

NOTICE INVITING TENDER

All required documents are to be submitted in online Electronic form only except documents required against payment of tender Fee, Vendor Registration& Earnest Money Deposit (EMD)

The Chief Engineer (O&M) -DGVCL invites “On line Tenders (e-tendering)”for Rate Contract for Repairing of failed/damaged Distribution Transformers having CRGO Core (STACK/WOUND/DRY/PAT/SDT)& Amorphous Core of various ratings on item wise rate including internal parts and external parts per unit rate basis from existing agencies and new entrepreneurs who fulfill tender conditions. Tender Papers & Specifications may be down loaded from Web site <https://tender.nprocure.com> (For view, down load and on line submission) and DGVCL web site www.dgvcl.com (For view & down load only).

The documents, as mentioned given here under, should be uploaded in **online electronic form**. Bidder has to pay **Tender fee & EMD (up to Rs. 3 Lac) and Vendor Registration fee** by **RTGS/NEFT/Online**. Tender fee & EMD online transaction details and Vendor Registration (VR) Documents must be uploaded in **online electronic form only**.

Tenders are invited in two bid system i.e. Techno-Commercial bid and price bid. Price bids to be submitted **ON LINE** only (Dates given below is provisional, will be changed after getting approval from competent Authority.)

1	Tender No.:	DGVCL/EE-T-1/TRANS-REP/2024-2026/05
2	Description	Rate Contract for Repairing of failed / damaged/Distribution Transformers having CRGO Core(STACK/WOUND/DRY/PAT/SDT)& Amorphous Core of various ratings on item wise rates including internal parts and external parts per unit rate basis repairing unit should be under DGVCL Jurisdiction or outside DGVCL.
3	Estimated Value of Tender	Rs. 22.46Cr. Per annum i.e.Rs. 44.91 Cr. for 2 years.
4	Tender Fee in Rs. (non-refundable)	Rs. 11800/- (Rs. 10,000/+18 % GST)
5	Estimatednoofrepairingof Transformer	Repairing of approximate 11,800 nos. of transformers per annum- i.e. @ 23,600 for 2 years
6	Earnest Money Deposit amount in Rs.	Rs.84750 /-Per Bidder for regular* 3 times for new bidder (i.e. Rs. 2,54,250/-)
7	Last date & Time of Online (e-tender) submission of offer (This is mandatory)	15-12-2023 (up to 18.00hrs)
8	Date of opening of preliminary stage in online mode.(If possible)	16-12-2023 (up to 12.00hrs)
10	Date of opening of Technical stage.	18-12-2023 (at 12.00 hrs.)

Signature of the Tenderer

Date:

Place:

Company's Round Seal Contd. (PTO)

	(If possible)	
11	Tentative Date of opening of Price bid in online mode/e-tender (if possible)	30-12-2023 (at 12.00 hrs.)
12	Validity of Tender	120 Days from the date of opening of Technical Bid

AS PER THE NOTICE OF THE INVITATION OF TENDER (NEWS PAPER ADVERTISEMENT), THE TENDER IS INVITED ON E-TENDERING (ON – LINE) SYSTEM, FOR WHICH FOLLOWING CONDITIONS ARE MANDATORY AND ANY DEVIATION WILL BE FOUND IN THE OFFER, THE TENDER / OFFERER WILL BE OUTRIGHTLY REJECTED AND NO ANY FURTHER COMMUNICATION IN THE MATTER WILL BE ENTERTAINED.

[A] All the relevant documents as mentioned in tender (Part III, Clause-30) (given here under) should be uploaded in **online electronic form**.

[B] Required documents as mentioned in **Annexure-1** of online tender should be uploaded in technical stage of online bid. In case of non-attachment of mandatory document or attachment of wrong document, bid may be rejected at discretion of DGVCL and no any further communication in the matter will be entertained.

[C] Bidders are requested to submit price – bid (Schedule–A) should be uploaded in **online electronic form**, it is mandatory. If price bid is submitted in physical form, the same will not be opened / considered and only on-line submitted price bid will be considered for evaluation.

Any technical questions, information and clarifications that may be required pertaining to this tender, enquiry should be referred to the **CHIEF ENGINEER (O&M.) DAKSHIN GUJARAT VIJ COMPANY LTD., “UrjaSadan”, Nana Varachha Road, Kapodra Char Rasta, Surat-395 006.**

DGVCL reserves the right to reject/scrap any OR all tenders without assigning any reasons thereof.

FROM:
Chief Engineer (O&M.)
DAKSHIN GUJARAT VIJ COMPANY LTD.
Corporate Office: “UrjaSadan”,,
Nana Varachha Road,
Kapodra Char Rasta
Phone No.: 0261 – 2506151/52
Fax No.: 0261 – 2572636
e-mail :ceom.dgvcl@gebmil.com
website:www.dgvcl.com

Signature of the Tenderer

Date:

Place:

Company's Round Seal Contd. (PTO)

Tender Documents in (PDF Format) which consists of:

Part – I: Instruction to Bidder & Important conditions

Part –II: Qualifying Requirements of the Bidders

Part –III: General Conditions of Contract

Part –IV: Scope of work

Part –V: Schedule –A of Prices.

Annexure-1:Details required to be furnished by the Bidders

Annexure-A: Process card for repairing of Distribution Transformers

Annexure-B: List of Testing Instruments

Annexure-B1: List of Machinery

Annexure-C: Repairing Work Detail

Annexure-D: Undertaking & Validity

Annexure-E: Undertaking for New Repairing Agency.

Note: - Bidders should be in touch with websites <https://tender.nprocure.com> & www.dgvcl.com for information regarding revision/corrigendum/amendment in tender till due date of online submission and thereafter. No separate information shall be sent in this regards and also not publish in newspaper.

In case bidder needs any clarification or if training required for participating in online tender, they can contact the following office:

(n) Procure Cell

(n) code solutions-A division of GNFC Ltd.,

403, GNFC Info tower, S.G. Road, Bodakdev

Ahmedabad – 380054 (Gujarat)

Toll Free: 1-800-233-1010 (Ext. 501, 512, 516 , 517, 525)

Phone No. 079-26857315 / 316 / 317

Fax: 079-26857321 / 40007533

Email: nprocure@gnvfc.net

Other terms & conditions are as per tender documents

**Chief Engineer (O&M)
DGVCL, SURAT.**

Signature of the Tenderer

Date:

Place:

Company's Round Seal Contd. (PTO)

Part-I

INSTRUCTION TO BIDDERS

- Tender fee is Nonrefundable.
- The Bidders are forbidden from furnishing their **own printed / typed** commercial and other terms and conditions.
- The Bidders shall specifically note that the Tenders are invited on item wise rate for CRGO Core (STACK/WOUND/DRY/PAT/SDT)& Amorphous Core of various ratings on item wise rate including internal parts and external parts. **Estimated rates are furnished and bidders have to quote their rates in % above or below the estimated rates excluding GST.**
- The Bidders shall specifically note that the quantities of repairing of failed Transformers are likely to vary as per the actual failure rate and payment shall be made on the basis of actual repairing work carried out.
- The Bidders shall have to submit e complete documents sets of their offer in On-Line Electronic forms.
- The Bidders will ensure submission of all the Tenders documents should be uploaded in **online electronic form.**
- Bidders are not allowed to transfer their offer to other firm who have not purchased the tender document nor to the firms who have purchased the tender document.
- Seal and Signature with date at all pages of all documents / Annexure are must. The bid which is not opened due to any reason/s in that case the same will not be returned to the bidder in any case / circumstances and no any communication for that.

Bidder has to upload scanned copies of original (Notarized/ Self-Attested copies of original- as specified in tender document) documents in **online electronic forms** (e-tendering) in scheduled time with bid and physical documents not required;

In absence of any of the above, techno-Commercial bid will not be opened / the opening of tender of the party will be at the discretion of the DGVCL.

● DELAYED AND LATE TENDERS :

Signature of the Tenderer

Date:

Place:

Company's Round Seal Contd. (PTO)

The bidders are requested to submit their bids by on line through our service provider M/s(n) Code Solutions before one day of the due date to avoid complication / dispute at later stage.

No tender shall be accepted / opened in any case which are received after due date and time of the receipt of tender irrespective of delayed due to postal service or any other reasons and DGVCL shall not assume any responsibility for late receipt of tender. Any correspondence in this matter will not be entertained.

- **Tender evaluation: L1 bidders (irrespective of new or existing agency) offer shall be considered as base offer and other agency to match with base rate/ offer for placement of order.**
- The DGVCL may split up the work amongst more than one Tenderer. The lowest bid will not be offered the whole contract.
- After opening of the tender and within the validity period no reduction or enhancement in offer price by the tenderer will be entertained. On the other hand, it will make the tender liable for rejection. However management reserves the right for negotiation of rates & terms from among the eligible bidders.
- Conditional Offers shall not be accepted.
- The bidder should have valid PAN No, GST Registration and workman compensation in addition to other statutory compliances. Copy of registration to be submitted.
- Recent test certificates copy of instruments by approved Govt. /NABL laboratory must be submitted - **NOT LESS THAN ONE YEAR OLD.**

Signature of the Tenderer

Date:

Place:

Company's Round Seal Contd. (PTO)

IMPORTANT CONDITIONS

(1) The documents, as mentioned given here under, should be uploaded in **online electronic form**. Tender fee & Vendor Registration (VR) fee must be submitted in Online. Otherwise the offer will not be considered and no further communication in the matter will be entertained.

(2) Bidders are requested to submit price – bid (Schedule–A) & Technical Bid should be uploaded in **online electronic form**, it is mandatory

(3) It is mandatory for all the bidders to submit their tender documents (technical bid) in **online electronic form** (e – tendering).

(4) The Techno-Commercial bid shall be opened on-line at date and time mentioned in the tender notice, if possible. Technical and pre-qualification bid details specification will be opened first and subject to evaluation based on the qualification criteria contained in the individual bid document. Price bids of bidders who are assessed and declared as substantially technically responsive on evaluation of the technical bid will be opened for commercial evaluation.

(5) TENDER FEE

Tender fee (Non-refundable) plus GST as applicable as notified in the tender notice should invariably be paid by below mentioned way otherwise offer will be ignored out rightly. **(This is Mandatory)**

- Bidder **must pay Tender Fee by RTGS/NEFT/Online**. and receipt of payment transfer through RTGS/NEFT/Online must be uploaded in preliminary stage

(6) EARNEST MONEY DEPOSIT:-

EMD of Rs. **84750.00** is payable by all existing bidders and **it 3 times as compared to regular bidders for new bidders as compare to regulars bidders** . No Interest will be allowed / paid against payment of E.M.D.

- Bidder **must pay EMD/Tender Fee/Vendor reg. Fee by RTGS/NEFT/Online**. and receipt of payment transfer through RTGS/NEFT/Online must be uploaded in preliminary stage. Details of RTGS/NEFT/Online are shown below.

:- Performa of R.T.G.S. Details:-

Sr. No.	Particulars	Requisite Details
1	Name of Bank	BANK OF BARODA
2	Name of Branch	BHAGATALAO Branch, P. B. No. 286, Kanpith, Bhagatav, surat, Surat-395003
3	IFSC Code	BARB0BHAGAT(5th character is "ZERO")
4	Name of Account	GUVNL A C DAKSHIN GUJ VIJ CO LTD
5	Account No	02590500000025

Signature of the Tenderer

Date:

Place:

Company's Round Seal Contd. (PTO)

The Micro and Small Scale Industrial (manufacturing) Units registered under Small Scale Industries of **Gujarat State** and holding subsequent registration with CSPO / NSIC / DGS&D, Registration Certificates for the item under Tender will be eligible for exemption from payment of EMD on **upload of original copies** of minimum one certificate from group A & B (i.e. one certificate from group A & one certificate from group B) for availing exemption in payment of E.M.D. **(This is mandatory)**.

Group A		Group B	
1	UDYAM Registration Certificate	1	CSPO Registration Certificates
		2	NSIC Registration Certificates
		3	DGS & D Registration Certificates

Note: In view of Ministry of Micro, Small & Medium Enterprises, Govt. of India, New Delhi notification S.O. 2119(E) dated 26th Jun, 2020 and subsequent amendments, **Only "UDYAM REGISTRATION CERTIFICATE"** out of SSI/MSME part II/Udhyog Aadhar Memorandum/Udyam Registration certificate shall remain valid from 1st July-2022 OR from the date as amended in future by the ministry of Micro, Small & Medium enterprises (MSME), Govt. of India. This benefit of exemption will not be admissible if they take part in the tender indirectly either through their dealers, agents, distributors or other intermediates)

The Certificates should indicate the item. In case of UDYAM REGISTRATION CERTIFICATE / Udyog Aadhar Memorandum, it should indicate the manufacture of related group of item.

Authenticated notary certified copy of the Certificates for the works / item under tender subject is required otherwise rejected without entering in to further correspondence in this regard and no reference will be made.

No relaxation shall be given to the bidders having valid UDYAM Registration Certificate/NSIC certificate of Outside Gujarat State. No relaxation shall be given to the bidders having only one registration number from Government of Gujarat but must with subsequent registration with NSIC/CSPO/DGS&D registration certificates for the item under tender.

NSIC/CSPO/DGS&D certificate more than 03 years old will not be considered and the validity of the same should cover at least the validity period of the tender and thereafter it has to be renewed and submitted immediately.

All the "UDYAM Registration Certificate" and "NSIC/CSPO/DGS&D" registration certificates Documents furnished along with the tender submitted by the bidders having **Small, Cottage & Tiny industrial units registered under small scale industries of Govt. of Gujarat** should have clear validity as per the tender and should invariably be renewed as per the norms of "UDYAM Registration Certificate" and "NSIC/CSPO/DGS&D" registration certificates Otherwise they shall have to pay E.M.D. and no exemption will be granted.

Signature of the Tenderer

Date:

Place:

Company's Round Seal Contd. (PTO)

Tenders submitted without Earnest Money Deposit by the firms, who are not eligible for any exemption, will be rejected without entering in to further correspondence in this regard and no reference will be made.

The UDYAM Registration Certificate & NSIC/CSPO/DGS&D certificate should indicate the works / services of works / services offered under this tender. Provisional Registration Certificates are NOT allowed.

EMD will be released only on payment of security deposit in respect of successful bidder whereas the same will be refunded to others on finalization of the tender / placement of order to successful bidder.

Participants not covered under above categories mentioned, will have to pay EMD compulsory, as prescribed, failing which the "Bid" will be treated as "Disqualified Bid" and automatically, stand as "Rejected Bid" at the time of scrutiny of Preliminary / Technical Bid No Interest will be allowed against payment of Earnest Money Deposit.

Bank Guarantees issued by following banks will be accepted as Performance Guarantee (PG) for Contract Period & Performance Guarantee (PG) for Warrantee Period. (banks notified latest G.R. by finance department of Govt. of Gujarat dated 21.04.2023) :

(A) Guarantees issued by the following banks will be accepted as SD/EMD on permanent basis:

❖ All Nationalized banks.

(B) Guarantees issued by the following Banks will be accepted as SD/EMD for period up to **March 31, 2024**. The validity cut-off date in the GR is with respect to date of issue of Bank Guarantees irrespective of date of termination of BG.

1. Axis Bank
2. AU Small Finance Bank
3. Bandhan Bank
4. BNP Paribas
5. City Union Bank
6. CSB Bank
7. DBS Bank India Limited
8. DCB Bank
9. Equitas Small Finance Bank
10. Federal Bank
11. HDFC Bank
12. HSBC Bank
13. ICICI Bank
14. IndusInd Bank
15. Karnataka Bank

Signature of the Tenderer

Date:

Place:

Company's Round Seal Contd. (PTO)

16. Karur Vysya Bank
17. Kotak Mahindra Bank
18. South Indian Bank
19. Standard Chartered Bank
20. Tamilnadu Mercantile Bank
21. Utkarsh Small Finance Bank
22. The Kalupur Commercial Co-op. Bank
23. Ahmedabad Mercantile Co-op. Bank
24. Nutan Nagarik Sahkari Bank Ltd.
25. Rajkot Nagarik Sahkari Bank Ltd.
26. Saraswat Co-operative Bank Ltd.
27. SVC Co-operative Bank Ltd.
28. The Gujarat State Co-Operative Bank
29. The Mehsana Urban Co-operative bank Ltd.
30. The Surat District Co-operative Bank Ltd.
31. The Surat People's Co-Operative Bank Ltd.
32. Saurashtra Gramin Bank

If Bank Guarantee(s) is / are submitted of the bank other than above banks / banks notified under latest G.R. by finance department of Govt. of Gujarat, it will not be accepted by DGVC and in such case it will be considered as Bank Guarantee (s) is / are not submitted and action will be taken accordingly.

Note: 1. Bank Guarantee of Rs. 50,000/- and above must be signed by Two Bank Official Jointly.

2. Designation of the officers must be mentioned clearly.

3. Place and Date of execution must be mentioned.

4. Official round seal of the bank is mandatory.

“NO STAGewise BANK GUARANTEES WILL BE ACCEPTABLE IN ANY CASE.”

CORPORATE GUARANTEES ARE NOT ALLOWED.

BANK GUARANTEE FORMAT

FOR TENDER NO.: DGVC/EE-T-1/TRANS-REP/2024-2026/05

(BANK GUARANTEE ON NON-JUDICIAL STAMP PAPER OF Rs.300/-)

WHEREAS M/s. _____ (name & address of the Firm) having their registered office at _____

(address of the firms Registered Office) (hereinafter called the 'Tenderer') wish to participate in the tender No. _____ for

_____ of (repairing of failed distribution Transformers) (Name of the material / equipment / Work) for

_____ **Dakshin Gujarat Vij company Ltd.** and WHEREAS a Bank Guarantee for (hereinafter called the "Beneficiary") Rs. _____ (amount of

EMD) valid till _____ (mention here date of validity of this Guarantee which will be **4 (FOUR)** months beyond initial validity of Tender's Offer) which is required to **be submitted by the Tenderer along with the Tender.**

Signature of the Tenderer

Date:

Place:

Company's Round Seal Contd. (PTO)

We, _____ (name of the Bank and address of the Branch giving the Bank Guarantee) having our Registered Office at _____ (address of Bank's Registered Office) hereby give this Bank Guarantee No. _____ dated _____ and hereby agree unequivocally and unconditionally to pay immediately on demand in writing from the **Dakshin Gujarat Vij company Ltd.** or any Officer authorized by it in this behalf any amount not exceeding Rs. _____ (amount of E.M.D.), (Rupees _____ (in words) to the said **Dakshin Gujarat Vij company Ltd.** on behalf of the Tenderer.

