Instructions to Bidders.

#### **12.0 EFFECT AND JURISDICTION OF CONTRACT.**

12.1 The Contract shall be considered as having come into force from the date of the issue of Letter of Intent/Letter of Award.

12.2 All disputes, differences arising out of or in connection with the contract shall be subject to the exclusive jurisdiction of the Courts at Ernakulam, Kerala State, India.

#### **13.0 ASSIGNMENT AND SUB-LETTING OF CONTRACT.**

13.1 The Contractor may, after informing the Engineer and subject to his written approval, assign or sub-let the Contract or any part including erection. In case suppliers of the equipments which he wants to sub-let are not identified in the Contract or any change in the identified supplier is required it shall be subject to approval by the Engineer. Such assignment /sub-letting shall not relieve the Contractor from any obligation, duty or responsibility under the Contract. Any assignment as above without prior written approval of Engineer shall be void and shall be construed as a Contracting Default as mentioned in clause No.15.0

#### **14.0 PATENT RIGHTS AND ROYALTIES.**

Royalties and fees for patents covering materials, articles, apparatus, devices, equipments or processes used in the Works under the contract shall be deemed to have



been included in the Contract Price. The Contractor shall satisfy all demands that may be made at any time for such royalties or fees and he alone shall be liable for any damages or claims for patent infringements and shall keep TELK indemnified in that regard. The Contractor shall, defend all suits or proceedings that may be framed for alleged infringement of any patents involved in the equipment/process of the Works under the contract at his own cost and expense. In the event of any equipment/ device/ process provided by the contractor is in such suit or proceedings of alleged infringement of any patent rights the contractor shall at his own expense, either procure the right to continue the use of such equipment / process or replace it with non-infringing equipment. In case of any suit or other proceedings instituted against TELK, the same shall be defended at the cost and expense of the Contractor who shall also satisfy/comply any decree, order or award made against TELK.

#### **15.0 CONTRACTORS DEFAULT.**

- 15.1 If the Contractor becomes insolvent, or otherwise becomes unable to carry out the work or if without the written consent of the Company, the Contractor assigns or sublets this contract or if in opinion of the Company the Contractor delays or neglects to finish the work in time or shall refuse to execute the work in time, the Company may give notice in writing to the contractor to make good the failure. In case the contractor fails to comply with the notice in thirty (30) days, it shall be at the liberty of TELK to terminate the contract forthwith and employ any other agency to continue and complete the work at the risk and cost of the Contractor. The Contractor shall have no claim to compensation for any loss that may incur from any materials he may have procured or engagements he may have made into on account of this work.
- 15.2 In the event of termination of contract as mentioned above, the Contractor shall not be entitled to recover or be paid any sum for any work thereto actually performed under this contract unless and until the company shall have certified the performance of such work and the value thereof. The Contractor shall only be entitled to be paid the amount so certified after deducting the value of damages if any caused to the Company.

#### **16.0 FORCE MAJEURE.**

- 16.1 Force majeure is herein defined as any cause which is beyond the control of the Contractor or the TELK as the case may be which they could not foresee or with a reasonable amount of diligence could not have foreseen and which substantially affect the performance of the Contract, such as:
- (a) natural phenomena, including but not limited to floods, droughts, earthquakes and epidemics;
  - (b) acts of any Government, including but not limited to war, declared or undeclared, priorities, quarantines, embargoes;

provided either party shall within fifteen (15) days from the occurrence of such a cause notify the other in writing of such causes.

- 16.2 The Contractor or TELK shall not be liable for delays in performing his obligations resulting from any force majeure cause as referred to and/or defined above. The date of completion will, subject to hereinafter provided, be extended by a reasonable time even though such cause may occur after Contractor's performance of his obligations has been delayed for other causes.

**17.0 TERMINATION OF CONTRACT ON TELK INITIATIVE.**

17.1 TELK reserves the right to terminate the Contract either in part or in full due to reasons other than those mentioned under the clause entitled Contractor's Default.

TELK shall in such an event give fifteen (15) days' notice in writing to the Contractor of its decision to do so.

17.2 The Contractor upon receipt of such notice shall discontinue the work under the contract to the extent specified in the notice with immediate effect. The contractor shall stop all further sub-contracting or purchasing activity related to the work terminated, and assist TELK in maintenance, protection, and disposition of the Works acquired under the Contract.

17.3 In the event of such a termination the Contractor shall be paid compensation, equitable and reasonable, dictated by the circumstances prevalent at the time of termination.

17.4 If the Contractor is an individual or a proprietary concern and the individual or the proprietor dies and if the Contractor is a partnership concern and one of the partners dies, then unless TELK is satisfied that the legal representatives of the individual Contractor or of the proprietor of the proprietary concern and in the case of partnership, the surviving partners, are capable of carrying out and completing the contract TELK shall be entitled to cancel the Contract as to its incomplete part without being in any way liable to payment of any compensation to the estate of deceased Contractor and/or to the surviving partners of the Contractor's firm on account of the cancellation of the Contract. The decision of TELK that the legal representatives of the deceased Contractor or surviving partners of the Contractor's firm cannot carry out and complete the Contract shall be final and binding on the parties. In the event of such cancellation TELK shall not hold the estate of the deceased Contractor and/or the surviving partners of the estate of the deceased Contractor and/or the surviving partners of the Contractor's firm liable to damages for not completing the Contract.

**18.0 TIME-THE ESSENCE OF CONTRACT.**

18.1 The time and the date of completion of the Works as stipulated in the Contractor's proposal and accepted by TELK and incorporated in the Letter of Award shall be deemed to be the essence of the Contract. The Contractor shall so organise his resources and perform his work as to complete it not later than the date agreed to.

18.2 The Contractor shall submit a detailed BAR CHART within the time frame agreed as per the Letter of Award consisting of adequate number of activities covering various key phases of the Works such as design, procurement, manufacturing, transport and field erection activities within fifteen (15) days after the date of acceptance of Notice of Award of Contract. This network shall also indicate the interface facilities if any to be provided by TELK and the dates by which such facilities are needed. During the performance of Contract, if in the opinion of the Engineer proper progress is not maintained suitable changes shall be made in the Contractor's operations to ensure proper progress.

**19.0 CONTRACT PRICE.**

The lump sum prices quoted by the Contractor in his bid with additions and deletions as may be agreed before signing of the Contract, for the entire scope of the work viz. supply and erection of equipments covered under the specifications and documents shall be treated as the Contract Price. The rates specified in the Letter of Award / Work order shall be fixed firm and no claim for enhancement / escalation on any ground whatsoever will be entertained and considered.