We _____ (name of the Bank) also agree that withdrawal of the Tender or part thereof by the Tenderer within its validity or Non-submission of Security Deposit by the Tenderer within one month from the date tender or a part thereof has been accepted by the **Dakshin Gujarat Vij company Ltd./** would constitute a default on the part of the Tenderer and that this Bank Guarantee is liable to be invoked and encashed within its validity by the Beneficiary in case of any occurrence of a default on the part of the Tenderer and that the encashed amount is liable to be forfeited by the Beneficiary.

agreement shall be valid and binding on this Bank up to and inclusive of _____ (mention here the date of validity of Guarantee) and shall not be terminable by notice or by Guarantor change in the constitution of the Bank or the firm of Tenderer Or by any reason whatsoever and our liability hereunder shall not be impaired or discharged by any extension of time or variations or alternations made, given, conceded with or without our knowledge or consent by or between the Tenderer and the DGVCL.

"Notwithstanding anything contrary contained in any law for the time being in force or banking practice, this Guarantee shall not be assignable, transferable by the beneficiary (i.e. GUVNL or Subsidiaries). Notice or invocation by any person such as assignee, transferee or agent of beneficiary shall not be entertained by the Bank. Any invocation of the Guarantee can be made only by the beneficiary directly."

NOTWITHSTANDING anything contained hereinbefore, our liability under this guarantee is restricted to Rs. _____ (Amt. of E.M.D.) (Rupees _____) (in words). Our Guarantee shall remain in force till _____ (Date of validity of the Guarantee). Unless demands or claims under this Bank Guarantee is made to us in writing on or before _____ (**Date of validity of the Guarantee**), all rights of Beneficiary under this Bank Guarantee shall be forfeited and we shall be released and discharged from all liabilities there under:

Place:

Date:

Please Mention here Complete Postal Address of the Bank with Branch Code, Telephone, e-Mail ID and Fax Nos.	Signature of the Bank's Authorized Signatory with Official Round Seal and contact number.
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Signature of the Tenderer

Date:

Place:

Company's Round Seal Contd. (PTO)

NAME OF DESIGNATED BANKS: All Nationalized & Scheduled Banks.

Note: The Banks shall be the Banks recognized / notified by the Finance Department, Government of Gujarat (GoG) from time to time.

PART-II **Qualifying requirements of the bidders**

(A) Bidders who fulfill any of the following criteria are eligible for offering the bid.

1. Gujarat State firms or outside Gujarat state firms, who have got adequate facility for repairing and testing of distribution Transformer and have **supplied** at least 100 nos. of new Distribution Transformers **CRGO core of 1-ph 5KVA & 25 KVA 11/0.250V, 3-ph 10KVA, 16KVA, 25KVA, 50KVA, 63KVA, 100KVA, 200KVA, 300KVA & 500KVA of 11 /22 KV capacities and Amorphous core 5/10/16/25/ 63/ 100/ 200/500 KVA of 11 /22 KV** against Purchase Orders issued by DGVCL/ MGVCL/PGVCL/ UGVCL/ SEBs/ Power Utilities during last three financial years & have repairing set up in jurisdiction of DGVCL OR outside jurisdiction DGVCL area..
2. Gujarat state based existing Transformer repairing agencies who are engaged in repairing of the CRGO & / Amorphous core Transformers under the existing rate contract awarded by the DGVCL/ MGVCL/PGVCL/ UGVCL Companies which are having satisfactory performance for the repairing of OGP & WGP failed Transformers and willing to repair the additional CRGO & / Amorphous core transformers within or outside jurisdiction of DGVCL of **1-ph 5KVA & 25 KVA 11 KV /0.250V, 3-ph 10KVA, 16KVA, 25KVA, 50KVA, 63KVA, 100KVA, 200KVA, 300KVA & 500KVA of 11-22 KV capacities & Amorphous core 5/10/16/25/ 63/ 100/200/500 KVA of 11-22 KV ratings** by developing necessary new facility required for repairing of CRGO & / Amorphous core transformers. To ascertain their new repairing ability for repairing of CRGO & / Amorphous core transformers, they will be awarded the contract on **“Trial basis”** to ensure the satisfactory repairing of the transformers having CRGO & / Amorphous core at discretion of DGVCL.
3. Any new entrepreneur who is willing to set up repairing facility and capable of repairing CRGO & / Amorphous transformers of various ratings have applied for vendor registration by paying VR fees with applicable GST and confirming to set up the unit within 120 days from the date of LOI/LOA at approved location. New interested repairers/firms who have already paid vendor registration fee and validity of vendor registration is in force, are eligible to participate in the tender.

The agencies which are debarred/ blacklisted/ stop deal by GUVNL Group companies will not be eligible for offering the bid.

Signature of the Tenderer

Date:

Place:

Company's Round Seal Contd. (PTO)

Eligible bidders, who are fulfilling above-mentioned criteria, in their own interest, are advised to go through the all terms, conditions and instructions very carefully and only then and then submit their offer.

The bidder must confirm that they own or have legal possession of repairing Factory / workshop or are willing to establish the same within the jurisdiction of DGVCL OR outside jurisdiction DGVCL.

(B) Registration:

1. Supplier/s:

- The supplier/s who is having the repairing unit for the repairing of CRGO & Amorphous core Transformers established for repairing of their Within Guarantee failed transformers in the jurisdiction of DGVCL or outside jurisdiction DGVCL shall have to apply for separate vendor registration by paying VR fees of Rs.15000/- (plus applicable GST) for factory within the Gujarat State and Rs 50000/- (plus applicable GST) for factory within country but out of Gujarat State(For Micro and Small Industries (non-refundable) and **must pay Tender Fee & EMD by RTGS/NEFT/Online.**

2. Existing Repairing Agencies:

Separate vendor registration/ re-registration for Amorphous and CRGO (STACK /WOUND/DRY/PAT/SDT) core Transformers as per prevailing rules of vendor registration on chargeable basis for all agencies are required. Agency can register for CRGO (STACK /WOUND/DRY/PAT/SDT)&Amorphous core Transformers in a single registration wherein CRGO (STACK /WOUND/DRY/PAT/SDT)&Amorphous core Transformers both shall be mentioned. **The validity of vendor registration shall be 5 years. The existing vendor should apply for re-registration at least two months before the date of expiry of their existing registration.**

During vendor registration/ Re registration practice, agency shall have to satisfy the tender **clause No. 44 of part IV** for minimum requirement for repairing agency and have **0.5class accuracy** or better for metering instruments.

All Annexure are compulsory to fill for all bidders.

3. New Repairing Agencies:

(Repairing unit should be within jurisdiction of DGVCL OR outside)

New interested repairers/firms who have already paid vendor registration fee are eligible to participate in this tender and who have not paid vendor registration (VR) fee also eligible to participate in tender by online paying VR fees at the time of participating tender.

Signature of the Tenderer

Date:

Place:

Company's Round Seal Contd. (PTO)

During registration, party has to submit the documents of proposed location of factory & undertaking to establish the factory set-up along with all testing instruments & machinery as per Annexure-B & Annexure-B-1 within 120 days' time limit from date of LOI/LOA at approved location. However, DGVCL reserves the right to extend this time limit of 120 days in exceptional circumstances.

Feasibility of proposed site of factory location from approachability point of view shall be verified by DGVCL for such new bidders before technically qualifying the bidder & if found suitable, the bidder shall be technically qualified based on the documents submitted. Price bid of such new bidders shall be opened only if the bidder fulfills the requirement of vendor registration & technically accepted.

In case, the bid of such vendor found acceptable, LOI/LOA shall be issued to such bidders, subject to establishing the factory within 120 days from the date of LOI/LOA. Subsequently a trial order for a quantity of **10 (Ten) Nos.** of different capacity transformers shall be issued after complete establishment of factory and found satisfactory during inspection. If the agency fails to establish factory set-up within time frame or is not considered for vendor registration then the LOI/LOA so issued shall be withdrawn. In such case, EMD shall stand forfeited.

If new agency establishes the factory within time frame & complete all formalities related to Vendor registration like satisfactory completion of LOI etc, A/T (Acceptance of tender) of bidder shall be released.

The bidder should have adequate & experienced resources to ensure proper design, engineering, and quality control and safety practices. Bidder to submit the suitable required details of such resources for job awarded against this tender.

(C) SOLVENCY:

Existing Repairer will have to submit latest solvency certificate from scheduled Bank as per prevailing Government of Gujarat Norms (Not more than three months old) for amount of **Rs.1 Lac.** New agency has to furnish solvency certificate for **Rs.5 Lac** from any nationalized Bank.

DGVCL reserves the right to call for any additional requirement and also reserves the right to reject the proposal of any bidder, if in the opinion of the DGVCL, the qualification data is incomplete or the bidder is found not qualified to satisfactorily perform the works.

For all the above, attested documentary evidence should be furnished.

(D) Conflict of Interest among Bidders/ Agents:

A Bidder shall not have conflict of interest with other bidders for particular quoted item. Such conflict of interest can lead anti-competitive practices to detriment of

Signature of the Tenderer

Date:

Place:

Company's Round Seal Contd. (PTO)

procuring Entity's interests. The bidder found to have a conflict of interest shall be disqualified. A bidder may be considered to have a conflict of interest with one or more parties in this bidding process for particular quoted item, if:

- a) They have proprietor/ partner(s) / Director(s) in common; or
- b) They receive or have received any direct or indirect subsidy / financial stake from any of them; or
- c) They have the same legal representative / agent for purposes of this bid; or
- d) They have relationship with each other, directly or through common third parties, that puts them in a position to have access to information about or influence on the bid of another bidder; or
- e) Bidder participates in more than one bid in this bidding process. Participation by a bidder in more than one bid will result in disqualification of all bids in which the parties are involved. However, this does not limit the inclusion of the components / sub-assembly / assemblies from one bidding manufacturer in more than one bid.
- f) In cases of agents quoting in offshore procurements, on behalf of their principal manufacturers, one agent cannot represent two manufacturers or quote on their behalf in a particular tenderer enquiry. One manufacturer can also authorize only one agent/ dealer. There can be only one bid from the following:
 1. The principal manufacturer directly or through one Indian agent on his behalf; and
 2. Indian / foreign agent on behalf of only one principal.
- g) A bidder or any of its affiliates participated as a consultant in the preparation of the design or technical specifications of the contract that is the subject of the Bid;
- h) in case of a holding company having more than one independently manufacturing units, or more than one unit having common business ownership/management, only one unit should quote. Similar restrictions would apply to closely related sister companies. Bidders must proactively declare such sister/common business/ management units in same/ similar line of business.
- i) Bidder shall not act in contravention/ violation to the provisions of competition act, as amended from time to time.

Every bidder should, at the time of submission of bid, **give a declaration, that bidder shall not have conflict of interest with other bidders**, where bidders are asked to quote rates for all tender items i.e. rates are called on % age basis, **as above**.

(E) Relationship with employee:-

Every bidder should, at the time of submission of bid, give a declaration as under, "if in any Bidder company/firm, the interest(i.e. Shareholding in company and share in partnership firm) of any employee of the tendering company or his/her relative as defined in section 2(77) of the company's Act 2013 is 10% or more, the tendering company will not deal with such company/firm at all.

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Tenderer therefore, must specifically disclose this fact in his technical Bid, on-disclosure of such facts would immediately disqualify the tenderer for further dealing with the tendering company”.

(F) Minimum Tender quantity to be Offered/Quoted:-

Minimum tender quantity per year to be offered by the bidder shall **not be less than 510 nos. of Transformers per annum**. Company shall not consider the bid of any firm and their bid will be rejected, who quotes for lesser quantity than the minimum quantity mentioned in the tender documents.

PART-III
General Condition of Contract

1. DEFINITION:

- The "DGVCL" shall mean the DAKSHIN GUJARAT VIJ COMPANY LTD., having its Corporate office at Kapodra-Surat. With expression shall unless repugnant to the context include its permitted assigns or successor / authorized representatives.
- The "Contractor" / Successful Bidders shall mean the Bidders, whose tender has been accepted by the DGVCL for award of the contract and shall include his authorized representatives.
- The "Engineer-in-Charge" shall mean the authorized officer of the DGVCL to act as Engineer-in-Charge to supervise the work – for the purpose of the contract.
- The "Specification" shall mean the tender forming a part of the contract along with Performa, schedules, Annexure and drawings.
- The "Order" shall mean the official letter issued by the DGVCL, informing the bidder that his tender has been accepted.
- The "Contract" shall mean the agreement to be entered into by the DGVCL with the contractor and shall include the commercial technical and general conditions, schedules, Annexure, drawings and any other conditions specifically agreed between the parties forming a part of the contract.
- The "EMD" shall mean Earnest Money Deposit.
- The "Contract Value" shall mean the total amount indicated in the contract agreement as per order placed by the DGVCL and calculated from the quantities indicated in the tender.
- The "Guarantee Period" shall mean the period during which the Contractor shall remain liable for replacement / repair and maintenance of any defective parts / work performed by the Contractor under the contract

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- The "Completion Period" shall mean the period starting from the date of issue of "Order" and required to complete the work in all respect as specified in the Scope of work.
- The "Work" shall mean activities to carry out for repairing of the failed / damaged Distribution Transformers.
- "Inspector" shall mean the any person nominated by DGVCL from time to time to inspect the equipment's, material stores or repairing works under the contract and/or duly authorized representative of the DGVCL.
- "Notice of Award of Contract/Letter of Award" shall mean the official notice issued by the DGVCL notifying the contractor that his bid has been accepted.
- "Date of Contract" Shall mean the date on which notice of award of contract /Letter of award-A/T has been issued.
- "Month" shall mean the calendar month day or days unless herein otherwise expressly defined shall mean calendar day or days of 24 hours each.
- "A Week" shall mean the continuous period of seven days.
- HV means High Voltage, HT means high Tension.
- LV means Low Voltage, LT means low Tension.

2. INVITATION OF TENDER:

The CHIEF ENGINEER (O&M), DGVCL for and on behalf of " DAKSHIN GUJARAT VIJ COMPANY LTD.", having its Corporate Office at, Kapodra-Surat, hereafter called the "DGVCL" intends to INVITE Tender for Rate Contract for Repairing of failed / damaged Distribution Transformers having CRGO Core (STACK/WOUND/DRY/PAT/SDT)& Amorphous Core of various ratings on item wise rate including internal parts and external parts per unit rate basis.

- Bids submitted after the time and date fixed for receipt of bids as set out in the INVITATION to Bid shall be rejected.
- **The works referred herein shall cover the entire scope of the Tender which include Rate Contract for Repairing of Distribution Transformers having CRGO Core (STACK/WOUND/DRY/PAT/SDT)& Amorphous Core of various ratings on item wise rate including internal parts and external parts per unit rate basis.**
- The issuance of bid document would not mean that the bidder has qualified for the bidding. Hence bidders should ensure themselves of their credentials before submitting their offer.
- Documents towards payment of tender fee and earnest money deposit (EMD) must be uploaded in preliminary stage. First the Preliminary Stage will be opened and if the documents towards payment of tender fee and EMD are found in order then only

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technical bid will be opened. All those who are found technically competent to carry out the job will be considered as qualified bidders and only their financial bid i.e. price bid will be opened.

3. BID PRICE:

The bidder shall quote in the appropriate schedule-A of bid form on item wise rate for scope of the works as specified separately in the schedule-A in % up or down or at par.

4. AMENDMENT TENDER

- At any time prior to the deadline for submission of bids, DGVCL may, for any reason, whether at its own initiative or in response to a clarification requested by a respective bidder, modify the bidding documents by amendments.
- The amendment will be notified on N-procure Website. DGVCL will bear no responsibility or liability arising out of non-compliance of the same in time or otherwise.
- In order to afford prospective bidder's reasonable time in which to take the amendment into account in preparing their bids, DGVCL may at its discretion, extend the deadline for the submission of bids.
- Such amendments, clarification etc. shall be binding on the bidders and will be given due consideration by the bidders while they submit their bids and invariably enclose such amended documents as a part of the bid.

5. SUBMISSION OF TENDER :- (online electronic form only in E-Tender)

- The Bidders must ensure that all the schedules and Annexure are completely filled in their tender and the information called for is given in totality. A set of complete tender documents is required to be submitted duly signed and stamped by bidder or by authorized person in way of power of attorney (Notarized Copy) to sign on behalf of bidder on each page as a token of unconditional acceptance to the conditions of various clauses of tender documents. The bidder's bid and the documents attached there to shall be considered for forming part of the contract documents.
- Bidder must pay Tender Fee, EMD & Vendor Reg. Fee by RTGS/NEFT/Online and receipt of payment transfer through RTGS/NEFT/Online must be uploaded in preliminary stage.
- The bids will be opened at the time and date set for opening of bids.
- The DGVCL reserves the right to reject any bid, which is not deposited according to the instructions and condition of bid stipulated above.

The Price Bid& Techno-commercial Bid is to be submitted ON LINE only in online electronic form.

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Note:- Bidders are requested to submit price – bid (Schedule – A)& Techno-commercial Bid on-line only and not to submit the same in physical form. This is mandatory.

REJECTION OF TENDER:

- The Bidders is expected to examine all instructions, terms, conditions, schedules and other details called for in this specification and keep himself fully informed about all which may, in any way, affect the work, or cost thereof. Failure to furnish the required information or submission of tender not as per the specification will be at the Bidders risk may result in rejection.
- The offer is liable to be out rightly rejected in case the bidding schedules are not filled and if the prices and particulars are not given in format prescribed in the tender documents.
- Further the offer is liable summarily rejected if it contains.
 - a) Deviation and contradictions to the terms and conditions specified in this tender.
 - b) Revision of prices or any commercial terms affecting the price after opening of technical bids shall not be considered and will be ignored.

6. LANGUAGE OF THE TENDER

All information in the bid shall be in English. 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.