**20.0 CONSTRUCTION OF THE CONTRACT.**

20.1 Notwithstanding anything stated elsewhere in the bid documents, the Contract to be entered into will be treated as a divisible supply and erection Contract.

Award will be placed on the successful Bidder as follows.

- i) First Contract: For Ex-works supply of all equipment and materials.
- ii) Second Contract: For providing all other services like inland transportation, insurance for transportation to site, unloading, storage, handling at site, erection, testing and satisfactory commissioning in respect of all the equipment supplied under the first contract.
- iii) Both these contract will contain interlinking cross – fall breach clause specifying that breach of one contract will constitute breach of the other contract.

20.2 In case of divisible supply and erection contract, or where TELK hands over its equipment to the contractor for executing, then the contractor shall at the time of taking over of the equipment is required to give an undertaking in the form acceptable to TELK for keeping the equipment in safe custody and to utilize the same exclusively for the purposes of the said contract.

20.3 The Contract shall in all respects be construed and governed according to Indian laws.

20.4 It is clearly understood that the total consideration for the Contract(s) has been broken up into various components only for the convenience of payment of advance under the Contract(s) and for the measurement of deviations or modifications under the Contract(s).

**21.0 CHANGE OF QUANTITY**

The Owner reserves the right to change the quantities of items or groups of items to be ordered as specified in the accompanying Technical Specifications, as may be necessary, during the execution of the Contract, but such variations unless otherwise specified in the accompanying Technical Specifications shall be limited to plus or minus twenty percent (20%) of the original quantity ordered.

**22.0 MATERIALS BROUGHT BY THE CONTRACTOR.**

22.1 All materials brought by the contractor for use in the work shall be in good condition and shall be presented for inspection to the Engineer –in- charge of the company and if rejected for any reason the contractor shall replace it at his cost.

22.2 The materials, tools and equipments brought by the contractor to the company's premises shall not be removed without the written consent of the Engineer-in-charge or any officer authorized for that by the company.

22.3 All materials, tools, equipment brought to the Company premises shall be entered as per the guideline of the company and the formalities to be followed are to be collected from the Engineer-in-charge or the authorized person of the Company.

### **23.0 WARRANTY PERIOD/ MAINTENANCE PERIOD.**

All the works carried out by the contractor shall be guaranteed for a period of Twelve (12) months from the date of successful commissioning unless otherwise specified in the specifications/special conditions of contract. In case of any defect in the work carried out or in the equipment supplied arising out of poor workmanship or design defect observed during the guarantee period of 12 months the same will be rectified by the contractor free of any cost to the company within a reasonable time period. In case the contractor fails to rectify the defects to the satisfaction of the company, same will be got done by the company at the risk and cost of the contractor and all expenses on this account shall be recovered by appropriating any amount due to the contractor or en-cashing the Performance Bank Guarantee.

### **24.0 REPLACEMENT OF DEFECTIVE PARTS AND MATERIALS.**

24.1 During the progress of works if it has been observed by the Engineer that the contractor has manufactured any equipment /plant or part of the plant/ equipment in unsound or imperfect or has supplied any part of the equipment/ system inferior than the quality specified, the contractor on receiving the details of such defects or deficiencies shall at his own expense re-construct or remove such work and furnish fresh equipment to the satisfaction of the Engineer. In case contractor fails to do the rectifications / replacement the Engineer will get the deficiencies rectified at the cost of the Contractor after giving seven (7) days notice to the contractor.

### **25.0 PAYMENTS.**

25.1 The payment to the Contractor for the performance of the works under the contract will be made by TELK as per the guidelines and conditions specified in the contract after making deduction like income tax, applicable Goods & Services Tax, levies, duties etc and any other deduction recommended by the Engineer-in-charge. All payment made during the Contract shall be on account payments only. The final payment will be made on completion of all the works and on fulfillment by the Contractor of all his liabilities under the Contract. The company's Engineer's certificate of measurement shall be accepted as final and binding on all parties.

#### **25.2 Currency of Payment.**

All payments under the Contract shall be in Indian Rupees or equivalent foreign currency as per the terms & conditions of the contract.

#### **25.3 Due Date for Payment.**

TELK will make progressive payment as and when the payment is due as per the terms of payment set forth in the accompanying Special Conditions of Contract / Technical Specification. Payment will become due and payable by TELK within sixty (60) days from

the date of receipt of Contractor's bill/invoice, provided the documents submitted are complete in all respects.

- 25.4 On account payment if any made to the contractor can't be construed as acceptance by TELK of the equipment or any part(s) thereof
- 25.5 TELK will make all payments by way of electronic transfer unless otherwise mentioned in the letter of award.
- 25.6 Measurement : As per mutual agreement.

**26.0 TAXES AND DUTIES.**

The successful bidder shall pay the taxes, duties, fees and other impositions as may be levied under the applicable laws in India, the amount of which is deemed to have been included in the quoted price. Further, all taxes, levies and duties payable outside India shall be the liability of the successful bidder and included in the quoted price. Bidders shall clearly specify the responsibility & liability of the income tax applicable in the contract and payable in India. All the documents which may be required by TELK for the payment of income tax shall be provided by the bidder to TELK. The bidder shall be responsible for the assessment of his income as per the applicable income tax laws in India. TELK will not accept any liability in account of additional tax/penalty/interest/burden etc due to bidder's failure in submission of the relevant documents for assessment of his taxable income by the India tax authorities. The bidders shall pass on the benefit of income tax available to them in his country under double taxation avoidance agreement.

Service tax if any to be paid in India on this contract will be borne by TELK. Tax liability if any on deputation of the successful bidder's personnel to India shall also be borne by the bidder and shall be the responsibility of the bidder as per Tax laws of India.

**27.0 CONTRACT PRICE BASIS - FIRM PRICE BASIS.**

**28.0 PACKING, FORWARDING AND SHIPMENT.**

- 28.1 The Contractor, wherever applicable, shall after proper painting, pack all equipment in such a manner as to protect them from deterioration and damages while transporting them to the Sites and its storage at the Sites till the time of erection. The dimension, approximate weight, indication for location of sling for lifting the material /cases and other important instructions to be taken care of while handling of the cases/ packets are to be written on them.
- 28.2 All demurrage, wharfage and other expenses incurred due to delayed clearance of the material or any other reason shall be to the account of the Contractor.