7. SIGNATURE OF BIDDER

- The bid must contain the name, residence address and place of business of the person or persons making the bid and must be signed and sealed by the bidder with his usual signature. The name of all persons signing should also be typed or printed below the signature.
- Bid by a partnership must be furnished with full names of all partners and be signed with the partnership name, followed by the signature (s) and designation (s) of the authorized partner (s) or other authorized representative(s).
- Bids by corporation/ company must be signed with the legal name of the corporation/ company by the President, Managing Director or by the Secretary or other person or persons authorized to bid on behalf of such corporation/ company in the matter.
- A bid by a person who affixes to his signature the word 'President', 'Managing Director' 'Secretary', 'Agent' or other designation without disclosing his principal will be rejected.
- Satisfactory evidence of authority of the person signing on behalf of the Bidder shall be furnished with the bid.
- The Bidder's name stated on the tender shall be exact legal name of the firm.

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- Erasures or other changes in the bid documents shall be over the initials of the person signing the bid.
- Bids not conforming to the above requirements of signing shall be disqualified.

9. DOCUMENTS COMPRISING THE TENDER

- The bidder should submit the required information asked in tender document
- Oral statements made by the bidders at any time regarding quality, quantity or arrangement of the materials or any other matter will not be considered.
- 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
- The bidder shall also submit documentary evidence to establish that the bidder meets the qualification requirement

10. POLICY FOR BIDS UNDER CONSIDERATION

Bids shall be deemed to be under consideration immediately after they are opened and until such time official intimation of award/rejection is made by the DGVCL to the bidders. While the bids are under consideration, bidders and/ or their representatives or other interested parties are advised to refrain from contacting by any means the DGVCL and/ or his employees/ representatives on matters related to the bids under consideration. The DGVCL, if necessary, will obtain clarifications on the bids by requesting for such information from any or all the bidders, either in writing or through personal contact, as may be necessary. Bidder will not be permitted to change the substance of the bid after the bid has been opened.

11. EFFECT AND VALIDITY OF TENDER

- The submission of any bid connected with these documents and specifications shall constitute an agreement that the bidder shall have no cause of action or claim, against DGVCL for rejection of his bid. The DGVCL shall always be at liberty to reject or accept any bid or bids at his sole discretion and any such action will not be called into question and the bidder shall have no claim in that regard against the DGVCL.
- The bid should be kept valid for a period of **120 DAYS** from the date set for opening of **Technical bids**.
- DGVCL may ask for extension in validity period. The bidder will be at liberty to accept it or not. In case bidder agrees to extend the validity period without changing his original offer, he will be required to extend validity period of the Bank Guarantee (Submitted against the EMD) suitably.

12. SCHEDULE PRICE BID

- BIDDER is requested to offer the price in schedule A. No partial work to be offered and if offered same will not be considered.
- The prices quoted shall be Exclusive of GST and the GST component should be clearly mentioned in the price breakup.

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- The rate quoted shall be inclusive of freight, transportation, loading, unloading of the material utilized for the repairing work in the repairing unit, insurance covering loss / damage due to theft, accidents, etc.
- The quoted price of the tender shall be firmed price % up/down/at par.

13. INSURANCE

The contractor at his cost shall arrange, secure and maintain all insurance as may be pertinent to the work and obligatory in terms of law to protect his interest and interests of DGVCL. Responsibility to maintain adequate insurance coverage at all time during the period of contract shall be of contractor alone. The contractor's failure in this regard shall not relieve him from any contractual responsibilities and obligations. Any loss, theft or damage to the equipment during handling, transportation, storage, erection, putting into satisfactory operation and all activities to be performed till the successful completion of commissioning of the equipment shall be to the account of the contractor. The transfer of title shall not in any way relieve the contractor from above responsibilities during the period of Contract. The contractor shall provide with copy of all insurance policies and documents taken out by him in pursuance of the Contract to DGVCL immediately after such insurance coverage. The Contractor shall also inform the DGVCL in writing at least sixty (60) days in advance regarding the expiry/cancellation and/or change in any of such documents and ensure re-validation ,renewal etc, as may be necessary well in time. The perils required to be covered under the insurance shall include, but not be limited to fire and allied risks, miscellaneous accidents (repairing work risks) workman compensation risks, loss of damage in transit, theft, pilferage, riot and strikes and malicious damages, civil commotion, whether conditions, accidents of all kinds etc.

14. UNLAWFUL ACTIVITIES

The contractor shall have to ensure that none of its employees are engaged in any unlawful activities (whether covered under the Scope of the present General condition of the contract or Not).

15. CHANGE/VARIATION ORDER

During execution of the contract, DGVCL reserves the rights to increase or decrease the scope of services envisaged under the contract. Such increase or decrease in the scope of services shall be governed by the rates agreed under the contract.

16. CONFIDENTIALITY

Contractor and its employees or representatives thereof shall strictly maintain the confidentiality of all data's , documents, papers, correspondence and any other information relating to the DGVCL, its business, operations, divulge or communicate to any third party or use for its own purpose any above mentioned information, etc. The Contractor shall neither disclose nor use the above for any purpose whatsoever without prior written approval to DGVCL. In case of violation of this clause, the

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Contractor is liable to pay compensation and damages as may be determined by the competent authority of the DGVCL.

17. ASSIGNMENT OR SUBCONTRACTING

Contractor shall not assign in part or otherwise any portion of this contract. No work shall be subcontracted without DGVCL Engineer-in-Charge prior written approval. The contractor should also ensure that sub-contractor or any of the personnel deployed is not an employee of DGVCL. Also if any Ex-Employee of DGVCL is deployed, specific written permission of DGVCL shall be obtained by the Contractor.

18. SUSPENSION OF WORKS

In the event of any obstruction/ exigency at site, or change in the scheme, or due to any other reason, if work is suspended on the instructions of the company, extension of the time may be considered by the DGVCL on merit and on the written request of the Contractor and entirely at the company's sole discretion only. No claim for any compensation on this account will ever be entertained.

19. REPLACEMENTS

DGVCL has right to instruct the Contractor to change the Sub-Contractor or skilled/ unskilled workers in case the conduct, the workmanship or speed of the work is not satisfactory.

20. CANCELLATIONS

Company reserves the right to cancel, at its sole discretion, all or any terms of this General condition of the contract or any contract, order or terms agreed between the parties in pursuance, without assigning any reasons and without any compensation to the Contractors.

21. UNSATISFACTORY PERFORMANCE/ TERMINATION

In the event of Contractor not being in a position to execute the contract or any part thereof, to the company's satisfaction, or any other similar reason, the company will be entitled to make alternative arrangements to complete the work at Contractor's costs, risks and responsibility and/or terminate the contract at its sole discretion, and claim damages as deemed fit by the DGVCL.

22. COMPANY'S RIGHT TO USE WORKS

If taking over certificate is delayed for any reason, for which DGVCL's decision shall be final and binding upon the Contractor, the DGVCL shall be entitled to use the works or portion thereof without affecting Contractor's responsibility and liability to complete the balance works as per Company's directives from time to time, though Contractor shall be afforded reasonable opportunity by the DGVCL to enable to complete all balance works required for issuance of Taking Over Certificate by the Company.

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23. DGVCL'S RIGHT

- The DGVCL reserves the right to terminate this contract or part thereof at any time during its tendency without giving notice of Termination or the reasons thereof.
- The DGVCL will be entitled to deduct directly from the bills to be paid to the contractor, any sum or sums payable by him and which sum/sums the DGVCL is required to pay as a principal employer on account of contractors default in respect of all liabilities referred to.
- The Bidders shall specifically note that any overwriting or corrections or manuscript in the bid shall be ignored and will not be considered authentic unless same are signed with Bidder's Stamp/Seal.
- DGVCL reserves the right to split the contract into two or more bidders. In such cases, the term for completion period will be negotiated and reduced proportionate to the order quantity / value.
- In case of any doubt or interpretation of the terms and condition, the decision of the CHIEF ENGINEER (Tech), DAKSHIN GUJARAT VIJ COMPANY LTD, Kapodra-Surat will be final and binding upon the Bidders and no dispute in this regard will be entertained.
- DGVCL reserves the right to accept any bid or reject any or all Tenders or cancel /withdraw INVITATION to bid without assigning any reason. Such decision of the DGVCL shall not be subject to question by any Bidders and the DGVCL shall bear no liability whatsoever for such decision.
- DGVCL reserves the right to change, increase or decrease the Nos. of transformers depending upon the exigency of work.

24. UNDERSTANDING, CLARIFICATIONS ON DOCUMENTS AND SPECIFICATIONS.

- The Bidder is required to carefully examine the specifications and documents and fully inform himself as to all the conditions and matters which may in any way affect the Work or the cost thereof. If any Bidder finds discrepancies or omissions in the specifications and documents or is in doubt as to the true meaning of any part, he shall at once request in writing for an interpretation/clarification by the DGVCL in triplicate. The DGVCL, then, will issue interpretation and clarifications as he may think fit of such interpretations and clarifications, the Bidder may submit his bid but within the time and date as specified in the INVITATION to Bid. All such interpretations and clarifications shall form a part of the specifications and documents, and accompany the bidder's proposal.
- Verbal clarifications and information given by the DGVCL or his employee(s) or his representative(s) shall not in any way be binding on the DGVCL.

25. ARITHMETICAL ERRORS

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The repairer will correct arithmetical errors during evaluation of price proposals on the following basis:

- (a) If there is a discrepancy between the unit price and the total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail and the total price shall be corrected unless in the opinion of the Purchaser there is an obvious misplacement of the decimal point in the unit price, in which case the total price as quoted shall govern and the unit price shall be corrected:
- (b) If there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected; and
- (c) If there is a discrepancy between words and figures, the amount in words shall prevail. However, where the amount expressed in words is related to an arithmetic error, the amount in figures shall prevail subject to (a) and (b) above.
- (d) If there is a discrepancy between percentage and figures related to various taxes or levies, the percentage shall prevail over figure mentioned.

However, where the amount expressed in percentage is related to an arithmetic error, the amount in figures shall prevail subject to (a) and (b) above. It should also be noted that at time of payment, the prevailing tax/levy rates will be used as on the date of approval of payment.

- (e) Except as provided in sub-clauses (a) to (d) herein above, the Purchaser shall reject the price proposal if the same contains any other computational or arithmetic discrepancy or error.
- If the Bidder that submitted the lowest evaluated Bid does not accept the correction of errors, its Bid shall be disqualified and its Bid Security shall be forfeited.
- All items in the Price Schedule-A must be listed and priced separately in the Price Schedules. If an item listed in Price Schedule is not priced, their prices shall be assumed to be included by the bidder in the prices of other items.

26. AWARD OF CONTRACT

- Notification of award of contract will be made in writing to the successful bidder by the DGVCL.
- The contract will be awarded to the best qualified and responsive bidder offering the lowest evaluated bid in conformity with requirements of these specifications and documents and DGVCL shall be the sole judge in this regard and subject to the provisions of these instructions to bidders and other terms and conditions detailed out in these documents and specifications. A responsive bid is one which accepts all terms and conditions of these specifications and documents without any modifications.
- The DGVCL shall have right to obtain the agreement, order and other conditions entered into by the contractor with any of the sub-contractor/s. The technical particulars of the work to be executed by sub-contractor shall be subject to approval of the DGVCL.

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- DGVCL Reserves the right to award separate contract to two or more parties in line with the terms and conditions specified in the specification.

27. SIGNING OF CONTRACT

- a. At the same time as DGVCL notifies the successful bidder that its bid has been accepted, DGVCL will send the detailed letter of award to bidder.
- b. Within 15 days of receipt of the detailed letter of award, the successful bidder shall sign with date the same and return it to DGVCL.

28. MANNER OF EXECUTION OF CONTRACT

- a. DGVCL after the issue of the letter of award to the contractor will send one copy of the final agreement to the contractor for his scrutiny and approval.
- b. The agreement unless otherwise agreed to shall be signed within 15 days of the acceptance of the letter of award, at the office of The Superintending Engineer of respective circle office on a date and time to be mutually agreed.
- c. The contractor shall provide for signing of the contract, performance guarantee, appropriate power of attorney and other requisite materials. In case the contract is to be signed beyond the stipulated time, the bid guarantee submitted with the tender will have to be extended accordingly. Agreement will be signed in two originals copy and the contractor shall be provided with one signed original and the rest will be retained by the DGVCL. The contractor shall provide free of cost to the DGVCL all the engineering data, drawings and descriptive materials submitted with tender to form a part of the contract immediately after issue of letter of award. Subsequent to signing of the contract, the contractor at his own cost shall provide the DGVCL (At the office of C.E.(O&M) with at least one true copies of agreement within 15 days after the signing of the contract.

29. COMPLETION PERIOD:

The Bidders should agree with transformer repairing work in all respect as per terms and conditions of the scope of work mentioned separately.

30. DOCUMENTS FOR APPROVAL

The contractor should upload the following documents online in electronic form.

- (1) Udhyam Registration with NSIC/CSPO/DGS&D registration certificates (Notarized Copy).
- (2) I. S.O. 9001-2008 Co. **(Preferably to submit)**
- (3) I.S.O. 14001-2004Co. **(Preferably to submit)** (Environment Management System)
- (4) Testing Facility for repairing of transformers.

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- (5) Vender Registration with GUVNL Group companies will be eligible for offering the bid/Approved with DGVCL for all material to be purchased for project.
- (6) GST Registration No (Provisional Certificate not allowed) & PAN No.
- (7) Details of qualified Engineer & total No of Staff available.
- (8) Land ownership documents as per clause No 44, part IV. (Notarized Copy).
- (9) Valid Factory License (Notarized Copy).

31. DEDUCTIONS FROM CONTRACT PRICE

All costs, damages or expenses with the DGVCL may have paid for which under the Contract the Contractor is liable, will be recovered by the DGVCL. The DGVCL may deduct the amount, from any monies due or becoming due by him to the Contractor under the Contract or any other contract between the DGVCL and Contractor or may be recovered by the actions of law or otherwise.

32. DEMURRAGE, WHARF AGE ETC.

All demurrage, Wharf age and other expenses incurred due to delayed clearance of materials or any other reason shall be to the account of the Contractor.

33. CONTRACTORS DEFAULT

If the contractor shall neglect to execute the Works with due diligence and expedition or shall refuse or neglect to comply with any reasonable orders given to him, in writing, by the DGVCL in connection with the work or shall contravene the provisions of the contracts, the DGVCL may give notice in writing to the contractor to make the good the failure, neglect or contravention complained of. Should the contractor fail to comply with the notice within 15 days from the date of service thereof, then and in such case the DGVCL shall be in liberty to employ other workmen and forthwith execute such part of the works as the Contractor may have neglected to do or if the DGVCL shall think fit it shall be lawful for him, without prejudice to any other right he may have under the contract, to make the works wholly or in part out of the Contractor's hands and re contract with any other person or persons, complete the works or any part thereof and in that event the DGVCL shall have free use of all Contractor's equipment that may have been at the time on the site in connection with the works without being responsible to the Contractor for fair wear and tear thereof and to the exclusion of any right of the Contractor, over the same and DGVCL shall be entitled to retain and apply any balance which may otherwise due on the Contract by him to the Contractor, or such part thereof as may be necessary, to the payment of the cost executing the said part of the works or executing a part thereof is aforesaid shall exceed the balance due to the Contractor, the Contractor shall pay such excess. Such payment of excess amount shall be independent of the liquidated damages for the delay which the Contractor shall have to pay if the completion of works is delayed. The termination of the Contract under this clause shall not entitle the Contractor to reduce the value of the Performance Guarantee nor the time thereof. The performance Guarantee shall be valid for the full value of the full period as originally stipulated in the contract.

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34. PAYMENTS IF CONTRACT IS TERMINATED

If the contract shall be terminated as aforesaid, the Contractor shall be paid by the DGVCL (Insofar as such amounts shall not have already been covered by payments on account made to the Contractor) for all work executed and accepted by the DGVCL prior to the date of termination at the rates and prices provided in the Contract and in addition:

- (a) The amount payable in respect of any preliminary items, so far as the work or service comprised therein has been carried out or performed and an appropriate portion as certified by the DGVCL of any such items of the work or service comprised which has been partially carried out or performed

In the event of any dispute in regard to the price of the works and portion of the payment to be made to the Contractor, the decision of the DGVCL shall be final.

The contractor will be further required to transfer the title and provide the DGVCL with the following, in the manner and as directed by the DGVCL

- (a) Any Completed Works
- (b) Such partially completed works including Drawing, Information and Contract rifts as the Contractor has specifically performed, produces or acquired for the performance of the contract.

35. TERMINATION OF THE CONTRACT BY THE DGVCL

The DGVCL may terminate the Contract after giving seven (7) days' notice if any of the following occurs:

- a) If the Contractor commits any "Acts of Insolvency" or shall be adjudged an insolvent, or shall make as assignment or composition for the greater part in number of amounts of his creditors , or shall enter into a deed of Assignment with his creditors , or being an Incorporated Company shall have an order made against him or pass an effective Resolution for winding up either compulsory or subject to the supervision of the Court or Voluntary , or if the Official Assignee of the Contractor shall repudiate the Contract, or if the Official Assigner or the Liquidator in any such winding up shall be unable, within the seven days after notice to him, requiring him to do so, to show, to the reasonable satisfaction of the DGVCL that he is able to carry out and fulfill the contract and if required by the DGVCL to give security thereof if the Contractor (whether Individual firm or Incorporated Company) shall suffer any payment under the contract to be attached to by or on behalf of any of creditors of the Contractor or if the Contractor shall assign or sublet the contract without obtaining through consent in writing of the DGVCL or if Contractor shall charge or encumber this contract for any payment due or which may become due to the contractor there-under.
- b) Has abandoned the contract or
- c) Has failed to commence the work or has without any lawful excuse under these conditions , suspended the progress of the works for seven (7) days after receiving from the DGVCL / Engineer written notice to proceed, or
- d) Has failed to proceed with the works with such due diligence and failed to make sue progress as would enable the works to be completed within the time agreed upon , or

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- e) Has failed to remove the materials from the site or to pull down and replace the works within the seven (7) days after receiving from the DGVCL/ Engineer written notice that said materials or works were condemned and rejected by the Engineer under these conditions, or
- f) Has neglected or failed persistently to observe and perform all or any of the acts, matters or things by this contract to be observed and performed by the Contractor for seven (7) days after written notice shall have been given to the Contractor requiring the Contractor to observe or perform the same, or
- g) On termination of the contract for any cause the Contractor shall see the orderly suspension and termination of operations, with due consideration to the interest of the DGVCL with respect to the Completion, safeguarding or storing of equipment produced for the performance of the Contract and the salvage and resale thereof or any other lawful reason which deems fit to the DGVCL.