**29.0 LIABILITY FOR ACCIDENTS AND DAMAGES.**

**29.1 ACCIDENT TO WORKERS.**

The Contractor will be liable for payment of all claims of damages, compensation or expenses payable as a result of any accident or injury sustained by workmen employed or used by him for the execution of the contract .The expenses, if any, incurred by the Company for medical expenses to the Contractor's workmen will be realized from him either by way of adjustment in his bills or deduction from the Security Deposit as the Company deems fit. If any accident or injury is sustained by any worker, the Contractor

should immediately inform the Company's Engineer. The contractor shall comply with all labour laws in this regard as indicated in clause no.33 and any other applicable laws.

**29.2 SAFETY MEASURES.**

The contractor has to make his own arrangement to ensure safety of the workers deployed by him. He has to provide all personnel safety appliances like safety helmet, safety belt, safety shoe etc. He has to follow the instructions given by the safety officer of Owner.

**30.0 LIQUIDATED DAMAGES FOR DELAY IN COMPLETION.**

If the contractor fails to execute and complete the work and or deliver any or all of the services within the period specified in the contract, company shall without prejudice to its other remedies under the contract or law, deduct from the contract price as liquidity damages a sum equivalent to 1 % of the contract price for each week or part thereof the delay until actual completion of performance subject to a maximum of 10% of the contract price.

**31.0 DELAYS BY TELK/OWNER OR HIS AUTHORISED AGENT.**

31.1 In case the performance of Contractor is delayed due to any act of omission on the part of the Owner or his authorised agents, then the Contractor shall be given due extension of time for the completion of the Works, to the extent such omission on the part of TELK / Owner has caused delay in completing the work awarded to the Contractor by the owner. Regarding reasonability of time extension, the decision of the Engineer shall be final.

**32.0 COMPANY / OWNERS OBLIGATION.**

32.1 Construction water and power supply [each at one point only] will be provided free of cost by the Company to the extent available. It has to be noted that this will be entirely at the discretion and convenience of the Company and supply of water/power cannot be claimed by the Contractor as a matter of right.

32.2 Company will hand over the front / site for erection in proper form as per the contract.

**33.0 WAGES TO LABOUR.**

33.1 The contractor shall comply with the provisions of the Minimum Wages Act and the Payment of Wages Act and the Rules framed there under in respect of the employees employed by him in the execution of works under the contract.

33.2 The Contractor shall be familiarized himself with the Contract Labour (Regulation and Abolition) Act 1970 and the Rules there under and should obtain the license for engaging the labor as per the above Act before commencing the works.

**34.0 COMPLIANCE WITH EMPLOYEES STATE INSURANCE & PROVIDENT FUND LAWS.**

34.1 If and when the Employees State Insurance Act and the Employees Provident Fund and Miscellaneous Provisions Act is made applicable to the site work, the contractor should accept full responsibility and exclusive liability for compliance with all obligations imposed by the said two Acts form time to time.

- 34.2 If the provisions of Employees State Insurance Act (ESI) and the Employees Provident & Miscellaneous Provisions Act (PF Act) are applicable to the contractor, the contractor shall be liable to arrange the following for his work :
- (a) To register all his workmen under the ESI scheme before starting the work and to submit the attendance particulars and statement of wages, contribution due and paid for the period on or before 5<sup>th</sup> day of the succeeding month to the ESI section of the Owner.
  - (b) To recover PF and PF dues if any (both employer's and employees) in accordance with the provisions of the PF Act
  - (c) Failure to comply with the above will attract penalty and the Accounts Department of the Owner will recover the due amount from the Contractor's bill without any reference or Notice.
  - (d) The contractor shall maintain a register/muster sheet showing clearly the name of workmen, wages paid, PF deduction made etc and submit the same to the Human Resource (HR) Department of the Owner.
  - (e) In case the contract is exempted from the provisions of the above mentioned Acts, he shall produce authentic documentary evidence in support of the same and satisfy and convince the concerned officer in the HR Department of the Owner.
- 34.3 The contractor has to comply with the provisions of the Kerala Construction Workers Welfare Fund Contribution and the amount is to be remitted to K.C.W.F and a compliance report to that effect has to be submitted to the concerned officer in the HR Department of the Owner.

**35.0 OBJECTION TO CONTRACTORS EMPLOYEES.**

The owner shall be at liberty to object to and require the contractor to remove forthwith from the works any person employed by the contractor in or about the execution of the work who in the opinion of the Owner, misconducts himself or is incompetent or negligent in the proper performance of his duties or whose employment is otherwise considered undesirable by the Owner.

**36.0 PROVISION OF WORKMEN'S COMPENSATION ACT.**

In every case in which by virtue of the provisions of the Workmen's Compensation Act the Owner is obliged to pay compensation to a workman employed by the contractor in the execution of the work, the Owner will be entitled to recover from the contractor the amount of compensation so paid and without prejudice to the right of the Owner under the said Act, the Owner shall be at liberty to recover such amount or any part thereto by deducting it from any other sum payable to the contractor.

**37.0 CLEARANCE OF SITE ON COMPLETION OF WORK.**

On completion of the work the contractor shall remove all temporary structures, debris etc from factory premises and hand over the site at which he has worked in clean condition.

**38.0 LANGUAGE OF THE CONTRACT.**

All documents pertaining to the Contract including specifications, schedules, notices, correspondence, operating and maintenance instructions, drawings or any other writing

shall be written in English language. Information in any other language shall be accompanied by its translation in English. The metric system of measurement shall be used exclusively in the Contract.

**39.0 DEFENCE OF SUITS.**

If any action in Court is brought against TELK or Engineer or an officer or agent, for the failure or neglect on the part of the Contractor to perform any acts, matters, covenants or things under the Contract, or for damage or injury caused by the alleged omission or negligence on the part of the Contractor, his agents, representatives or his sub-contractors, workmen, suppliers or employees, the Contractor shall in all such cases indemnify and keep TELK, and the Engineer and / or his representative, harmless from all losses, damages, expenses or decrees arising of such action.

**40.0 PROGRESS REPORTS.**

40.1 During the various stages of the works in the pursuance of the Contract, the Contractor shall at his own cost submit periodic progress reports as may be reasonably required by the Engineer with such materials as charts, net works, photographs, test certificates, etc. Such progress reports shall be in the form and size as may be required by the Engineer and shall be submitted in at least three (3) copies.