36. GRAFT & COMMISSION ETC.

Any graft, commission, gift or advantage given, provided or offered by or on behalf of the Contractor or his partner, agent, officers, director, employee or servant or any one on his or their behalf in relation to the obtaining or to the execution of this or any other contract with the DGVCL, shall, in addition to any criminal liability which may incur, subject to contractor to the cancellation of this and all other contracts and also to payment of any loss or damage to the DGVCL resulting from any cancellation. The DGVCL shall then be entitled to deduct the amounts so payable from any money otherwise due to the Contractor under the Contract or any other Contract

37. LANGUAGES AND MEASURES

All documents pertaining to the Contract including specification, schedule, notices, correspondence, operating and maintenance instructions, drawings or any other writing shall be written in English language. The metric system of measurement shall be used exclusively in the Contract

38. RELEASE OF INFORMATION

The Contractor shall not communicate or use in advertising, publicity, sales, releases or in any other medium, photographs or other reproduction of the works under this contract or description of the site, dimension, quantity, quality or other information, concerning the works unless prior written permission has been obtained from the DGVCL.

39. JURISDICTION OF CONTRACT

The laws applicable to the contract shall be the laws in force in India. The courts of **Surat** shall have exclusive jurisdiction in all matters arising under this contract

40. ENFORCEMENT OF TERMS:

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The failure of the either party to enforce at any time any of the provisions of this contract or any rights in respect thereto or to exercise any option therein provided, shall in no way be construed to be a waiver of such provisions, rights or options or in any way to affect the validity of the contract. The exercise by either party of any of its rights herein shall not preclude or prejudice either party from exercising the same or any other right it may have under the contract.

41. FORCE MAJEURE

"D.G.S. & D. FORCE MAJEURE CLAUSE"

"If, at any time during the continuance of this contract, the performance in whole or any part by either party of any obligation under this contract shall be prevented or delayed by reason of any war, hostility, act of the public enemy, civil commotion, sabotage fires, Floods, explosion, epidemics. Quarantine restrictions, strikes, lock-outs or acts of god (hereinafter referred to as event)" then provided notice of the happening of any such event is given by either party to the other within twenty one days from the date of occurrence there of neither party shall be reason of such event be entitled to terminate this contract nor shall either party shall have any claim for damages against the other in respect of such nonperformance or delay in performance, and deliveries under the contract shall be resumed as soon as practicable after such event has come to end or ceased of exist, and the decision of the Managing Director as to whether the deliveries have been so resumed or not shall be final and conclusive.

Provide further that if the performance in whole or part of any obligation under this contract is prevented or delayed by reasons of any such event for a period exceeding 60 days, either party may at its option terminate the contract provided also that if the contract is terminated under this clause, the Principal agency shall be at liberty to take over from the Contractor at a price to be fixed by the Managing Director, which shall be final, all used undamaged and acceptable materials brought out components and stores in course of manufacture in the possession of the contractor at the time of such termination or such portion thereof as the Purchaser may deem fit excepting such materials, brought out components and stores as the contractor may with concurrence of the Purchaser elect to retain."

- Notwithstanding any provision mentioned above, the DGVCL shall not be in any way be liable for non-performance either in whole or in part of any contract or for any delay in performance thereof in consequence of strikes, shortages, combination of labour or workman or lockout, breakdown or Accident to machinery or accidents of whatever nature.
- The Contractor or the DGVCL shall not be liable for delays in performing their respective obligations resulting from any force majeure causes as defined above. The date of completion will be extended by a reasonable time by the competent authorities of the DGVCL, by mutual agreement.
- In case of damage or destruction of any property or equipment belonging to the Contractor due to force majeure causes, the DGVCL shall not be liable for the same.

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All questions, disputes or differences whatsoever, which may, at any time, arise between the parties i.e. the DGVCL and the contractor upon or in relation to or in connection with the Contract shall be referred to sole Arbitrator appointed by the Managing Director, DGVCL for that purpose, who shall be retired High Court Judge or a retired District Judge and the decision of the said Arbitrator shall be final and binding upon the parties.

Reference to the Arbitrator shall be final and binding upon the parties governed by the provisions of The Arbitration & Conciliation Act, 1996 as amended from time to time and the Rules made there under. The Arbitration proceedings shall be conducted at **Kapodra -Surat, Corporate Office of DGVCL** or at any such place as the sole Arbitrator may determine. The award of the sole Arbitrator shall be final and binding upon the parties.

Performance under this contract shall, if reasonably possible, continue during the Arbitration proceedings and no payments due or payable by the DGVCL shall be withheld unless they are the subject matter of the Arbitration proceeding.

43. EMPLOYMENT OF LABOUR

- Persons below the age of 18 years shall not be employed for the work. No female worker shall be employed in the night shift between 07.00 p.m. and 06.00 a.m. next day.
- Contractor shall maintain a valid labour license under the Contract Labour (Regulation and abolition) Act for employing necessary manpower required by him. In the absence of such a license, the contract shall be liable to be terminated without assigning any reason thereof. Contractor should also employ qualified and experienced persons as per requirement of Electricity Act and rules for carrying out supply and erection work under this contract.
- In case the DGVCL becomes liable to pay any wages or dues to labour or any Government agency under any of the provisions of the Minimum Wages Act, Payment of wages Act, employee Compensation Act, Contract Labour Regulation Abolition Act, employee provident fund or any other law due to act of omission of the Contractor, the DGVCL may make such payment and shall recover the same from the Contractor's bills.

44. COMPLIANCE WITH LABOUR REGULATION:

During continuance of the contract, the contractor and his sub-contractors shall abide at all times by all applicable existing labour enactments and rules made there under, regulations, notifications and bye laws of the state or central government or local authority and any other labour law (including rules) regulations, bye laws that may be passed or notification that may be issued under any labour law in future either by the state or the central government or the local authority. The employees of the contractor and the sub-contractor in no case shall be treated as the employees of the DGVCL at any point of time.

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45. CONTRACTORS TO INDEMNIFY THE DGVCL

The Contractor shall indemnify the DGVCL and every officer and employees of the DGVCL including, Engineer-in-charge and his staff against all actions, proceedings, claims, demands, cost and expenses whatever, arising out of or in connection with the matters referred herein above and elsewhere and against all actions, proceedings, claims, demands, costs and expenses which may be made against the DGVCL or Government for or in respect of performance of its obligation under the contract documents.

46. WORKMAN'S COMPENSATION AND EMPLOYERS LIABILITY INSURANCE

Insurance shall be affected for all the Contractor's employees engaged in the Performance of this contract. If any of the work is sublet, the Contractor shall require the Sub-Contractor to provide workmen's employer's liability insurance for the latter's employees and ensure that such employees are covered under the Contractor's Insurance.

47. WORK & SAFETY REGULATIONS

The contractor shall ensure proper safety of all the workmen, materials, plant and equipment belonging to him or to the DGVCL or to others, working at the site. The contractor shall also be responsible for provision of all safety notices and safety equipment required both by the relevant legislations and the engineer, as he may deem necessary.

- All equipment used in construction and erection by contractor shall meet Indian/International standards and where such standards do not exist, the contractor shall ensure these to be absolutely safe. All equipment shall be strictly operated and maintained by the contractor in accordance with manufacturer's operation manual and safety instructions and as per guidelines/rules of the DGVCL in this regard.
- The contractor shall provide suitable safety equipment of prescribed standard to all employees and workmen according to the need, as may be directed by the engineer who will also have right to examine these safety equipment to determine their suitability, reliability, acceptability and adaptability.
- The contractor shall not interfere or disturb electric fuses, wiring and other electrical equipment belonging to the DGVCL or other contractors under any circumstances, whatsoever, unless expressly permitted in writing by the DGVCL to handle such fuses, wiring or electrical equipment.
- No repair work shall be carried out on any live equipment. The equipment must be declared safe by the engineer and a permit to work shall be issued by the engineer before any repair work is carried out by the contractor. While working on electric lines/equipment, whether live or dead, suitable type and sufficient quantity of tools will have to be provided by the contractor to electricians/workmen/officers.

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- In case any accident occurs during the construction/erection or other associated activities undertaken by the contractor thereby causing any minor or major or fatal injury to his employees due to any reason, whatsoever, it shall be the responsibility of the contractor to promptly inform the same to the engineer in prescribed form and also to all the authorities envisaged under the applicable laws.
- It is mandatory for the contractor to observe during the execution of the works, requirements of safety rules.
- The contractor shall follow and comply with the employer's safety rules relevant provisions of applicable laws pertaining to the safety of workmen, employees, plant and equipment as may be prescribed from time to time without any demur, protest or contest or reservations. In case of any discrepancy between statutory requirement and employer's safety rules referred above, the latter shall be binding on the contractor unless the statutory provisions are more stringent.
- If the contractor fails in providing safe working environment as per employer's safety rules or continues the work even after being instructed to stop work by the engineer, the contractor shall promptly pay to the DGVCL, on demand by the employer, compensation at the rate of Rs.5000/- per day of part thereof till the instructions are complied with and so certified by the engineer. If the contractor does not take all safety precautions and/or fails to comply with the safety rules as prescribed by the DGVCL or under the applicable law for the safety of the equipment and plant and for the safety or personnel and the contractor does not prevent hazardous conditions which cause injury to his own employees or employees of other contractors or DGVCL's employees of any other person who are at site or adjacent thereto, the contractor shall be responsible for payment of compensation to the DGVCL.

48. DEFENSE OF SUITS

If any action in court is brought against the DGVCL or the Engineer or an officer or agent of the DGVCL for the failure, omission 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 VENDOR/ SUB CONTRACTOR: or in connection with any claim based on lawful demands of SUB VENDOR/ SUB CONTRACTOR, workmen, suppliers or employees, the Contractor shall in all such cases indemnify and keep the DGVCL or the Engineer and/or his representatives harmless from all losses, damages, expenses or decrees arising out of such action.

The DGVCL shall have full power and right at his discretion to defend or compromise any suit or pay claim or demand brought or made against him as aforesaid whether pending or threatened, as he may consider necessary or desirable and shall be entitled to recover from the Contractor all sums of money including the amount of damages and compensation and all legal cost, charges and expenses in connection with any compromise or awards which shall not be called into question by the Contractor and shall be final and binding upon him.

49. SECRECY

The technical information, drawings, specifications and other related documents forming part of the enquiry or Contract are property of DGVCL and shall not be used

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for any other purpose, except for the execution of the contract. All rights related to the technical specifications, drawings and records are reserved by DGVCL only and no part or partial should be reproduced, copied or alter without prior permission to the DGVCL in writing. In the event of the breach of this provision, DGVCL can claim the damages caused by such events.

PART-IV **SCOPE OF WORK**

1.0 PERIOD OF CONTRACT:

The contract for repairing of failed distribution transformer shall be for **two years** from the date of execution of agreement and based upon the performance, necessary extension shall be given **on mutual discussion and as per agreement**. Performance, filed office comments and suggestions are to be taken into consideration.

2.0 RATES:

The rates for various items shall be as per the Schedule-A attached. The price bids as above / below /at par the rates.

3.0 TRANSFORMER RATING:

- 11 KV / 250 V, 1-Phase Transformer - 5 to 25 KVA
- 11 KV / 433 V, 3-Phase Transformer - 10 to 500 KVA
(Stack/Wound/Dry/SDT/PAT/ Any other)
- 22 KV / 433 V, 3-Phase Transformer - 16 to 500 KVA
(Stack/Wound/Dry/SDT/PAT/ Any other)
- 11 / 22 KV, 3-Phase Amorphous Transformer - 5 to 500 KVA
- Special Design Transformers.

The Transformers will be either sealed or bolted type and either with copper or aluminum winding. The transformers will be made available from any distribution Circle as decided by DGVCL. **However, actual quantity and rating of transformers which may be given for repairs will vary depending on the performance of units repaired by you**, quickness in repairing, technology adopted for repairing and testing instruments and economical quality repair of transformers.

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The standards given below contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of these standards:

IS No.	Title
IS 1180	Outdoor/Indoor type, oil immersed distribution transformers up to and including 2500 kVA, 33 kV:
(Part 1) : 2014	Mineral oil immersed
(Part 3) : 2021	Natural/Synthetic organic ester immersed

IS No.	Title
IS 12444 : 2020	Copper wire rods for electrical applications — Specification (first revision)
IS 1885 (Part 38) : 1993	Electro technical vocabulary: Part 38 Power transformers and reactors
IS 1866 : 2017	Mineral insulating oils in electrical equipment supervision and maintenance guidance (first revision)
IS 2026 (Part 1) : 2011	Power transformer: Part 1 General requirements
IS 5484 : 1997	EC grade aluminum rod produced by continuous casting and rolling Specification (second revision)

3.2 TERMINOLOGY

For the purpose of this standard, the definitions given in IS 1180 (Part 1), IS 1180 (Part 3), IS 1180 (Part 4), IS 1885 (Part 38) and IS 2026 (Part 1) shall apply.

3.3 CLASSIFICATION OF REPAIR ACTIVITIES

The extent of repair for any transformer depends upon the failure analysis comprising certain tests, such as visual inspection of active-part assembly (and if need be, disassembly of coils and inspection thereof), history of transformer including loading pattern, condition of tank and radiators/fins, number of times repair undergone in past, life of transformer, load tests, winding tests, core condition etc.

Repair activities may broadly be classified as:

a) Minor repair work which involves replacement/repair (whichever is applicable) of failed parts which are external to windings, for example, arcing/flashover from leads to earth or change of failed/damaged bushings, metal parts, OLTC/OCTC parts or other fittings/accessories, tank leakage, gasket replacement, PRV etc;

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- b) Major repair work which involves change of coils that have failed electrically or due to mechanical forces and change of a few laminations or complete core, change of tank etc; Enhancement of overloading capacity by increasing cooling by adding radiators is also considered as a major repair activity. Sometimes repair of damaged/deformed tank and its paintwork would be necessary. This is also considered as a major repair activity.
- c) Another type of important repair activity is overhauling/ rehabilitation of transformer which involves change of gaskets; change of insulating liquid if parameters do not meet the relevant standards; internal cleaning; tightening of core-coil assembly; repainting and re-servicing of fittings and accessories or replacement of accessories.

3.4 GENERAL

3.4.1 Identification

Whenever a transformer is received for repair, the following four important aspects should be identified first:

- a) Information regarding failure site of the transformer as stated by the customer (site report) including accident if any for example fire.
- b) Information which is crucial and to be kept by the service centre for records.
- c) Information that is to be attached to the transformer part being repaired.
- d) Information that can be assessed and retained by the customer post repair work.

3.4.2 Record keeping

Record keeping is an important step not only for the service centre but also for the customers who can quantify the pre- and post-condition of the transformer. Every time a transformer is received for repair, a unique record document or service order should be established. This document should briefly describe:

- a) The root cause of failure as described by the customer.
- b) Items identified requiring repair by the repairer.
- c) A list of damaged or missing components.

In addition, photographs or digital images may be attached to this record document to confirm the state of the failed transformer upon receipt and to prepare further documentation for the repair process. If the transformer is liquid-filled type, the poly chlorinated bi-phenyl (PCB) concentration for 1000 KVA and above transformer should also be clearly shown on the service order with supporting documentation from the customer or test laboratory.

For recordkeeping, technical information about the transformer should also be captured. This includes nameplate data, electrical test data (site and repair centre which is before and after repair), and details of the repairs required by the customer, the repairs performed, and a list of all parts that were replaced should also be maintained for physical verification. Records should be made available for review by the customer as and when required.

All data and damaged items should be listed on the service order form. This information should then be passed to the customer with recommended repairs for the damaged items.

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3.4.3 Service number label/Estimate number

Before shipment, every repaired transformer should be permanently embossed or inscribed with the name or identifying logo of the repair center or repair service provider including month & year of repair adjacent to the nameplate. The service order number for the most recent repair should also be clearly marked on the unit.

3.4.4 Assessment/Investigation for Failure of Transformer

Upon receiving a damaged transformer, the service center should follow the process given below:

- a) Promptly inspect and test the transformer to identify the problem as per the service order and make first investigation report (FIR);
- b) Collect data for failure investigation before any other assessment;
- c) Carry out visual inspection to study the presence or absence of all major components and accessories with proper note-taking and physical recordkeeping;
- d) Take images/photographs of any electrical tracking, physical damage, oil levels and leakages, overheating, tempering, and encounters with animal or external factors such as natural calamities (disaster) etc.
- e) Collect as much information as possible about the operating conditions of the transformer at the time of failure;
- f) Collect and keep debris from any part, observed on visual inspection for further analysis;
- g) During physical inspection, it is necessary to carefully note in as much detail as possible namely the position of all operating mechanisms, indicating devices, signs of physical damage (if visible), manufacturing defects, transportation defects, etc. and
- h) Test the transformer for its electrical integrity once the visual inspection and physical damage assessment are complete.

3.4.5 Cleaning

Once the transformer is assessed / investigated as per the details given above, it should be cleaned to remove dust and debris. Prior to the disassembly, it is often advisable to clean transformer tanks and enclosures to avoid contamination of the core and coil assemblies when they are removed. The transformer under repair should be dismantled step by- step, only till the extent required. Once disassembled, the components should be thoroughly cleaned. Any cleaning agent remaining on cleaned components should be allowed to evaporate while the residue should be removed carefully. Care should be taken while cleaning the more delicate components. Post-cleaning, the parts should be stored in a clean, dry location prior to assembly.

3.4.6 Terminals

3.4.6.1 Leads

A lead is often used to extend the start and/or finish of the coil to the terminals. A lead can be coloured or marked so as to correspond to the connection identification as shown on

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the nameplate or as specified in Indian Standards if any. A lead should have the correct temperature, voltage and current rating for the application and should be capable of withstanding elevated temperatures experienced during the repair process. Broken or damaged lead should be replaced. Cross section of Delta wire should be double of winding wire.

3.4.6.2 Enclosures

Transformer terminals are often enclosed within metal enclosures or cable box for enhancing safety measures. The integrity of these enclosures should be maintained. The enclosure should be large enough to accommodate leads and terminals so as not to cause overheating due to herding and to ensure that minimum electrical clearances and bending radius are maintained

3.4.7 Accessories

All accessories, which may have been removed during disassembly (for example temperature gauges, pressure relief devices (PRDs), bushing, liquid level gauges, cooling fans, gas relays, current transformers, sudden pressure rise relays, etc, and any associated wiring) should be re-checked and validated to be complete and operating correctly before being returned to service. In case the original transformer is fitted with a silica gel breather, it should be replaced every time a transformer is received for repair. Arcing horn on HV bushing should be attached keeping minimum tip to tip spacing of 8.5 mm or as per the design. Replacement bushings should be similar to the original in design that is it should have proper current rating, Basic Impulse Level (BIL) and 50 Hz test levels equal to or higher than the windings to which they are connected. All the accessories must be safely kept and reinstalled before delivery.

3.4.8 Preparation for Shipment

The transformer should be painted according to 30. After the paint is applied and cured, the customer should be advised that work is complete, and the transformer is ready for shipment. Follow any specific instructions provided by the customer. Prepare the transformer for shipment according to 36.

3.5 REPAIR OF CORE COIL ASSEMBLY

The most common rewind is that which is based on the original design. The winding process has essentially three components:

- a) The investigation of the original failure;
- b) Gathering physical data for the existing core and coils;
- c) The actual winding of the new coils.

3.6 Data Collection

The repairer should capture maximum of the following information as far as possible from the earlier collected data (mainly during the core and coil assembly, from name-plate and by removing the individual winding coils) and should properly record the same:

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- a) Name plate data;
- b) Physical overall dimensions of core-coil assembly including core clamp (for example length, width and height etc.);
- c) Basic coil design (cylindrical, spiral wound or disc);
- d) Physical dimensions of the coils (for example I.D., O.D., radial thickness and height etc.);
- e) Electrical clearance dimensions, phase-to-phase and phase-to-ground;
- f) Number of turns;
- g) Turns per layer (LV and HV);
- h) End clearance/End packing (LV and HV);
- j) Direction the coils are wound;
- k) Tap locations (physical and electrical);
- m) Insulation material of winding conductor (wire and strip);
- n) Size of conductor (LV and HV);
- p) Number of conductors in parallel.
- q) Conductor/foil material: Copper/Aluminum;
- r) Resistance of each coil;
- s) Special features such as extra supports, tying, main lead lengths etc;
- t) Stacked core or wound core; in case of wound core whether CRGO or amorphous;

Measure core dimensions: In case of stacked core, measure width and thickness of each packet, core diameter, leg center, window height, window width, total core frame length and total core frame height.

In case of wound core (CRGO/Amorphous), mention type of construction (Core type or shell type), measure sheet width, total stack thickness within LV Coil I.D., window height, window width (W1 and W2), total core frame length and total core frame height.

- u) Grade of steel used to be found from supplier or by loss measurement;
- v) Type of liquid used for liquid-immersed transformer: mineral oil or ester fluid;
- w) Measure electrical and chemical properties of the liquid including DGA and Furanic Compounds, if applicable;
- y) Loading cycle of transformer and maximum temperature rises;
- z) Physical weights of CCA before and after- if possible, core weights and coil weights separately.

4.0 **ESTIMATE APPROVING AUTHORITY**

- A) **CRGO (STACK/WOUND/DRY/PAT/SDT) & Amorphous Core Transformers:** External and internal inspection of failed transformers is to be done in presence of authorized representative of DGVCL. Based on this, repairer will prepare an estimate for items to be repaired as per approved item wise rate and submit report to concerned SE (O&M) for approval. The repairer will give advance intimation for witnessing the external and internal inspection. The failed transformers shall not be opened in absence of authorized representative of DGVCL. Only after approval of estimate, the

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repairing work has to be attended. Repairing cost 25% of NEW transformers are given as under.

Sr. No.	Capacity in KVA	Voltage Class					
		11 KV (Amount in Rs.)				22 KV (Amt in Rs.)	
		3 Star & other	4 Star	Level-1	Level-2	3 , 4 – Star & Others	Level - 1
01	1-ph 5 KVA	5422	6206	13287	0	0	0
02	10 KVA	8716	7707	14367	0	0	0
03	16 KVA	8696	11729	15546	10851	16455	0
04	25 KVA	10124	15651	18585	13998	18889	0
05	63 KVA	20423	23684	34156	22137	33661	0
06	100 KVA	24609	31094	44750	27700	48700	0
07	200 KVA	47170	65139	85124	55986	87710	141250
08	500 KVA	148260	193768	294789	198914	161287	301741

The estimate for repairing cost up to 25 % i.e. 25 % cost of new Transformer can be Approved by concern S.E. (O&M) with proper justification with a copy to the C.E. DGVCL for information. The estimate for repairing cost more than 25% and up to 30 % cost of the new transformers is to be sent to C.E. (O&M) DGVCL for approval. If the estimate for repairing is exceeding 30% price of new transformer of 11 KV / 22 KV capacity from 5 KVA to 500 KVA and which are not repairable, the transformer has to be made scrap and intimation to be sent to the C.E.(O&M) DGVCL. The transformers of old and obsolete designs, heavily damaged tank/radiator, copper winding and core are to be scrapped. (Tank, Conservator Tank & radiator damage charges are not included in the cost of 25 % & 30 %)

In case of damage of core and tank, the transformers are to be declared scrap and transformer with all the parts are to be deposited to Division store. The internal inspection team is instructed to seal the transformer at site& Division JE TMS have to lift the Transformers immediately and proceed for scrap proposal& auction process.

The Joint internal inspection of failed distribution transformers **MUST** be carried out by the concerned EE (O&M) along with One EE/DE of Circle office and JE (TMS). **Videography for internal inspection of damaged transformers should be mandatory.** Opening of transformer activity shall be started only in presence of DGVCL's representative. If transformer will be found opened before the arrival of DGVCL'S representative at the works of repairing agency, then the estimate shall not be approved for repairs of failed transformers and further transformer shall not be allotted to the repairing agency.

5.0 DETAILS OF FACTORY SET UP:

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- a} In case two or more nos. of repairing agencies are found using common Equipment/instruments for repair/testing work, the DGVCL shall not permit such arrangement. If this is observed further allotment of transformers shall be stopped and contract shall be cancelled.
- b} The repairing agency shall have separate entity i.e. separate shed (not in same Premises), separate ownership, different partners/proprietor, separate 20 KW electricity connection, different qualified engineers, separate equipment machineries/ instruments etc. In case any of the above things is found common for any repairer, the contract shall be cancelled.
- c} It is JE / DE Division office's responsibility to report the name of agencies at corporate office which are using common equipment/ instruments for repair/testing work.
- d}- Minimum 3000 Sq. ft(built up area with open land) shall be required for factory premises for new bidder.
 - If a premise is on lease then the remaining registered lease deed period is at least 5 years from the date of the Tender. There should be a separate entry from the road.
 - If existing agencies who are having less area as compare to above and if they are not supplying repaired transformer timely then their annual allotment for transformer repairing shall be reduced proportionately considering total built up area with open land.

6.0 TECHNICAL KNOW HOW:

At least one full time qualified and having minimum one year experienced Engineer shall supervise various activities pertaining to repairs of damaged Distribution Transformers. Each & every test certificate should be signed by qualified engineer of agency. The name of Engineer with his qualifications, passport size Photo and experience to be considered indicated in your offer. During factory visit if qualified engineer is not found, the contract shall be cancelled.

7.0 SHIFTING OF PREMISES/ SHED:

- a} **In the same circle** -In case of shifting of factory premises of the Registered Vendor, such Vendor has to pay Registration Charges of Rs. 1500/- towards Registration Fees, along with the other relevant documents. Factory inspection by DGVCL's engineer not below the rank of EE of Corporate Office and concerned Circle Office jointly shall be carryout and necessary approval for shifting of premises shall be issued by concerned Circle Office. Only after that transformers at the new premises shall be issued.
- b} **In the other Circle** - In case of shifting of factory premises in the Circle other than circle allotted, such Vendor has to pay Registration Charges of Rs. 1500/- towards Registration Fees, along with the other relevant documents. Factory inspection by DGVCL's engineer not below the rank of EE of Corporate Office and concerned Circle Office (New Circle) jointly shall be carryout and necessary approval for shifting of premises shall be issued by

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concerned Circle Office (New Circle). Only after that transformers at the new premises shall be issued. Before shifting to new premises, repairer has to complete repairing of all the OGP transformers issued to him by their original Circle. After shifting to new premises, in case of GP failed Transformers of old Circle the transportation charges as decided by DGVCL shall have to borne by the repairer and shall be deducted from their bill pertaining to old Circle or new circle.

- c) GST shall be applicable on all kind of registration charges.

8.0 CHANGE OF PARTNERS:

In case of selling of repairing agency to other party or addition/deletion of partners, the repairer has to submit fresh partnership deed and power of attorney for authorized signature on various documents to concerned Circle office for approval with a copy to the Chief Engineer DGVCL. In case of change of name or ownership or control of company/ firm of registered agency, process fee of Rs.5000/- shall be recovered.

- 9.0 In case any instrument at the factory work is replaced/changed/required to be sent for repairs during the period of contract, the same shall have to be intimated to The Chief Engineer, DGVCL, and to the Circle and Divisional Head immediately or else contract will be liable to be cancelled for full or part period. You shall have factory shed with sufficient open land, electric connection with minimum 20 KW under LTMD or NRG category, having all required machinery / testing equipment and permanent qualified experienced engineer. If the same is not observed during contractual period, Company shall cancel the contract and the GP failed transformers shall be repaired at your risk and cost from other repairing agency till completion of guarantee period. Calibration with NABL approved Lab should be insisted every year & on repairing of instrument.

10.0 TRANSPORTATION:

For repairing Agency situated in the jurisdiction of DGVCL area

DGVCL shall make necessary arrangement for transportation of failed transformer and repaired transformer from field to your works and back to field respectively, Loading of failed transformers and unloading of repaired transformers at field shall be arranged by DGVCL. However, the unloading of failed transformer and loading of repaired transformer at your work shall be arranged by repairer at your cost. **If transformer fails within guarantee period then Lump sum amount of Rs.275/- per transformer will be recovered against to & fro transportation charges.**

For repairing Agency situated outside jurisdiction of DGVCL area

Repairing agency shall make necessary arrangement for transportation of failed transformer (OGP and WGP) and repair transformer from field to your works and back to field respectively, loading of failed transformers and unloading of repaired transformer at

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field shall be arranged by DGVCL. However the unloading of failed transformers and loading of repaired transformer at your works shall be arranged by repairer at your cost. **Thus to and fro transportation charges will be borne by repairing agency situated outside jurisdiction of DGVCL area.**

11.0 **PAYMENT:**

Full payment shall be made by concerned Division Office, normally within one month from the date of submission of the bills, which will have to be submitted on completion of each work. While submitting the bills for repairs of transformers, following procedure shall have to be adhered to:

- I Each and every bill for repaired transformer shall be submitted along with test certificate duly signed by representative of repairing agency and Company's representatives. **No payments will be done without test certificate.**
- II The repairer shall certify on the bills that materials, spares mentioned in the bill have been actually fitted/ used on Transformers. No change is made in electrical connections i.e. star/delta etc.
- III The repairer will have to give a **guarantee for performance of Transformers** which have been repaired by him as per **Clause No.38** of the conditions.

12.0 **INDEMNITY BOND**

You will have to execute indemnity bond on stamped paper of Rs. 300/- at concern circle Office before commencement of works as per Company's prescribed Performa i.e. Circle office is instructed that no any Transformers is to allot before execution of indemnity bond.

13.0 **TAX**

"Any kind of tax if payable will be paid extra as per rules and it should be claimed as a separate item in the bill. Any statutory increase or decrease in the taxes and duties subsequent to your offer if it takes place within the original contractual delivery date will be to DGVCL's account subject to the claim being supported by documentary evidence. However, if any decrease takes place after the contractual delivery date, the advantage will have to be passed on DGVCL."

14.0 PERFORMANCE GUARANTEE towards execution period/ PERFORMANCE GUARANTEE t towards guarantee/warrantee period

Performance guarantee towards execution period

Performance guarantee towards guarantee/warrantee period shall be paid by all the bidders to the concerned Superintending Engineer, DGVCL, Circle Offices in

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the form of Demand Draft issued by any Scheduled Commercial Bank in favour of Dakshin Gujarat Vij Co. Ltd. payable at the Head Quarter of the Circle Office or in the form of Bank Guarantee from Nationalized Bank as approved by Govt. of Gujarat's Circular prevailing at the time of placing the order (**banks notified latest G.R. by finance department of Govt. of Gujarat**) prior to order placed.

Total amount of Performance guarantee towards execution period / Performance guarantee towards guarantee/warranty period shall be 10 % of total Tender value, which is to be recovered from all successful Agencies (Bidders) after equally splitting among existing bidders. Further as the tender will be for two years, it shall be half of 10%. i.e. 5% of Tender value **i.e. Rs. 423710** (subject to Minimum Rs.1.5 Lac if applicable).

Validity of the Performance guarantee towards execution period / Performance guarantee towards guarantee/warranty periods for 43 Months (24 months work order plus 18 months Guarantee period plus 01 month claim period) for CRGO/Amorphous/**CRGO Wound Core** transformer and 31 Months for SDT/PAT (24 months work order plus 06 months Guarantee period plus 01 month claim period).

The outage period i.e. period from the **date of receipt of the transformer** till unit is repaired shall not be counted for arriving at the guarantee period i.e. guarantee period of the particular transformers will be extended for such outage period. In such case, suppliers have to extend performance guarantee towards guarantee/warranty period accordingly.

Security Deposit / Performance guarantee will be returned after one month from the expiry of guarantee period of last repaired transformer.

The Performance guarantee towards execution period / Performance guarantee towards guarantee/warranty period submitted in the form of Demand Draft will be retained till completion of the guarantee period. No interest will be paid on the Security Deposit.

If repairing agency fails to pay the security deposit within the stipulated time limit, then the Company reserves the right to forfeit the bid security (EMD) and cancel the contract.

15.0 **INSURANCE**

The repairing agency shall have to submit **Insurance of Rupees10 Lac** per repairer to concern Superintending Engineer within one month on receipt of the order. **This amount of Insurance will be enhanced in proportion to the total number of transformers lying in custody of repairing agency at a time if necessary.** The agency shall have to insure at their cost, the Company's materials against all risks like theft, misappropriation, riots, fire etc. and due intimation of

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having done so shall be sent by him to concern CEO & SE, Circle, (Further details of insurance please refer clause 13 part III).

16.0 EXTENSION OF CONTRACT PERIOD:

The contract for repairing of failed distribution transformer shall be for two years from the date of execution of agreement and based upon the performance, necessary extension shall be given on mutual discussion and as per agreement. Performance, filed office comments and suggestions are to be taken into consideration. Company reserves the right to cancel the contract in between also.

17.0 SETTLEMENT OF DISPUTE

In case of any dispute, the decision of the Superintending Engineer of concerned circle will be final and binding to repairing agency. All questions, disputes or differences arise under, out of or in connection with the tender / contract if concluded shall be subject to the exclusive jurisdiction of the court under whose jurisdiction the place from which the tender / Acceptance of tender is issued, is situated i.e. **SURAT**.

18.0 The contract or any part thereof shall not be sublet to any other agency/individual.

19.0 RADIATORS/TANK/CONSERVATOR TANK

After thorough cleaning of the tanks and enclosures, rust or corrosion should be removed, and the affected areas should be re-painted after surface preparation. Additionally, any areas from where liquid was leaking should be repaired and painted. It is preferable to clean and paint the whole tank (inside and outside), radiator or enclosure as stipulated in 9. Damaged or blocked radiator should be replaced.

It is recommended that on completion of repairs, the radiators (and tank) should be tested as per routine test procedure outlined in IS 1180 series.

In case of damage of Radiator, Tank, Conservator tank in CRGO Core (STACK/WOUND/DRY/PAT/SDT) & Amorphous Core, charges for replacement shall be paid as per Sr. No.18a,18b & 20 of Schedule-A The rate quoted should be net of salvage value.

19.1 GASKET

Major materials including gasket should conform to requirements specified in relevant part of IS 1180 series.

Nitrite rubber cork gaskets conforming to Type C, grade RC70 as per IS 4253 (Part-2) shall be fixed with the appropriate adhesive material between the tank and the top cover. Nitrite/Neoprene rubber gaskets conforming to Type IV 4C (heat and oil resistant) as per IS 11149 shall be provided for bushing O ring (oil gaskets). The adhesive material shall not deteriorate the properties of the gasket. Only the Joint Free Gasket shall be used. Between

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the tank and the top cover, up to two dovetail joints with adhesive shall be allowed.

20.0 **NAME PLATE**

The following details shall have to be written on nameplate to be provided additionally with welding on the tank of the repaired transformers, at the time of repair.

1. Property of DGVCL
2. Name of Division.
3. Transformer unique ID No.
4. Estimate number.
5. Name of repairer
6. Date of dispatch
7. Date of expiry of guarantee after repair
8. SR No as per repairer's record
9. No of times job is repaired

No repairer will remove the original nameplate on receipt of transformer for repairs. The original nameplate of the manufacturer shall also be retained. If the original nameplate is missing, the following details have to be provided as per specimen given in addition to above.

DGVCL/EE-T-1/DE-T-6/TRANS-REP/2020-21/03						
	KVA			Make		
	Volt at	HV		Frequency		
	No Load	LV		Impedance		
	Amp.	HV		Oil quantity in Transformer		
		LV		Serial No.		
	Phase.	HV		No. of time job Repaired	No	
		LV		Type of CORE		
				Type of Winding-AL/CU		

Irrespective of availability or non-availability of nameplate of original manufacturer/repairer, repairer has to provide the additional nameplate duly riveted on the other side of tank over and above nameplate of original manufacturer. The nameplate shall be as per DGVCL drawing containing all the above-specified details duly printed and Sr. No. of repairer & date of dispatch & other details shall be provided. The record of such details - Sr. No. of transformer, date of dispatch shall be maintained. On the basis of this, guarantee period of transformer shall be reckoned. In the joint inspection report, this shall be mentioned by the inspector. No transformer without name plate shall be accepted.