**41.0 TRAINING OF OWNER'S PERSONNEL.**

41.1 The Contractor shall train Owner's employees regarding the equipment/system/operation/maintenance as per mutually agreed terms and conditions.

**42.0 INSPECTION.**

The agency shall offer the equipment / material for inspection by the owner before dispatch. The agency shall submit the manufacturing quality plan for approval by the owner and stage inspection if any shall be finalized after mutual discussion with the successful bidder.

**43.0 SPARES.**

The Bidder shall submit a list of mandatory spares for three years operation of the system/ equipment for which order may be placed by the owner at its discretion along with the main equipment .The cost of the spares shall be considered for evaluation.

**44.0** The above terms & conditions are prepared applicable in general to the supply, erection, testing & commissioning of Capital Equipments and execution of other Contracts. If, any of the clauses are found not applicable or not relevant to the particular Supply/Contract shall be identified, listed and submitted by the bidder to TELK along with the technical bid.

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## INSTRUCTIONS TO BIDDERS

### 1.0 GENERAL INSTRUCTIONS

- 1.1 The Transformers and Electricals Kerala Limited having its registered office at Angmaly South P.O. Ernakulam District, hereinafter called 'TELK/Owner' will receive bids in respect of equipment to be supplied, erected and commissioned as set-forth in the accompanying Technical Specifications. All bids shall be prepared and submitted in accordance with these instructions.
- 1.2 Tenders sealed and endorsed as such with the name of the work clearly written thereon should be delivered at the Office of the Company not later than the stipulated time shown in the Notice Inviting Tender. The tenders will be opened by the Managing Director or his nominee in the presence of such of those tenderers or their authorized agents, as may be present, at 3 p.m. on the same day.
- 1.3 The outside of the envelope should also indicate clearly the name of the Bidder and his address. In addition the left hand corner of the envelope or container should indicate the Specification Number and the bid opening date and time. The envelope containing the bid should be addressed to.
- 1.4 The Bidder has the option of sending the bid by registered post or by submitting the bid in person, so as to reach by the date and time indicated in the Invitation for Bid. Bids submitted by telex/telegram will not be accepted.
- 1.5 TELK reserves the right to reject any bid which is not deposited according to the instructions stipulated above.
- 1.6 The tenders should be accompanied by an Interest-free EMD/Security Deposit for an amount of Rs. 20,50,000 INR equivalent currency by Demand Draft from an "A" class bank and payable in branches in India at State Bank of India or an irrevocable Bank guarantee. The Company will accept Earnest Money, in the form of bank guarantee also issued by the State Bank of Travancore/State Bank of India/other Nationalized Banks in the form prescribed by the Company. In either case, the EMD should be submitted in a separate sealed envelope superscripting the mode of remittance of Earnest Money Deposit  
FORMAT FOR BG shall be acceptable to TELK.
- 1.7 The EMD deposited by the unsuccessful Bidders/ tenderers will be refunded only 21 (twenty one) days after the award of contract for the work. No interest will be paid on EMD.

- 1.8 The successful Bidder's EMD will be returned upon Bidder's accepting the Letter of Award and furnishing the Performance guarantee as per clause no.23.
  - 1.9 The EMD/Security deposit/Bank Guarantee may be forfeited :
    - (a) If the bidder withdraws his bid during the period of bid validity specified by the bidder on the bid form, or
    - (b) In case of a successful bidder, if the bidder fails:
      - (i) To accept the letter of award or
      - (ii) To furnish the performance guarantee
  - 1.10 TELK shall always be at liberty to reject or accept any bid or bids at its sole discretion and any such action will not be called into question and the bidder shall have no claim in that regard against TELK
  - 1.11 Bid submitted after the time and date fixed for receipt of bids as set out in this instruction to bidders are liable to be rejected and returned to the bidders.
  - 1.12 The bidder shall also submit documentary evidence to establish that the bidder meets the qualification requirements as detailed in clause No. 2.0 of the Instruction to Bidders.
  - 1.13 The tenderer shall satisfy TELK that, he possesses the necessary experience and that he has at his disposal suitable and required facilities and experienced employees to ensure that his work is of best quality and workmanship according to the latest proven technology and Engineering practices.
  - 1.14 The tenderer shall satisfy TELK that, he is financially sound and in a position to fulfill contractual obligations offered to be undertaken by him.
  - 1.15 Tenders submitted incomplete in any respect such as unattested corrections in rates quantities, units or amounts, figures not expressed in words, totals of amounts not entered etc are liable to rejection. In case of variations in amounts expressed in words and figures, the amount as per words will be taken for evaluation.
  - 1.16 The "Works" referred herein shall cover the entire scope of the proposal which includes supplying and erection of equipment including the successful completion of commissioning and handing over the system for regular operation to TELK. In this regard, the joint protocol may be made between the contracting agency and TELK.
  - 1.17 The bidder shall complete the bid form inclusive of price schedules, technical data requirements etc to be furnished in the bidding document for the goods to be supplied and services to be rendered, a brief description of goods and services, quantity and prices.
- 2.0 QUALIFYING REQUIREMENTS OF BIDDERS :** See the scope of work.

### **3.0 SCOPE OF THE PROPOSAL**

3.1 The scope of the proposal shall be completeness of the work on the basis of a single bidder's responsibility, completely covering all the equipment/the system/specified under the accompanying technical specifications. It will include the following.

3.1(a) Detailed design of the equipment.

3.1(b) Complete manufacturing including shop testing.

3.1(c) Providing Engineering drawing, data operational manual etc for the owners approval.

3.1(d) Packing and transportation from manufacturers works to the site and transit Insurance

3.1(e) Receipt, Storage and Preservation of equipment at the site.

3.1(f) Erection, Testing and Successful Commissioning of the equipment under the contract.

3.2 The successful Bidder shall ensure the interchangeability of parts wherever possible.

3.3 The successful Bidder shall bring all tools and tackles, instruments and appliances required for the erection, testing and commissioning.

### **4.0 CONTENTS OF BIDDING DOCUMENTS**

4.1 The goods and services required, the bidding procedures and contract terms are prescribed in the bidding documents

In addition to the Invitation to Bids, the bidding document is a compilation of the following sections.

- a. Instructions to Bidders – Section INB
- b. General Conditions of Contract – Section GCC
- c. Special Conditions of Contract.
- d. Bid Form and Price Schedule
- e. Technical Specifications.
- f. Technical Data Sheet if any.

### **5.0 TIME SCHEDULE**

5.1 The basic consideration and the essence of the Contract shall be in strict adherence to the time schedule for performing the specified Works.