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Repairer shall provide Yellow, White, Red, Blue painted strips vertical in alternative manner for first, second, third repair etc. i.e. for first repair yellow, second repair white, red & blue etc so on, to know the nos. of repairs carried out.

21.0 TAPPING SWITCH:

If tapping switch needs replacement, the same will be discarded in case of old 25, 63 & 100 KVA transformers and Transformer has to be made fixed ratio of normal tap. The damaged tapping switch will be deposited to DGVCL's Divisional store by the agency. However, the tapping switches for 200 KVA & 500 KVA transformers are essential and hence shall not be discarded.

22.0 BUSHING:

If bushing needs replacement, same will be replaced at the time of repairing. It should be replaced by DISCOM approved make.

23.0 METAL PARTS:-

All the aluminum/ damaged metal parts shall be removed and brass metal parts are to be used. Quoted rates are net of salvage value.

HV & LV terminal studs shall be used as per following size only:

HV (11KV & 22KV)-140mm X 12mm, LV (up to 100KVA)-205mm X 12mm, LV (above 100KVA & up to 200KVA)-260mm X 20mm

Transformer top cover shall be provided with special bolt nut of sheared type bolt of stainless steel to avoid oil theft. Transformer drain valve shall be removed/ sealed.

24.0 DAMAGED PARTS:-

The damaged HV and LV coils will be retained by repairer after cutting the same in four pieces as not to be re-used in presence of DGVCL Company's representative of which necessary details shall be given in joint inspection Report to be signed by the repairer and DGVCL Company's representative. **During Internal Inspection, video graphy of cutting of damaged winding should be mandatory.**

25.0 (a) WINDING: -

New coils to be replaced with damaged coils shall be wound with similar quality of materials & insulation. Insulation of wire/ strip, inter layers between LV & HV winding & windings to earth shall be of class-'A', and section as utilized by the original manufacturer of transformers. In case it is found that proper size & type of material are not used then the contract will be cancelled immediately and ongoing payments will be withhold.

(b) IDENTIFICATION MARK FOR NEW COILS :

In the process of repairing of transformers, the repairers replace the coils with new material. There is no visual facility to verify whether the coil is new or old. In order to

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verify and confirm that the repairer has replaced the old coil by new one, the repairer shall insert a non-tear able polyester strip containing their company's name and month of manufacturing at least at 2 places in each HV/LV coil. This polyester strip shall not be removable even on pulling out the same. This will enable the company to check and verify the exact number of coils newly prepared and replaced.

(c) Coil Winding

Coil winding should be carried out in a clean environment using a winding former build for the particular coil being wound. The winding former can either be a pressboard cylinder, wooden, metallic, expandable type or any other which gives perfect winding diameter. The winding is built up according to the data acquired from the original design as indicated in 8.2. Attention should be given to the size of cooling ducts, wire compaction and tension, tap locations, crossovers, connections, tightness of winding, uniformity in winding and spacers. Proper tension on the conductors ensures a tight, solid coil. The tension should be appropriate and should not lead to the stretching of the conductor. All crossovers and leads should have additional insulation applied to avoid mechanical breakdown of the conductor insulation during processing or service. Connections are made using a suitable joint (soldered, brazed or welded and cleaned to ensure no sharp edges) and separately insulated. Care must be taken to minimize the insulation build. Once the coil is complete, the physical dimensions and resistance should be checked. Coils for liquid immersed transformers should be dried for shrinkage.

25.1 Core Laminations

Cores are generally stacked cores or wound cores. The process of disassembly and assembly of the stacked and wound cores are described below:-

25.1.1 Disassembly of Stacked Cores (CRGO)

Core should be cleaned after removal of the windings and an accurate dimensional sketch of the core cross-section should be made prior to disassembly. In addition, the number of laminations stacked together should be counted and noted; this is usually two or three but can be more. In most cases, it is only the yoke that is un-stacked. Upon removal, all laminations should be stored properly and stacked together in the same order in which they are to be put back. Laminations from dry-type transformers may be bonded together with cured resin if the core and coil assembly were dipped as a unit. This makes un-stacking of the laminations difficult and requires extra care to avoid damaging them. Laminations should be well supported during storage and put in a safe and dry location.

25.1.2 Assembly of Stacked Cores and Coils

Prior to assembly, the laminations and clamping arrangement should be cleaned. The laminations should be thoroughly inspected for signs of insulation breakdown

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and for burrs that should be removed. The packing rods between the core legs and the coils should be installed at this time which helps to centre the coils and secure them to the core. During assembly of the yoke, the laminations are replaced according to the sketch prepared prior to disassembly. It should be ensured that the laminations butt tightly against each other at all joints as excessive gaps can drastically reduce the flux density in the core. Once all the laminations are in place, the clamping assembly is put in place, insulated and the securing bolts torqued to recommended values. Next, the transformer coils should be ratio-tested to confirm the overall ratio and the electrical location of the taps. Magnetic Balance test (MBT) should also be conducted to eliminate possibility of any shorted turn.

25.1.3 Disassembly of Wound Cores (CRGO)

Wound cores are often difficult to disassemble than stacked cores. Similar to the disassembly process of stacked cores, the number of laminations stacked together should be noted prior to disassembly. Overall dimensions also should be recorded accurately. The bands securing the laminations are cut and the laminations are then carefully removed. The urge to straighten the laminations upon removal should be avoided. Avoid too much bending since that will change the characteristics of the laminations and also make assembly very difficult. Avoid complete disassembly of the core. It will be easier to achieve proper assembly if fewer laminations are removed. When laminations are removed, they should be well supported and stored in a clean, safe location.

25.1.4 Assembly of Wound Cores (CRGO)

Prior to assembly, the laminations and clamping structure should be cleaned. The laminations should be inspected for insulation breakdown and for burrs that should be removed. During assembly, it is critical that the butt joints be secured and tight. This can be very difficult to achieve on some transformers. To help in this process, the core can be tightened and banded in stages, that is install a few laminations and apply temporary bands to tighten them. The temporary bands are then removed before additional laminations are installed. Once all laminations are assembled, the final clamping bands are applied, and the steel clamping structure is put in place, insulated and the bolts/tie rods torqued to the correct values. As mentioned in 25.1.2, the coils should be tested at this point to ensure the proper ratio and the correct electrical location of the taps.

25.1.5 Disassembly of Amorphous Wound Cores

In amorphous-core transformers, cores are fixed, and the coils are inserted. Thus, for such transformers following steps should be followed prior to disassembly.

a) The core coil assembly should be upended (inverted) as the preferred position of core joints is at the bottom in the final transformer assembly. This places the core joints at the top:

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- b) After removing the core clamps, yoke insulation, tie rods etc. the outer CRGO sheet should be unlocked and the core packets should be unlaced using a suitable round edged knife to avoid damage to lamination;
- c) After opening all core joints, lamination packets are held vertically with help of CRGO sheet having width equal to amorphous lamination width and tied with the cotton tape;
- d) Same procedure shall be repeated for other limbs. The damaged coil is then carefully removed with suitable lifting arrangement and placed on a clean surface
- e) Core weight before and after shall be monitored for adequate performance;
- f) Disposal of broken pieces and scrap of amorphous metal shall be done as per local law of land.

Note: Amorphous material being brittle, chances of breakages cannot be eliminated but can be minimized by careful handling.

25.1.6 Assembly of Amorphous Wound Cores

Prior to assembly, the following steps shall be followed:

- a) Core surface should be cleaned. A magnet can be used to remove any damaged core flakes from bottom core. New insulation is provided if necessary and new coil is installed;
- b) The CRGO support sheet is removed and the core lamination packets are laced. At this stage, proper overlapping of core joints as in original assembly should be ensured to achieve correct electrical parameters;
- c) After lacing, the core packets are closed and locked with outer CRGO, same as before;
- d) Core joints are covered using the insulation paper to contain amorphous flakes in place,
- e) Appropriate insulation is provided, and the steel core clamping structure is put in place;
- f) The core coil assembly is inverted to have the core joints at the bottom. After inverting the core coil assembly, the packing is removed from the core and top core channel;
- g) Relevant tests like turns ratio and correct electrical location of the taps, insulation test to be performed.

25.2 Connections and Joints

There are essentially two connections that should be made when winding a transformer, those in the winding and connections external to the winding. All connections should be carefully prepared, cleaned to finish off any sharp edges or burr and to ensure mechanical and electrical integrity.

25.2.1 Connections in the Winding

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There are several methods of making joints and splices, and the ones described in this code are mere examples. Connections in the winding can be used to connect various parts of the winding (as in a disc style of winding), to splice in another spool of wire, or to provide tap connections for the winding. In all cases, the joint should be prepared and insulated to ensure electrical and mechanical integrity and to consume less space. Jointing being special process should be performed by qualified technicians. For a splice to meet these needs within the winding, a brazed or welded scarf joint or butt joint is often used. The two connecting pieces should be carefully prepared to ensure that all local insulation is removed and a good fit of one piece against the other is achieved. Once the brazing or welding is complete, all sharp protrusions and flux material should be removed. Strand insulation can be restored by applying a few layers of the appropriate insulation as described in 8.5.3. If the coils contain wire that is smaller than 3.2 mm², splices within the winding should not be used. If the joint is a tap connection, a 'T' joint can be used. If the joint connects two parts of the winding such as in a disc type of winding, a lap joint can be used if space permits; otherwise, a butt or scarf joint should be used. In all cases, all sharp protrusions should be removed after brazing or welding is complete. An additional piece of sheet insulation is often wrapped around the joint to protect adjacent turns. Where tap leads exit the winding, they are often securely tied into the winding to avoid breaking the conductor at this point.

25.2.2 External Connections

In most transformers, external connections are generally made to extend the tap leads or the main leads or to install a lug or similar connection device to the end of the leads. A piece of multi-strand wire or cable can be attached to the coil conductor where the wire exits the winding, or the connection can be made well outside the coil. If the connection is made external to the coil conductor, the wire used for this purpose can be attached to the winding wire by brazing, soldering or welding, or by using a crimp connector. The most secure connection can be ensured through brazing or welding but requires additional skill on the part of the worker. In addition, any fluxes or cleaning agents should be removed after the connection is made. Crimp connectors, bimetallic ones, should be used when joining dissimilar metals or for attaching lugs or similar connection devices to the end of the leads. Cross section of Delta wire should be double of winding wire.

25.2.3 Insulating Connections

For insulating the connections, the insulating materials should have proper voltage and temperature ratings, and clearly indicated for use in air or for use under the dielectric fluid. The insulation should extend beyond the connection in each direction to establish a creep age path to suit the voltage of the winding and to suit the environment (air or submerged in the liquid dielectric). The insulation should be secured in such a manner that it shall not dislocate or fall off during processing or in service. In addition, suitable sleeve is usually installed over any wire that extends beyond the coil.

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25.2.4 Insulating Connections

The requirements for dry-type and liquid-filled transformers differ slightly. The leads for dry-type transformers often have to withstand high temperatures in contrast to which the leads for liquid-filled transformers should be able to withstand submersion in the dielectric. When multistrand wire or cable is connected to the coil conductor, the cable or wire conductor is sized using a current density that is the same or preferably lower than that used for the coil conductor. As a guide, one can use a conductor of the same size or a larger size than that used by the original manufacturer. On small transformers, the coil conductor is often used as a lead. In this case, a sleeve is usually placed over the wire for added mechanical and electrical strength.

25.3 Final Assembly of the Transformer (After Repair)

The final assembly operations to repair a liquid filled transformer need more attention and care, for example:

- a) Ensure dryness, cleanliness of tank and prepare tank with all new gaskets of suitable material, accessories, assemble metal parts and bushings as per design;
- b) Before placing the assembly in oven IR testing should be carried out;
- c) Before placing the core coil assembly in oven proper functioning of all heaters of the oven must be ensured;
- d) Core coil assembly to be dried in oven to ensure required insulation resistance (IR) value so that water content in insulations is optimum possible level. Insulation resistance test is often used to qualify this criterion;
- e) Tank the core coil assembly and complete all the connections and joints in minimum possible time to reduce exposure of dried windings to the atmosphere;
- f) Tightening of gaskets/seals must be ensured after tanking;
- g) During tanking of the core-coil assembly, the oil breakdown voltage (BDV) should be checked before filling into the transformer. In case used oil is being filled after filtration/centrifuging, its BDV should not be less than the BDV value specified in IS 1866;
- h) Complete the impregnation process by dielectric fluid as per manufacturer's guidelines;
- j) For distribution transformers above 11 kV class, Oil filling should be done using vacuum pump by creating vacuum in the tank; and
- k) Allow transformer to settle for at least 4 hours before testing.

Final assembly like tanking and impregnation sequence can be vice versa depending on the manufacturer's facility and customers requirement.

25.4 REPAIRING OF LIQUID-FILLED TRANSFORMER

The operations to repair a liquid-filled transformer are similar to dry-type transformers except final assembly and impregnation process. Much of the additional work required relates to the dielectric fluid and the tank. Retro-filling, as

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indicated in Annex F, helps to increase the life of the transformer, it is overloading capability, and makes it eco-friendly and safer from fire safety point of view.

25.4.1 Checking for Service Suitability

All name-plate data should be recorded on the service order form as described in 7.2. If applicable, the PCB concentration should be verified for 1000 KVA and above capacity transformer.

26.0 CHANGE IN NUMBER OF COILS: -

The design of coil should be as per the original design & the repairer is not allowed to change it without approval in writing of competent authority.

27.0 TRANSFORMER OIL: -

The failed transformer shall be supplied with full of transformer oil filled up to oil level gauge mark or totally empty. Maximum 5% losses towards filtration/impregnation and wastage shall be allowed for oil filled in failed transformers. No filtration loss/ impregnation loss will be allowed for the transformers failed in guarantee period or where fresh oil is given. The used carbonized oil taken out from failed transformer will be filtered free of cost and shall be used by agencies. Filtered oil shall be tested electrically and shall meet the BDV values required and filled after repairs of transformers. Oil should be tanked after proper cleaning the transformer tank and after removing sludge from the oil. However, though the transformer will be supplied with full of oil or empty, it should invariably be recorded in physical & internal inspection report.

In case of fresh oil is to be filled up in repaired transformer, it is mandatory the presence of Junior Engineer / Deputy Engineer at the time of oil filling. The quantity of fresh oil is to be clearly mentioned in the report and dully signed by the concerned JE/DE & Authorized representative of repairing agency.

Scrap Transformer oil (with sludge) shall be disposed of by repairer at own risk.

28. WORK ALLOTMENT:

- (A)** Repairing agency shall be allotted failed distribution transformers from any circles under DGVCL to carry out repairing of failed transformer. However, initial quantity of allotment will be decided by the CE , DGVCL depending on established repair work capacity, upgraded technology / facility for repairing the transformer , past performance of earlier repairing order and return of transformer failed within guarantee period back to DGVCL in time. You shall carry out repairing of failed / damaged Dist. Transformer of any Circle.

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Subsequent allotment of transformer will be determined only after return of 90 % quantity of repaired transformer allotted in previous lot back to Company and performance and % failure of repaired unit of the concerned agency in service.

If the repairing agency does not return 90 % of the allotted transformers, then no further allotment to that agency should be made. On receipt of the 90 % repaired transformers from the allotted quantity, further allotment may be made to avoid blocking of the inventory.

In case % failure of transformers is found more than 15 % (fifteen percent in case of 11KV and 20% in case of 22 KV Transformer), further additional failed Distribution transformer will be allotted to repairing agency at the discretion of the DGVCL or allotment may be stopped.

J.E. / D.E. (TMS) Divisional office will review the performance of repairing agency in every monthly TMS MIS reports and will report same to circle office and circle office will review the performance of repairing agency by compelling all division report and report same to corporate office duly signed latest by 10th of every month.

Performance of repairing agency will be reviewed every month with TMS MIS.....Kind Attention JE TMS.

- (B) Separate allotment will be given for 11KV and 22KV Transformers based on past performance and % failure. Field will issue transformers strictly as per 11 KV and 22 KV Class wise allotments only i.e. 11 KV is not available 22 KV rated transformer should not be issued and vice versa.
- (C) DGVCL reserves the right to allot any numbers of transformers of any capacity against **poor** performance or to **stop deal** with poor performance agency and agency doing breach of trust.

29.0 **DRYING OF ACTIVE PARTS:-**

The repairer shall have to dry the transformer in oven up to the desired/ specified limits in order to remove the complete moisture from the active part. The repairer shall keep proper records of drying of every active part mentioning estimate, weight of transformer, date of placement in oven, date of removal from oven and megger value. **During checking, if oven records are not found from repairing agencies, the contract shall be cancelled.**

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30.0 **PAINTING: -**

The tank must be internally painted with a coat of special paint anti corrosive hot oil resistive paint, which will not affect the transformer oil. Externally one coat of zinc chromate anti-corrosive paint and two further coats of Admiral Gray have to be applied. Before applying Zinc Chromate, tank surface shall be properly cleaned. Also, DGVCL symbol of size 4" to be painted on both side of transformer to identify DGVCL transformer from distance (Red colour).

At some point during the repair process, often just prior to shipping, the transformer should be painted. Before using any paint product, the engineer should know its characteristics, and be aware of safety and health hazards the product presents. The repairer should also be aware of any environmental regulations covering the usage of product. It is important that painting be carried out under controlled conditions according to the paint manufacturer's instructions. The work should be carried out in a heated, well ventilated area isolated from other personnel. For spray applications, a paint booth or spray recovery system is recommended. The person applying the paint should be supplied with all necessary safety equipment including the face mask, face shield, oxygen supply system, protective gloves and coveralls. The surfaces to be painted should be clean and free from oil and grease. It is important to protect items such as bushings or gauges during the painting process. The coverings on the bushings and any other items should be removed when the paint has cured.

30.1 **Overhauling**

This operation usually requires noticeably more work for oil-filled transformers than for dry-type transformers. The purpose is to totally refurbish the transformer and accessories.

30.2 **Preliminary Inspection and Tests**

Perform a quick visual inspection to identify and record any mechanical damage to the tank or radiators and any fluid leaks or trace that may exist. The following tests should be performed — the insulation resistance HV to LV, HV to G with LV grounded, LV to G with HV grounded; ratio check all phases on all taps, if existing; and winding resistance check. Take insulating liquid samples for BDV analysis.