5.2 The Owner's requirements of completion schedule for the Works are mentioned in the accompanying Section - Special Conditions of Contract.

- 5.3 The successful Bidder shall complete the whole work in the agreed completion time.
- 5.4 The completion schedule as stated in the Section Special instructions To the Tenderer shall be one of the major factors in consideration of the bids. TELK reserves the right to request for a change in the work schedule before the issue of the Order of Contract to the successful Bidder.

## **6.0 BID PRICE**

- 6.1 The tenderer is advised to submit tender strictly on the terms and conditions and specifications contained in the tender documents including amendments if any issued by TELK prior to submission of tender.
- 6.2 The tender shall quote his competitive price for supply and services in the prescribed format for price (enclosed) on firm price basis. The offer shall remain fixed, firm and binding and shall not be subject to any escalation/variation on any account.
- 6.3 The applicable taxes, duties, levies etc for the supply and services payable on the transaction between the Owner and the Bidder shall be indicated separately.
- 6.4 The charges for transportation up to site, unloading charges at site, comprehensive insurance cover for transit-cum-storage-cum-erection shall be shown separately.
- 6.5 The charges for erection, testing commissioning etc shall be shown separately.
- 6.6 Income Tax if any shall be borne by the tenderer.
- 6.7 For evaluation of the bids in foreign currency, the exchange rates (TT selling rate of State Bank of India) as on the scheduled date of tender opening (Cover-1 bid in the case of two (part bid) shall be considered

## **7.0 LANGAUAGE OF THE BID**

The bid prepared by the Bidder and all correspondence and documents relating to the bid Exchanged by the Bidder and Owner shall be written in the English language. Information in any other language shall be accompanied by its translation in English. Failure to comply with this may disqualify a bid. In the event of any discrepancy in meaning, the English language copy of all documents shall govern.

## **8.0 SIGNATURE OF BIDS :**

- 8.1 The bid must contain the name, residence and place of business of the person or persons or firm furnishing the tender and must be signed and sealed by the bidder with his usual signature. The tender can be signed by the authorized signatory and in that case proof of such authorization should be submitted with the tenders.

8.2 Erasures or other changes in the bid documents shall be over the initials of the person signing the bid

8.3 Bids not conforming to the above requirements of signing may be disqualified

#### **9.0 INFORMATION REQUIRED WITH THE PROPOSAL**

9.1 The bids must clearly indicate the name of the manufacturer, the type of model of each principal item of equipment proposed to be supplied and erected. The bid should contain drawings and descriptive of equipments/materials indicating general dimensions, material from which the parts are manufactured, principles of operation, the extent of pre-assembly involved, method of erection and details of special tools if any for erection of the equipment.

9.2 The above information shall be provided by the Bidder in the form of separate sheets, drawings, catalogues, etc in three copies.

9.3 Any bid not containing sufficient information to describe accurately the equipment proposed may be treated as incomplete and shall be rejected. Any major departure from the drawings and descriptions submitted along with the offer will not be permitted during the execution of the Contract without specific written permission of the Engineer.

9.4 Standard catalogue pages and other documents of the Bidder may be used in the bid to provide additional information and data as deemed necessary by the Bidder.

#### **10.0 LOCAL CONDITIONS**

10.1 Bidders are advised to inspect and examine the site and its surroundings and get familiarized and satisfied himself with respect to local conditions, site conditions, the form and nature of site, the means of access to site etc. He may also try to get information like availability of accommodation that may be required and information on all kind of contingencies that may be arranged to get the work executed. It must be understood and agreed that such factors have been properly investigated and considered while submitting the proposal. The Owner shall not entertain any request for clarification from bidders, regarding such local conditions.

#### **11.0 UNDERSTANDING OF BID DOCUMENTS**

11.1 The bidder is expected to examine all instructions, forms, terms and specifications in the Bid documents and fully inform himself as to all the conditions and matters which may in any way affect the scope of work or the

cost thereof. Failure to furnish all information required by the Bid documents or submission of a bid not substantially responsive to the Bid document in every respect will be at the bidder's risk and may result in rejection of the bid.

## **12.0 CLARIFICATIONS ON BID DOCUMENTS AND SPECIFICATIONS**

12.1 Contractor shall carefully examine all Bid Documents to his entire satisfaction. If the Bidder finds discrepancies or omissions, in specifications and documents or is in doubt as to the true meaning of any parts he shall at once make a request in writing for an interpretation/clarification to the owner. TELK then, will issue interpretation and clarifications as it may think fit in writing. After receipt of such interpretations and clarifications, the Bidder may submit his bid but within the time and date as specified in the Invitation for tender. All such interpretations and clarifications shall form a part of the specifications and documents, and accompany the Bidder's proposal. A Bidder requiring any clarification on bidding document may notify the owner in writing. The owner will respond in writing to any request for such clarifications of the bidding document which it receives not later than fifteen days (15) prior to the deadline for submission of bids prescribed by the owner. Written copies of owner's response will be sent to all Bidders who have received the Bidding document.

12.2 Verbal clarifications and information given by the Owner or his employee(s) or his representative shall not in any way binding on the owner.

## **13.0 PERIOD OF VALIDITY OF BID**

The tender will be considered FIRM for acceptance for a period of 90 (Ninety) days from the date of opening of the tender. The tenderers will not be free to withdraw or modify their tender within this period, except at the risk of forfeiture to the Company of the Earnest Money deposited. If it is found necessary to keep the tender open for a further period, prior consent of the bidder shall be taken, in writing for every further period.

## **14.0 FORMAT OF BID**

### **15.0. QUALITY ASSURANCE**

15.1 The bidder shall include in his proposal the Quality Assurance Programme containing the overall quality management and procedures which he proposes to follow in the performance of the work during various phases like raw material procurement, procurement of bought out items, manufacturing, erection and testing.

- 15.2 At the time of award of contract the detailed Quality Assurance programme to be followed for the execution of the contract will be mutually discussed and agreed to and such programme shall form a part of the contract.

#### **16.0 INSURANCE**

The Bidder's insurance liabilities pertaining to the scope of Works are detailed out in the clause titled 'Insurance' in General Conditions of Contract. Bidder's attention is specifically invited to these clauses. Bid price shall include all the cost to fulfill all insurance liabilities under the contract

- 17.0 PAYMENT TERMS:** As per Special Conditions of Contract.