30.3 **Removal of Core and Coils**

The oil should be drained out from the tank and stored in tanks specially designed for the purpose (separate tank for mineral oil, Natural ester, Synthetic organic ester and silicon fluid). This will help in preventing oil contamination by other substances. When draining the oil from a damaged transformer, the contaminants in or floating on the oil can foul the transformer windings. Thus, a filter should be used in the suction line to prevent contamination or damage to the pump. Precautionary

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measures should be taken to prevent leakages. Once the oil is drained and all components (such as the conservator, the bushings, tap switch operators, and thermometer pockets) are removed, the cover is then removed by removing the clamp that holds it in place, unbolting it or cutting the weld. For the latter case, the tank should be purged with and pressurized with nitrogen prior to cutting the weld. Bushings should be removed or protected from metal splatter. After the cover is removed, any remaining accessories that require access from inside the tank can be removed. The core and coil assembly can then be carefully lifted from the tank. Allow the core and coil assembly to drain over the tank for a short time and then place it on the floor over a drip tray. Cover the assembly with a polyethylene sheet.

30.4 Major Inspection and Tests

Perform a detailed inspection of the core and coil assembly, the inside of the tank, and all the accessories that were removed. Items that require special attention are: the tap changer and its connections; the core clamping assembly; insulation between the core and the clamping structure; blocking; coil insulation; coil leads; any accessible conductor joints; bushings; inside of the tank; conservator; radiators; and all accessories. Tests performed at this time are insulation resistance between the core and the clamping structure, functional tests on all accessories and a degree of polymerization on the paper. The results listing the deficiencies, recommendations and repair costs should be provided to the customer. The customer may choose to repair only the most critical deficiencies or enhanced repairing/retro-filling for better asset life. These should be repaired along with “standard” repairs listed by the service centre as part of the overhauling.

30.5 Cleaning and Repairs

All components are cleaned using appropriate methods for each item. The core and coil assembly is flushed using mineral oil at very low pressure. The tank, cover, conservator, control boxes and bushing terminal boxes should be thoroughly cleaned using shot blasting in case major damage in paintwork is observed during visual inspection; otherwise, conventional methods for cleaning may also be used. On larger transformers, cleaning the inside of the tank can expose personnel to additional unwanted hazards, such as toxic, flammable or suffocating vapours from solvents in a confined work space, therefore, relevant PPE to be used. These issues should be resolved to avoid undue risk to service personnel and to satisfy the local regulating authorities. After surface preparation and prior to cleaning is the appropriate time to add or replace any radiators or cooling tubes. The gaskets and seals should be replaced with materials resistant to deterioration by insulating fluid. The oil should be processed and cleaned to remove particulates, gases and acids. Once all the repairs have been completed, the unit can be reassembled.

30.6 Reassembly

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Reassembling the transformer starts with drying the core and coil assembly. This is best accomplished by placing the core and coils into an oven where the temperature does not exceed 95 °C. Ensure that an absorbent material is present around the base of the core and coil assembly to soak up oil that will drain from the insulation. Scrap oil and other materials (cotton waste etc) used for oil soaking to be disposed as per local regulations. Prior to removing the core and coil assembly from the oven, ensure that the work area is clean, and that cleanliness will be maintained throughout the assembly process. When the core and coil assembly is removed from the oven or drying tank, the clamping bolts should be checked for tightness. The assembly is then lifted, quickly lowered into the tank, and all hold down supports installed and tightened. The core coil assembly along with tank should be placed in oven as per standard operating process based on the available facility. The tank is then quickly filled with dielectric fluid (preferably under vacuum) to the top of the transformer core to ensure all insulating material is submerged under dielectric fluid. The dielectric fluid should be above room temperature. Install all sidewall components, replacing any damaged control wiring. Install the cover and all cover-mounted components. The transformer is then filled with the remaining fluid until the correct fluid level is shown on the fluid level gauge. The security of all joints is confirmed by pressurizing the transformer tank with approximately 03 PSI of dry air and inspecting all joints for leak proof connections. If time permits, the transformer should remain pressurized for 12 hours and then the pressure should be checked. Mask all the bushings, gauges and valves, and paint the unit. For natural esters, ensure adequate sealing of transformer as recommended by the supplier.

30.7 Final Tests

The following tests should be conducted on the transformer-insulation resistance core-to-ground; insulation resistances between each winding and between each winding and ground; turns ratio test; phase relation check or polarity check; winding resistance; open circuit core loss; copper loss; separate source voltage withstand test for HV and LV windings; and an induced overvoltage withstand test. Optional test that may be carried out is magnetic balance test. All tests are described in clause no 35.0. Once all tests are complete, oil samples should be taken for conducting BDV test. The results should confirm that no internal problems occurred during testing and recorded for comparison with the future test results.

31.0 TESTING OF TRANSFORMERS AFTER REPAIRS: -

Each and every transformers shall be tested for Routine tests by repairing agency as per IS 1180 and IS 2026:2014 before delivered to the Company. The testing arrangement will have to be made by the repairer. The repairer shall give an advance intimation of seven days in writing to Company's representative before the repaired transformers are ready for inspection and testing, failing which the repairer shall be responsible for delay in delivery and penalty as per clause No 37 will be imposed. The testing shall be done in presence of Company's authorized

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representatives and the **test results shall be recorded in the register** and also repairer and representative of the Company shall sign test witness report jointly. All the components parts used for replacing defective one shall confirm to relevant BIS and shall be of standard / reputed makes and best quality. Necessary test certificates and documentary evidence of purchase and use thereof in repairs of Company's transformers shall be produced if asked for. The repairer shall have facility for testing of transformer for all acceptance tests & all the instruments shall have to be calibrated every year at the Govt. approved testing calibration laboratory.

The test equipment should meet the accuracy requirements for recording the test results. The test equipment should be calibrated as per the relevant standards and should bear a mark or label verifying calibration. Calibration certificates should be stored and provided to customer if required.

The Following Acceptance / Routine tests as per IS 1180 / IS 2026 shall be carried out on each transformer by repairing agency after repairs.

- a. Measurement of winding resistance.
- b. Measurement of voltage ratio and check of voltage vector relationship.
- c. Measurement of Impedance voltage / short circuit impedance (Principal tapping, when applicable) , Measurement of No load losses and current.
- d. Measurement of Insulation Resistance.
- f. Induced over voltage withstand test (Double power & Double Frequency test)
- g. Separate source voltage withstand test (HV test)-(HT-28KV for 11KV, 50KV for 22KV Transformer, LT-3KV for one minute).
- h. BDV Test for oil.
- i. Polarization Index test.
- j. Polarity test.
- k. Applied Voltage Tests

Detail method of testing of transformer

31.1 Insulation Resistance and Di-Electric Strength Test

This test is usually performed to obtain three different winding insulation resistance values—high voltage to low voltage and ground; low voltage to high voltage and ground; and high voltage to low voltage. It can also be used to obtain insulation resistance values between the core and ground when there is core-to-ground connector that can be removed so as to electrically isolate the core from ground. For best results, the transformer should be clean and dry before performing this test.

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If the transformer has more than two windings, the insulation resistance of winding should be measured in turn with the other windings grounded. The insulation resistance should be measured with a dc insulation resistance tester, that is, a mega ohm meter. The test equipment should be suitably sized for the transformer or winding to be tested and the test performed at a voltage level consistent with the voltage rating of the winding under test. Suggested test voltages are given in the Table 1.

Table 1 Insulation Resistance Test Voltages

SI No.	Winding Voltage Class (kV)	Insulation Test Voltage(dc)
(1)	(2)	(3)
i)	Upto 1.1	1 000
ii)	3.3 – 11	2 500
iii)	22 – 33	5 000

The temperature of the winding should be measured at the same time as the insulation resistance value is obtained, which will allow the resistance reading to be corrected to a common temperature such as 27 °C. Temperature correction factors are given in Annex G. Test voltage is applied for 1minute. All accessories attached to the winding should be disconnected and grounded to the core.

Table 2 Recommended Minimum Insulation Resistance

SI No.	Winding Voltage Class (kV)	Insulation Resistance (MΩ)
(1)	(2)	(3)
i)	Upto1.1	600
ii)	3.3	1 000
iii)	6.6	1 500
iv)	11.0	2 000
v)	22 – 33.0	3 000

Minimum insulation resistance values may be obtained from the manufacturer's operation manual. In absence of this information typical minimum values as given in Table 2 shall apply. In case if the resistance values obtained are below these values, one should investigate to determine the cause of the low values. The significance of one insulation resistance reading is not well defined for liquid-filled or dry-type transformer; consequently, these values are best used to determine equipment suitability for overvoltage tests or for trending over time.

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The recommended minimum one-minute insulation resistance for oil-filled transformers is given by the relationship:

$$R_{min} = C \times E / (kVA)^{1/2}$$

where

R = the minimum insulation resistance in mega ohms (MΩ);

C = 1.5 for transformers at 20 °C and 30 for un-tanked core and coils;

E = voltage rating in volts (phase-to phase) for delta-connected transformer and phase-to-neutral for wye-connected transformers; and

kVA = rated capacity of the winding under test (if three-phase winding is being tested where all the windings are being tested as one, the rated capacity of the three phase winding is used).

The resistance should be corrected to a reference temperature as follows:

$$R_{ref} = k_t \times R_t$$

where		
k_t	=	correction factor for the temperature at which measurement was taken (see Table 5 in Annex G for correction factor for various temperatures); and
R_t	=	Measured value of resistance.

Moisture generally affects the insulation resistance of dry-type transformers. To confirm the presence of moisture, the insulation resistance can be measured at two different voltages. For example, if the insulated resistance at 500 V dc and 1 000 Vdc differ by more than 25 percent, this can indicate the presence of moisture in the winding.

31.2 Polarization Index Test

This is an extension of the one-minute insulation resistance test described in 33.1, and has the advantage that moisture has little effect on these measurements. The same dc voltage used for the one-minute test is applied for a period of 10 minutes. Resistance measurements are recorded after one minute and 10 minutes. The polarization index is the ratio of the 10 minute resistance to the one-minute resistance. Equipment with values below 1.3 should be investigated for possible insulation contamination. This is most reliable for dry-type insulation systems; consequently, the result should be interpreted with caution for liquid-filled equipment.

31.3 Winding Resistance Test [IS 2026 (Part 1)]

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There are other tests that can be performed on a transformer to assess its condition. These tests do not test the insulation system directly but provide meaningful information about the other components.

To obtain accurate results, this test is usually performed using a winding resistance bridge. On a new or rewound transformer, this information can be used to determine the copper or load losses that will occur in the transformer and separate them from eddy current losses in the winding. This test can also be used to detect faulty joints or tap switch contacts within the winding. Note that when measuring the resistance of the LV winding on large transformers, it can take several minutes for the measurement equipment to reach a stable value. At the same time, oil temperature and also the winding temperature should be measured. The resistance value can be corrected to a common temperature using the relationship:

$$R_{ref} = R_{tx} (T_{ref} + 235) / (T_t + 235) \text{ (for Copper)}$$

and

$$R_{ref} = R_{tx} (T_{ref} + 225) / (T_t + 225) \text{ (for Aluminium)}$$

where

ref = reference temperature; and

t = test temperature at which the values were obtained.

31.4 Measurement of Voltage ratio or Transformer Turns Ratio (TTR) Test

Low-voltage ac is applied to the low-voltage winding of the transformer, and the voltage induced in the high-voltage winding is measured through test set reference transformers and a null meter. Using the TTR test set one can determine the polarity of the transformer, phase relations, and turn ratio.

Measurements should be taken on all taps. Unsatisfactory results can be indication of loose connections, tap changer misalignment, short circuits, incorrect turns after rewind, or open circuits in the winding. The maximum variation of the measured value is 0.5 percent.

Table 3 Common TTR Responses and Associated Transformer Condition
(Clause A-4.2)

Sl No.	TTR Reading	Condition
(1)	(2)	(3)
i)	Low current and no output volts	Open turn in the excited winding
ii)	Normal current, output voltage low or unstable	Open turn in output winding
iii)	High current and difficulty balancing	High resistance in test leads or

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	the bridge	tap charger
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31.5 Polarity Test

This test can usually be performed with the TTR meter described in A-4.2. Alternatively, a low amplitude AC voltage source and voltmeter can be used. One terminal of the HV winding and the LV winding are connected together, and the low amplitude ac source is connected to the HV winding.

The voltage across the remaining terminals HV to LV is measured. The result, if greater than the voltage applied to the HV winding, indicates that the polarity is additive. Alternatively, if the voltage is lower than that applied to the HV winding, the polarity is subtractive. This test can also be performed on three-phase transformers if both the ends of the HV and LV windings for each phase are accessible. Test one phase at a time with all other terminals open circuited. For additive polarity, the HV and LV winding are wound in the opposite direction. When they are wound in the same direction, a transformer is described as having subtractive polarity. This characteristic becomes very important when more than one transformer is connected in parallel to supply a load. If the polarities are not the same, large voltage and current imbalances will occur that can damage the transformers or the connected load.

31.6 Phase Sequence Test

This test is used to determine the phase relationships between the HV and LV windings. It is particularly useful after a transformer has been rewound and connected following disassembly in the factory or in a service Centre. It is recommended that this test be performed any time the leads from the core and coil assembly are disconnected from the terminals. In this way, one can be sure they are connected properly after the work is complete. The test is similar to the polarity test expect that the line and neutral coil leads are connected as they would be in service. Connect corresponding terminals together, one from HV and one from LV (usually U1 and U1). Connections for various winding configuration are shown in Figure 1 in Annex G.

A low amplitude (120 V or less) three-phase ac voltage is then applied to the HV winding. The voltage between the remaining terminals is then measured and recorded. The magnitudes are then compared to the expected magnitudes based on overlaying the phase relation diagrams from the name-plate and calculating the phase relation sum of the voltages being measured.

31.7 No-Load Loss Test

This test is mostly performed on a new transformer to verify the core losses or iron losses. However, this test can also be performed on a transformer under repair to determine whether there are shorts between laminations and to provide a reference for future tests. This test can be performed using one wattmeter on a single-phase transformer and one-, two- or three-watt meters on a three-phase transformer. The

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low-voltage winding is energized to rated voltage with the HV winding open circuit. The watts measured are the no-load losses, and the current is the excitation current. It is important that the supply waveform be sinusoidal and at the correct frequency. The losses are measured with a wattmeter suitable for use at low power factor. Unfortunately, without knowing the original losses it may be difficult to assess the condition of the core in a used transformer. The losses obtained in this manner include dielectric losses as well as stray losses and copper I²R losses, both due to the exciting current.

31.8 Load Loss and Impedance Test

This test is carried out to determine the losses within a transformer due to the resistance of the HV and LV windings. Once again, the energizing source should have balanced voltages, and the waveform should be sinusoidal. If these two criteria are met, the measurement can then easily be made with one, two- or three-watt meters. The usual method is to short circuit the LV winding and energizes the HV winding on the 100 percent tap until rated current is achieved. The watts measured are the load losses and the voltage required to circulate the rated current is the impedance voltage. The winding temperature should also be recorded at this time. The reference temperature used for determining copper losses is 75 °C. The recorded readings will contain core losses as well as the load or copper losses; the core losses can usually be neglected unless the impedance of the transformer is unusually high.

31.9 Applied Voltage Tests

To confirm that a particular transformer or accessory can withstand the electrical stresses in service, it is subjected to a high-voltage test. This test uses ac source and the electrical stress is usually applied between the windings and ground. The HV and LV windings are usually tested separately with the windings not being tested connected to the ground. To avoid damaging the insulation, avoid application of the high-potential test voltage. High-voltage tests should not be used on equipment with graded insulation systems. That is because the insulation level at the neutral end of the winding is less than at the line end.

31.10 Separate Source Voltage Withstand Test

A 50 Hz single-phase ac supply is connected to the HV and LV windings separately. The winding under test has all terminals shorted together. The other winding terminals are also shorted and connected to the ground. The 50 Hz source should be suitably sized to provide the necessary charging current for the transformer being tested, and the waveform should be purely sinusoidal. The test voltage is raised to the test value at a slow, controlled rate. It should, however, not be so slow as to unnecessarily extend the test period. Usually, the above criterion can be met if the voltage is raised to 75 percent of the test value in 5 seconds to 10 seconds and the rate of rise from there on is 2 percent to 3 percent of the test value per second. The test value is maintained for one minute, and the voltage smoothly but rapidly decreased after that time. The equipment is deemed to have passed the

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test if the test voltage is maintained for the one-minute period without any disruptive discharge.

31.11 High Frequency Induced Over-Voltage Test

This test is used to verify the integrity of the turn-to-turn insulation in single-phase and three-phase transformers, as well as phase-to-phase insulation in three-phase transformers. It may also be used in place of the 50 Hz high potential test for graded insulation systems. The test is carried out at high frequency to reduce the exciting current required to energize the transformer. Common preferences are 100 Hz up to 200 Hz. To keep the severity of the test essentially constant for various frequencies, the duration of the test is limited to 7200 cycles. The test supply is applied to each phase of the LV winding of the transformer under test. The HV winding is left open. The voltage is raised smoothly and quickly to the test value (less than 15 s), held for the 7200 cycles, then reduced smoothly and quickly (less than 5 s) to zero. The transformer is deemed to have passed the test if no disruptive discharge occurs during the test.

The reference guaranteed no load losses and load losses for and % impedance is specified as under.

In earlier tender, repairing agency was provided reference guaranteed no load losses and load losses and % impedance table/relevant IS in tender.

DISCOMs had also purchased transformers having evaluation based on Total Owning Cost (TOC) formula which transformer may have lower losses compared to losses mentioned in IS 1180:2014.

Therefore, reference guaranteed no load losses, load losses and % impedance of failed transformer from Name plate of failed transformer and if Name plate or losses on Name plate are not available then losses as per A/T of specific Supplier for which transformer belongs be taken. The details of A/T, suppliers can also be ascertained by TIN plate also.

And only for those classes, capacity and winding which are not covered above for that case the reference guaranteed no load losses; load losses and % impedance for CRGO and Amorphous transformers are to be maintained as per losses shown in earlier finalized tender as under.