#### **18.0 DUTIES AND TAXES**

- 18.1 *No claim shall be entertained by TELK in respect of custom duties, Goods & Services tax, and other levies payable by the bidders in respect of the transaction between the bidders and their vendors/sub-suppliers in respect of procurement of any parts, sub-assemblies, raw-materials and equipment which shall be included in the bid price itself.*

- 18.2 *Goods & Services Tax (GST), Duties and other levies in respect of the transaction between the Owner (TELK) and the Contractor under the Contract, if any, shall not be included in the bid price but they should be indicated separately wherever applicable in the Bid proposal sheets.*

*Whenever ex-works price is quoted exclusive of GST applicable on the transaction between TELK and the contractor, then the due credit under the ITC (Input Tax Credit) scheme as per the relevant Government policies wherever applicable, shall be taken into account by the Bidder while quoting bid price.*

- 18.3 As regards the Income Tax, surcharge on Income Tax and other corporate taxes the Bidder shall be responsible for such payment to the concerned authorities and the same will be deducted at source.

- 18.4 Deduction of taxes at source, if applicable will be made as per relevant rules prevailing in India.

#### **19.0 AWARD OF CONTRACT**

- 19.1 Notification of Award of Contract will be made in the form of Letter of Award to the successful Bidder by TELK in duplicate

- 19.2 The Contract will be awarded to the best qualified and responsive Bidder offering the lowest evaluated bid in conformity with the requirements of these specifications and documents and TELK shall be the sole judge in this regard and subject to the provisions of this Instructions to Bidders and other terms and conditions detailed out in other documents and specifications. A responsive bid is one which accepts all terms and conditions of these specifications and documents without any major modifications. However, TELK may waive any minor informalities or irregularities in the bid.
- 19.3 The acceptance of the tender rests with the Managing Director who does not undertake to accept the lowest or any other particular tender or to assign any reason thereof.
- 19.4 The right to award the contract either in conformity with or in a manner entirely different from the terms of this invitation that may be considered most suitable before or subsequent to the receipt of bids due to exigencies, is reserved with TELK.

## **20. SIGNING OF CONTRACT**

- 20.1 On acceptance of the Bid Owner will notify the successful Bidder that its Bid has been accepted and will send the Bidder the detailed Letter of Award. The owner will also send a copy of Contract agreement to be signed between the Owner and the Bidder.
- 20.2 Within fifteen (15) days of receipt of the detailed Letter of Award, the successful Bidder shall sign and date the original of letter of Award and return the same to the Owner.
- 20.3 The Bidder will prepare the contract Agreement as per the Format acceptable to TELK and the same will be signed within 60 days from the date of acceptance of Notification of Award. The Contractor shall pay for all legal/stamp/incidental expenses for executing such agreement.

## **21.0 DRAWINGS & DOCUMENTS**

The successful Bidder is required to supply all drawings and documents to TELK in accordance with the accepted terms & conditions and specifications.

## **22.0 CONTRACT PERFORMANCE GUARANTEE**

- 22.1 The successful bidder within 45 (Forty five) days of the award of contract, shall be required to furnish a Performance Guarantee issued by State Bank of India/State Bank of Travancore/other Nationalized Banks equivalent to 10 (Ten) percent of the contract value in the form prescribed by the Company for the faithful performance of the contract in accordance with the terms and conditions specified in these documents and specifications. The Earnest Money deposited by the successful tender shall be released only on his furnishing the Contract Performance Guarantee and accepting the



Letter OF Award.

22.2 The Bank Guarantee will be released only after completion of the warrantee period and the BG shall be kept valid till 180 days after completion of the warrantee period.

22.3 If the bidder to whom the work is awarded fails to furnish the Contract Performance Guarantee to the satisfaction of the Company and accept the Letter OF Award, the Company shall have the right at its sole option to forfeit the Earnest Money Deposit without any notice to the bidder

### 23.0 LIABILITY FOR ACCIDENTS AND DAMAGES

The Contractor shall be responsible for loss or damage to the equipment/system which is under the contract till the equipment System is taken over by TELK.

### 24.0 SAFETY OF WORKERS

24.1 The Contractor shall be responsible for the safety of the labour employed by him and he shall be liable to pay the necessary compensation in case of accidents as per Workmen's Compensation Act. Necessary safety gadgets like safety shoes, safety helmet, safety belt for labours working at height etc will be provided by the contractor. The contractor shall observe and abide by all safety rules regulations of the company.

### 25.0 INCOME TAX AND GOODS & SERVICES TAX CLEARANCE CERTIFICATE/REGISTRATION.

25.1 The bidder shall furnish copies of Income Tax PAN Card & GST Registration certificates.

### 26.0 EXCLUSIONS, DEVIATIONS AND PURCHASER'S OBLIGATIONS.

The tender shall be for the complete scope of the work and services as detailed in the attached technical specification and hence exclusions and deviations are not acceptable. However in case of any minor deviations for the better performance of the equipment/ plant under the specification, the tenderer should clearly and separately state specific reasons for those deviations. The tenderer shall also clearly indicate the inputs to be provided by TELK in his offer.

### 27.0 SUPERVISION SERVICE AT SITE

The tender shall indicate in his offer the number of supervisory personnel having relevant experience to be deployed at site for supervision of erection and commissioning.

### 28.0 RIGHT TO ISSUE AMENDMENT TO TENDER DOCUMENTS.

28.1 At any time prior to the dead line for submission of bids, the Owner may, for any reason whether at its own initiative or in response to a clarification requested by a

Bidder, modify the bidding documents by amendment(s)

- 28.2 The amendments will be notified in writing or by email to all Bidders which have received the Bidding documents. Owner will bear no responsibility or liability arising out of non- receipt of the same or otherwise.
- 28.3 In order to afford the bidders reasonable time to take the amendments into account in preparing their bids the owner may at its discretion extend the deadline for submission of bids.
- 28.4 Such amendments, clarifications, etc shall be binding on the bidders and due Consideration will be given by the bidders while they submit their bid and invariably enclose such documents as a part of the bid. TELK reserves the right to issue any amendment to tender documents and to add/ or clarify, supplement, delete any of the conditions, clauses or items stated in the tender documents.
- 29.0 The above terms & conditions are prepared applicable in general to the supply, erection, testing & commissioning of Capital Equipments and execution of other Contracts. If, any of the clauses are found not applicable or not relevant to the particular Supply/Contract shall be identified, listed and submitted by the bidder to TELK along with the technical bid.

XXXXXXXXXX

**TECHNICAL PARTICULARS OF 100 MVA, 220/33 KV  
STATION TRANSFORMER.**

SUB-

Sl. No.	Particulars	REQUIRERED AS PER SPECIFICATION	AS PER AGENCY DESIGN
1	Governing Standards	IEC60076	
2	Service	Outdoor	
2	Rated frequency (Hz)	50	
4	No. of phases	3	
5	Type of cooling	ONAN / ONAF / OFAF	
6	No. of windings	Two Winding	
7	Rating (MVA)		
a	ONAN Cooling	60 MVA	
b	ONAF Cooling	80 MVA	
c	OF AF Cooling	100 MVA	
8	Tetiary Loaded / Stabilising	-	
9	Tertiary Capacity	-	
10	Rated voltage (KV)		
a	HV/IV/TV	220/ 33 kV	
b	System Short circuit level	40 kA / 1 sec.(for HV )	
11	Connection symbol	YNyn0	
12	Temperature rise of oil above reference peak ambient temperature of 50 deg.C	45 <sup>0</sup> C	
13	Temperature rise of windings, above reference peak ambient temperature of 50 deg.C	50 <sup>0</sup> C	
14	Guaranteed "No load losses" at rated voltage, normal ratio and rated frequency and 75 deg. C average winding temperature (kW)	45 kW (max.)	
15	Guaranteed load losses at rated output, rated frequency at Principal tap corrected for 75 deg. C winding temperature (KW)	260 kW (max.)	

16	Guaranteed cooler losses at rated output, normal ratio, rated voltage, rated frequency at ambient temp. of 50 deg. C	8.5 kW (max)			
<b>Sl. No.</b>	<b>Particulars</b>	<b>REQUIRERED AS PER SPECIFICATION</b>			<b>AS PER AGENCY DESIGN</b>
17	Positive sequence impedance on rated MVA base, rated current and frequency and 75 deg. C winding temp at				
a	Principal tap (%) (HV - LV)	12.50% (+/-10% tol.)			
b	Highest tap (%) (HV - LV)	13% (+ / - 15% tol.)			
c	Lowest tap (%) (HV - LV)	12% (+ / - 15% tol.)			
18	Max. flux density in core steel	1.7			
19	Max. Current density in the winding at rated voltage A/cm <sup>2</sup>	2.5			
20	Test Voltages:	HV	LV	HVN	
a	Lightning withstand test voltage( kVpeak)	950	170	95	
b	Power frequency withstand test (kVrms)	395	70	38	
c	Switching surge withstand voltage (kVpeak)	-			
21	On Load Tap Changing gear (OLTC / OCTC)	OLTC			
a	Provided on	220 kV Neutral			
b	Tap range	+5% ~ -10% of 220 kV			
c	Rated current (Amps)	350 A			
d	Rated voltage (kV)	66 kV			
e	Number of steps	12			
f	Step voltage (kV)	1588			
22	WEIGHTS AND DIMENSIONS:	To be furnished by the Agency			

A	Weights (kg)		
a	Core		
b	Thickness & Grade of Core Material ( W/kg at 1.7 Tesla)		
<b>Sl. No.</b>	<b>Particulars</b>	<b>REQUIRERED AS PER SPECIFICATION</b>	<b>AS PER AGENCY DESIGN</b>
c	Copper conductor		
	i) CTC ( Copper / Paper)		
	ii) PCC ( Copper / Paper)		
d	Mild steel		
e	Insulation (PB / Wood)		
f	i) Oil Mass in kg		
	ii) Oil Volume in Litres		
g	Total weights of complete transformer with oil and		
h	Weight of the heaviest package for transportation		
B	Dimensions (meters)		
a	Overall height above rail		
	Overall length		
c	Overall breadth		
d	Size of the heaviest package for transportation ( LxBxH)		
C	OTHER PARTICULARS		
a	Resistance per phase		
i	HV Winding		
ii	LV Winding		
iii	Tap Winding		
b	HV Winding Shield	Interleaved / Contra Shield	
c	Type of OLTC	Linear/Reversing /Coarse Fine	
d	HV Line lead Insulation	Paper insualtion / Lead Snouts	
e	Tank shielding	Copper / CRGO / Others	
f	Method of coil Clamping		
g	Any Other Special Arrangements		

**TECHNICAL PARTICULARS OF 250 MVA, 420/15.75 KV  
GENERATOR TRANSFORMER.**

<b>Sl. No.</b>	<b>Particulars</b>	<b>REQUIRERED AS PER SPECIFICATION</b>	<b>AS PER AGENCY DESIGN</b>
1	Governing Standards	IEC60076	
2	Service	Outdoor	
2	Rated frequency (Hz)	50	
4	No. of phases	3	
5	Type of cooling	OFAF	
6	No. of windings	Two Winding	
7	Rating (MVA)		
a	ONAN Cooling	-	
b	ONAF Cooling	-	
c	OFAF Cooling	250 MVA	
8	Tertiary Loaded / Stabilising	-	
9	Tertiary Capacity	-	
10	Rated voltage (KV)		
a	HV/IV/TV	420 / 15.75 kV	
b	System Short circuit level	50 kA / 3 sec.(for HV )	
11	Connection symbol	YNd11	
12	Temperature rise of oil above reference peak ambient temperature of 50 deg.C	35 <sup>0</sup> C	
13	Temperature rise of windings, above reference peak ambient temperature of 50 deg.C	40 <sup>0</sup> C	
14	Guaranteed "No load losses" at rated voltage, normal ratio and rated frequency and 75 deg. C average winding temperature (kW)	102 kW (max.)	
15	Guaranteed load losses at rated output, rated frequency at Principal tap corrected for 75 deg. C winding temperature (KW)	460 kW (max.)	

16	Guaranteed cooler losses at rated output, normal ratio, rated voltage, rated frequency at ambient temp. of 50 deg. C	25 kW (max)			
<b>Sl. No.</b>	<b>Particulars</b>	<b>REQUIRERED AS PER SPECIFICATION</b>			<b>AS PER AGENCY DESIGN</b>
17	Positive sequence impedance on rated MVA base, rated current and frequency and 75 deg. C winding temp at				
a	Principal tap (%) (HV - LV)	13.50% (+/-5% tol.)			
b	Highest tap (%) (HV - LV)	12% (+ / - 15% tol.)			
c	Lowest tap (%) (HV - LV)	12% (+ / - 15% tol.)			
18	Max. flux density in core steel	1.727			
19	Max. Current density in the winding at rated voltage A/cm <sup>2</sup>	2.5			
20	Test Voltages:	HV	LV	HVN	
a	Lightning withstand test voltage( kVpeak)	1425	95	95	
b	Power frequency withstand test (kVrms)	630	38	38	
c	Switching surge withstand voltage (kVpeak)	1175			
21	On Load Tap Changing gear (OLTC / OCTC)	OCTC			
a	Provided on	420 kV Neutral			
b	Tap range	+ / - 5% of 420 kV			
c	Rated current (Amps)	500 A			
d	Rated voltage (kV)	110 kV			
e	Number of steps	4			
f	Step voltage (kV)	6062 V			
22	WEIGHTS AND DIMENSIONS:	To be furnished by the Agency			

A	Weights (kg)		
a	Core		
b	Thickness & Grade of Core Material (W/kg at 1.7 Tesla)		
<b>Sl. No.</b>	<b>Particulars</b>	<b>REQUIRERED AS PER SPECIFICATION</b>	<b>AS PER AGENCY DESIGN</b>
c	Copper conductor		
	i) CTC (Copper / Paper)		
	ii) PCC (Copper / Paper)		
d	Mild steel		
e	Insulation (PB / Wood)		
f	i) Oil Mass in kg		
	ii) Oil Volume in Litres		
g	Total weights of complete transformer with oil and		
h	Weight of the heaviest package for transportation		
B	Dimensions (meters)		
a	Overall height above rail		
	Overall length		
c	Overall breadth		
d	Size of the heaviest package for transportation ( LxBxH)		
C	OTHER PARTICULARS		
a	Resistance per phase		
i	HV Winding		
ii	LV Winding		
iii	Tap Winding		
b	HV Winding Shield	Interleaved / Contra Shield	
c	Type of OLTC	Linear/Reversing /Coarse Fine	
d	HV Line lead Insulation	Paper insualtion / Lead Snouts	
e	Tank shielding	Copper / CRGO / Others	
f	Method of coil Clamping		
g	Any Other Special Arrangements		



## ANNEXURE-5

**TECHNICAL PARTICULARS OF 315 MVA, 400/220 / 33 KV AUTO-TRANSFORMER.**

Sl. No.	Particulars	REQUIRERED AS PER SPECIFICATION	AS PER AGENCY DESIGN
1	Governing Standards	IEC60076	
2	Service	Outdoor	
2	Rated frequency (Hz)	50	
4	No. of phases	3	
5	Type of cooling	ONAN / ONAF / OFAF	
6	No. of windings	Auto Transformer with tertiary	
7	Rating (MVA)		
a	ONAN Cooling	189 MVA	
b	ONAF Cooling	252 MVA	
c	OFAF Cooling	315 MVA	
8	Tetary Loaded / Stabilising	Stabilising	
9	Tertiary Capacity	105 MVA	
10	Rated voltage (KV)		
a	HV/IV/TV	400 / 220 / 33 kV	
b	System Short circuit level	50 kA / 1 sec.(for HV & IV)	
11	Connection symbol	YNaod11	
12	Temperature rise of oil above reference peak ambient temperature of 50 deg.C	50 <sup>0</sup> C	
13	Temperature rise of windings, above reference peak ambient temperature of 50 deg.C	55 <sup>0</sup> C	
14	Guaranteed "No load losses" at rated voltage, normal ratio and rated frequency and 75 deg. C average winding temperature (kW)	63 kW (max.)	
15	Guaranteed load losses at rated output, rated frequency at Principal tap corrected for 75 deg. C winding temperature (KW)	300 kW (max.) (HV-IV loading)	

16	Guaranteed cooler losses at rated output, normal ratio, rated voltage, rated frequency at ambient temp. of 50 deg. C	7 kW (max)			
<b>Sl. No.</b>	<b>Particulars</b>	<b>REQUIRERED AS PER SPECIFICATION</b>			<b>AS PER AGENCY DESIGN</b>
17	Positive sequence impedance on rated MVA base, rated current and frequency and 75 deg. C winding temp at				
a	Principal tap (%)	HV-IV 12.50% (+/-10% tol.)			
		HV-LV 45% (+15% tol.)			
		IV-LV 30% (+15% tol.)			
b	Highest tap (%)	HV-IV 13% (Approx.)			
c	Lowest tap (%)	HV-IV 13.5% (Approx.)			
18	Max. flux density in core steel	1.7			
19	Max. Current density in the winding at rated voltage A/cm <sup>2</sup>	2.7			
20	Test Voltages:	HV LV	IV	HVN	
a	Lightning withstand test voltage( kVpeak)	1300 250	950	170	
b	Power frequency withstand test (kVrms)	630 95	395	70	
c	Switching surge withstand voltage (kVpeak)	1050			
21	On Load Tap Changing gear (OLTC / OCTC)	OLTC			
a	Provided on	220 kV side			
b	Tap range	+ / - 10% of 400 kV			
c	Rated current (Amps)	800A			
d	Rated voltage (kV)	220 kV			
e	Number of steps	16			
f	Step voltage (kV)	2888 V			
22	WEIGHTS AND DIMENSIONS-	To be furnished by the Agency			

A	Weights (kg)		
a	Core		
b	Thickness & Grade of Core Material (W/kg at 1.7 Tesla)		
<b>Sl. No.</b>	<b>Particulars</b>	<b>REQUIRERED AS PER SPECIFICATION</b>	<b>AS PER AGENCY DESIGN</b>
c	Copper conductor		
	i) CTC (Copper / Paper)		
	ii) PCC (Copper / Paper)		
d	Mild steel		
e	Insulation (PB / Wood)		
f	i) Oil Mass in kg		
	ii) Oil Volume in Litres		
g	Total weights of complete transformer with oil and		
h	Weight of the heaviest package for transportation		
B	Dimensions (meters)		
a	Overall height above rail		
	Overall length		
c	Overall breadth		
d	Size of the heaviest package for transportation ( LxBxH)		
C	OTHER PARTICULARS		
a	Resistance per phase		
i	HV Winding		
ii	LV Winding		
iii	Tap Winding		
b	HV Winding Shield	Interleaved / Contra Shield	
c	Type of OLTC	Linear/Reversing /Coarse Fine	
d	HV Line lead Insulation	Paper insualtion / Lead Snouts	
e	Tank shielding	Copper / CRGO / Others	
f	Method of coil Clamping		
g	Any Other Special Arrangements		