In the tender of the year 2015, the reference guaranteed no load losses and load losses for and % impedance is specified as under- for **CRGO**:

Sr. No.	VOLTAGE / RATIO	KVA RATING	NO LOAD LOSSES IN WATTS (MAX)	FULL LOAD LOSSES IN WATTS (MAX) AT 75 DEG. CENTIGRADE	% IMPEDANCE
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1	11000/ 250 V	5	23	123	4% (Stack) 3% (wound)
2	11000/ 433 V	10	45	224	3.75%
3	11000/ 433 V	16	54	381	4.5%
4	11000/ 433 V	25	100	685	4.5 %
5	11000/ 433 V	63	180	1235	4.5 %
6	11000/ 433 V	100	260	1760	4.5 %
7	11000/ 433 V	200	500	2800	4.5 %
8	11000/ 433 V	500	950	5500	5.0 %
9	11000/ 433 V	1000	900	6199	5.0 %
10	22000/ 433 V	16	64	384	4.5 %
11	22000/ 433 V	25	115	700	4.5 %
12	22000/ 433 V	63	200	1400	4.5 %
13	22000/ 433 V	100	280	1850	4.5 %
14	22000/ 433 V	200	500	3000	4.5 %
15	22000/ 433 V	500	1050	5800	5.0 %

In the tender of the year 2015, the reference guaranteed no load losses and load losses for and % impedance is specified as under- for **Amorphous**:

SR. NO.	VOLTAGE RATIO	WINDING MATERIAL (AL / CU)	KVA RATING	NO LOAD LOSSES IN WATTS (MAX)	FULL LOAD LOSSES IN WATTS (MAX) AT 75 DEG. CENTIGRADE	% IMPEDANCE
1	11000 / 433 V	AL	10	45	225	4.5 %
2	11000 / 433 V	AL	16	60	480	4.5 %
3	11000 / 433 V	AL	25	28	490	4.5 %
4	11000 / 433 V	AL	63	57.5	958	4.5 %
5	11000 / 433 V	AL	100	78.5	1458	4.5 %
6	11000 / 433 V	AL	200	270	2300	4.75 %
7	11000 / 433 V	CU	5	24	74	-
8	11000 / 433 V	CU	63	58	971	4.5 %
9	11000 / 433 V	CU	100	64.5	995	4.5 %
10	22000 / 433 V	CU	63	38	1100	4.5 %
11	22000 / 433 V	CU	100	55	1575	4.5 %
12	22000 / 433 V	CU	200	124	2312	4.75 %

In the tender of the year 2023, the reference guaranteed no load losses and load losses for and % impedance is specified as under- for **CRGO& Amorphous**:

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Sr. No.	VOLTAGE / RATIO	KVA RATING	Maximum no Load Losses in Watt	Maximum total Losses at 50 % loading in Watt	Maximum total Losses at 100 % loading in Watt	% IMPEDANCE
1	11000/ 250 V	5	15	35	95	4 %
2	11000/ 433 V	10	40	84	240	4.5 %
3	11000/ 433 V	16	50	135	440	4.5 %
4	11000/ 433 V	25	60	190	635	4.5 %
5	11000/ 433 V	63	125	340	1140	4.5 %
6	11000/ 433 V	100	170	475	1650	4.5 %
7	11000/ 433 V	200	270	780	2300	4.75 %
8	11000/ 433 V	500	545	1510	4300	4.75 %
9	22000/ 433 V	200	311	819	2415	4.75 %
10	22000/ 433 V	500	730	1585	4515	4.75 %

(Total losses in watt at 100 % loading = No load losses in watt + Full load losses in watt at 75 Deg. C)

- (a) No load losses & Load losses for 5, 10, 16, 25, 63 & 100 KVA of 11/22 KV Transformers are max. losses and hence, no Tolerance is permissible as per IS-2026 **for the first time repairing, however for second time and onward time repairing further maximum 10% (+) losses will be allowed.**
- (b) In case of No load losses & Full load losses for 200 & 500 KVA of 11/22 KV transformers as per IS 2026, following tolerance is given.
 - (i) +15% tolerance can be given on each no load & Full load losses provided the tolerance for total losses not exceeded tolerance of +10%.
 - (ii) Tolerance on % impedance can be given as per IS 2026.

The each and every transformer repaired shall be tested for routine test as stated above. Every repairing agency shall maintain a register for each transformer tested and no load losses and load losses measured shall be invariably mentioned in the register. The register kept giving details of testing of all the tests carried out as specified in the clause shall be checked by the inspecting officer of the DGVC at any time and the same shall be produced for verification. In case, the register is not found with appropriate details, the action taken by the DGVC shall be binding to the agency.

For old age DTR having age more than 20 years life, some deviation as per point no (C) mention below shall be allowed for all capacity ~~(as per IS 1180/IS 2026)~~. Guaranteed no load losses & Full load losses for the transformers with loss

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capitalization formula will be as declared by manufacturer which will be available on name plate or from respective A/T.

(C) The rewinding process starts with the investigation of the failure that necessitated the rewind. Information gathered may prove helpful when rewinding the coils so that subsequent failures can be avoided or delayed. Some of the features that should be looked for are signs of overheating and its probable cause, reduced electrical clearances, material incompatibility, and the mechanical failure of components. If the fault cannot be located visually, electrical tests (see clause no 31.0) as necessary can be carried out to determine the nature and location of the failure. The customer should provide the detailed information recorded before installation, such as original no-load losses, load losses and percentage impedance etc. of the transformer under repair.

Once the transformer reaches the repairer's workshop, it is necessary to carry out no load test at rated voltage with healthy LV/dummy LV turns. Based on the results, repair of the transformer shall be carried out as follows:

a) If the measured no-load losses at the repairer's workshop exceed 15 percent of the original no load losses (provided by the customer), then the transformer may not be suitable for repair and no repair works to be taken up and the core shall be scrapped; and

b) If the measured no-load losses at the repairer's works are found below 15 percent of the original no load losses (provided by the customer), then the transformer shall be taken up for repair works.

The total losses (pre-repair) shall then be calculated as below:

Total Losses pre-repair =

No-load losses measured at repairer's workshop + original load losses (as per name plate)

After repair, the total losses shall be measured and the same shall not exceed the total losses (pre-repair) by more than 10 percent that is:

Total Losses post-repair $\leq$ 110 percent (that is 1.10) $\times$ Total Losses pre-repair

The tolerances on component losses (that is no-load losses and load losses) measured post-repair shall be as below:

Sr No	Component losses	Tolerances
1	No-load losses	+ 15 percent on the no-load losses measured at repairer's workshop
2	Load losses	+ 15 percent on the original load losses (provided by the customer)

Note: The tolerance values specified in above clauses are not applicable for repair of distribution transformers during the warranty period.

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32.0 SEALING OF TRANSFORMERS: -

After repairing & testing of transformer, two Seals shall be provided on the opposite side of the transformer by Divisional JE TMS. In case of failure, these seals are to be opened in presence of Company's representative at the time of internal inspection. Again after repairing & testing of Transformer, fresh seals shall be provided by DGVCL.

33.0 INSPECTION: -

A team from DGVCL shall visit the works of repairing agency at any time and verify the estimate / assessment for transformer repairing, quality of components used, testing instruments, machineries / equipments, test reports of earlier transformers tested etc. They may also witness some or all tests on the transformers available in the factory / workshop of the repairing agency. Repairing agency shall give co-operation to this team during its visit and furnish all the details required by them. In case any default is observed during this visit, necessary action shall be taken against repairing agency & Company may cancel the contract / black list the repairing agency.

All accessories should be checked for mechanical damage, noting the items inspected, those that are damaged, and the nature of the damage. The operation of any cooling fans and controls should be verified. The radiators, threaded fittings and gasket should be checked for leaks. The bushings should be cleaned and checked for cracks. The proper operation of the tap changer, if any, should be checked. Alternatively, the security of the tap connections in the tank should also be checked.

34.0 INSPECTION CHARGES: -

Repairing agency shall not charge for inspection and assessment of damaged transformers.

35.0 INSPECTION CHARGES FOR UNECONOMICAL UNITS :-

Rs.500/- will be paid for inspection of uneconomical units. However, repairer will have to reseal the unit by tack welding at six places in presence of Company's representative. The repairer has to assemble the unit again – i.e. core / HV, LV winding etc. in the actual position before tack welding – instead of just dumping the part in the transformer tank. For uneconomical units, no charges shall be payable.

36.0 TRANSPORTATION CHARGES FOR TRANSFORMER FAILED WITHIN GUARANTEE PERIOD

For repairing Agency situated in the jurisdiction of DGVCL area

DGVCL shall make necessary arrangement for transportation of failed transformer and repaired transformer from field to your works and back to field respectively, Loading of failed

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transformers and unloading of repaired transformers at field shall be arranged by DGVCL. However, the unloading of failed transformer and loading of repaired transformer at your work shall be arranged by repairer at your cost. **If transformer fails within guarantee period then Lump sum amount of Rs.275/- per transformer will be recovered against transportation charges. Both the way, transportation shall be done by DISCOM.**

For repairing Agency situated outside jurisdiction of DGVCL area

Repairing agency shall make necessary arrangement for transportation of failed transformer (OGP and WGP) and repair transformer from field to your works and back to field respectively, loading of failed transformers and unloading of repaired transformer at field shall be arranged by DGVCL. However the unloading of failed transformers and loading of repaired transformer at your works shall be arranged by repairer at your cost. **Thus to and fro transportation charges will be borne by repairing agency situated outside jurisdiction of DGVCL area.**

After all repairs are completed, the transformer should be labeled as described in tender and packaged to prevent damage during transportation to the customer. The type of packaging and method of transport should be provided to the transport company and the customer. It should be confirmed that no PCB contamination is present in the liquid filled transformers of 1000 KVA and above capacity. The distribution transformer should be transported generally in liquid-filled condition. In either case, the transport agency should be equipped with an emergency response kit. Additional protection should be provided for fragile items such as bushings, gauges, etc. For larger units, the enclosure may be disassembled, or special supports can be fabricated to prevent damage. For smaller units, this can be achieved by bolting the enclosure (and core and coil assembly) to a pallet. In all cases, it should be ensured that the transformer has been securely tied to the transport vehicle and is properly protected against the weather. Unless otherwise instructed by the customer, the tap switch or tap connections should always be set at the rated voltage position.

37.0 DELIVERY , INTEREST & PENALTY.

It must be seen that joint inspection is positively to be carried out within 10 days from the date of sending transformers. **The repairer must send estimate within 2 days from the date of joint inspection.** If the estimate of repairing agency not received within two days from the date of internal inspection, notice to be issued for same to the agency by Division Office. Concerned JE of Division office(TMS/Store) must prepare release within 3 days after receipt of estimate from agency. Division JE TMS has to follow up with circle/corporate for approval of estimate after preparing the release.

The approval of the estimate/release is to be conveyed by Circle office within 4 days and by corporate office within 15 days from the receipt of estimate/release. Concerned JE of Division Office shall arrange the required oil within short period from date of approval of estimate.

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- (A) "The repairer will repair the transformer within 30 days from the date of approval of estimate for OGP and within 30 days for GP failed transformer from the date of receipt of the transformer. No Transformer shall be kept un-repaired beyond 30 days after the date of approval of the estimate for OGP and from the date of receipt of the transformer for GP, **failing which repairer may become liable to pay interest charges on capital locked at 15% per annum for the Transformers with no oil pending to issue to agency** from the date of completion of granted period on purchase price of Board/Company for each rating of transformers taken from the nearest date of A/T for new Transformers."
- (B) The repairer will repair the transformers within 30 days from the date of approval of estimate for OGP and from the date of receipt of the transformer for GP failed transformer, failing which, notice for 15 Days shall be issued by the concerned Division office then and even after that if transformers are not repaired within 15 days, **penalty at the rate of ½ % per week plus applicable taxes, if any on repairing cost** of transformer under repair shall be recovered without issuing any further notice **for the Transformers with no oil pending to issue to agency**. (For GP on repairing cost of transformer may be last repaired cost).

CLARIFICATION:

The penalty at the rate of ½ % per week plus applicable taxes, if any on repairing cost of transformer under repair shall be recovered after 45 days (30 days + 15 days of Notice period) from the date of approval of estimate for OGP and from the date of receipt of the transformer for GP for the Transformers with no oil pending to issue to agency. This means that effective delivery period is 45 days only.

38 GUARANTEE

- 38.1** While attending repairs of the transformers, the repairer shall ensure that guaranteed technical particulars and performance of the same are maintained for repaired transformers except where voltage ratio is to be changed. Under no circumstance, the value of percentage impedance, losses and efficiency shall be altered from original value except when voltage is changed. **Item used in repairing of failed transformers should be standard specifications.**
- 38.2** "The repairer shall have to give guarantee for the satisfactory performance of repaired transformers as under from the date of dispatch for the whole unit irrespective of parts repaired/replaced during repairing.
- a. 11 KV Transformers-(5 KVA to 500 KVA)- CRGO Core 18 Months
 - b. 11 KV / 22 KV Transformers- (5 to 500 KVA)- Amorphous Core 18 Months

Signature of the Tenderer

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- | | | |
|----|--|-----------|
| c. | 22 KV Transformers- CRGO Core | 12 Months |
| d. | 11 / 22 KV SDT/PAT of various Ampere Ratings | 06 Months |

Therefore, during the joint inspection, repairer shall thoroughly checkup each coil and each parts of the unit in presence of DGVCL's Engineers while submitting the estimate for repairs to concerned Superintending Engineer. No extra charges will be allowed to transformer failed within guarantee period even though damages are found other than repaired/replaced parts. Transformers failed within guarantee period shall be repaired within 30 days from the date of intimation by EE concerned; otherwise further joint inspection of other deposited transformers will not be carried out till the repair of guarantee period failed transformers is completed. Only external physical inspection will be carried out for the transformers failed within guarantee period and no internal inspection will be carried.

- 39.0** The transformers delivered before the expiry of present order and whose joint Inspection are completed will have to be repaired at old rate.

40.0 FAILURE TO EXECUTE ORDER.

In case of failure on the part of the repairer to cope up with the work within the specified period, the same will be got executed through some other agency even at higher rates and the difference in amount if any, shall be recovered from the repairer.

- 41.0** In case of poor progress of repairs of transformers, Company reserves the right to curtail the quantity. If performance is too poor, then cancellation of order will be carried out. The Company reserves the rights for cancellation without giving any reasons.

- 42.0** Repairer shall have to maintain Process Card for repairing of Distribution transformers as per Annexure-A enclosed in respect of each transformer repaired by them. The process card shall be produced by agency for verification as and when required up to 24 months from date of dispatch.

- 43.0** The repairer shall have to complete all formalities of **agreement** and payment of **security deposit, Performance Guarantee& indemnity bond** etc **at respective Circle**, prior to contract order placed(before A/T issue), otherwise contract order shall be automatically treated as cancelled and no further correspondences in this regards will be entertained.

44.0 MINIMUM REQUIREMENT FOR REPAIRING AGENCY

THE REPAIRING AGENCY SHALL HAVE THE FOLLOWING REQUIREMENT.

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1. Independent constructed factory shed with Minimum 3000 Sq. ft(built up area with open land) shall be required for factory premises **for new bidder**. If a premise is on lease then the remaining registered lease deed period is at least 5 years from the date of the Tender. There should be a separate entry from the road.
2. Sufficient open land for storing of failed/repaired transformer with movement of man/material/vehicle.
3. Loading and unloading facility for failed/repaired transformer.
4. Permanent Electric connection with minimum 20 KW under NRGP or LTMD category tariff.
5. All necessary machinery for repairing of dist. Transformers such as winding machine, drill machine, welding machine (electric/arc welding/gas welding)
6. Oven for storing minimum 10 Nos. of job of 11 KV/22 KV.
7. Oil filter machine with sufficient capacity.
8. EOT Chain pulley block of 2 ton capacity or electric hoist of similar capacity.
9. Testing equipment suitable to carry out all acceptance test as per IS: 1180 and IS: 2026 along with calibrated meters.
10. Test bench for conducting acceptance test with high accuracy class of meters.
11. List of machinery as per Annexure B-1.
12. List of testing instruments as per Annexure B.
13. Proof of owner ship deed as per Annexure -C.
14. List of partner/director.
15. Power analyzer.
16. Qualified Engineer.

45.0 DECLARATION OF TRANSFORMER FAILED WITHIN G.P. AS SCRAPPED DUE TO DAMAGE OF CORE ETC.

If during guarantee period, transformer core is found damaged or due to any other reason transformer is UN-repairable and required to be scrapped, then in that case, total amount of last repairing bill shall be recovered from the repairing agency and no other charges shall be paid to the repairing agency such as opening of transformer, labour etc.

As no internal inspection is to be carried out in presence of representative of DGVCL in case of transformer failed within guarantee period, and hence if during the initial opening of transformer by repairing agency, any damage found in the core, then repairing agency shall not disturb anything in the transformer such as HV/LV coils, cores etc. and immediately call concerned EE of division office for internal inspection.

“If, the GP repaired transformer is failed within 6 months, from the date of installation in that case, the clause mentioned in the contract shall be applicable. In

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case, if, transformer is failed after six months, no recovery shall be applicable and the transformer shall be declared as scrap.”

If during inspection by DGVCL, the core, HV/LV coils etc. is found disturbed by the repairing agency then in the case, 50% of cost of transformer purchased in last A/T shall be recovered. Joint inspection report should be prepared in details.

However, all such cases with joint inspection report may be referred to CE, DGVCL and his decision shall be binding to the repairing agency.

The Company has every right to carry out the internal inspection of the job and **stage inspection during repairing.**

- 46.0** No transformer should be converted from copper winding to aluminum winding.
- 47.0** You shall have to provide 0.5 class accuracy or better power analyzer, duly calibrated at third party Government/NABL approved laboratory within 03 months. This shall be verified during inspection of the transformer testing. Failing to do so Further allotment shall be stopped.
- 48.0** DGVCL reserves the right to repair SDT (Special Design Transformer)/PAT/PLMT in line with CRGO rates conditions according to our own requirement of company.
- 48.1** Over and above, if any clause from above (tender specifications) is violated at any stage, the firm registered as Vendor in GUVNL or in any subsidiary Company of the GUVNL will be stop deal and/ or banned for business dealing and/ or blacklist. Further, The firm, stop deal and/ or banned for business dealing and/ or blacklist by GUVNL or any subsidiary Companies of GUVNL shall be considered as a stop deal and/ or banned for business dealing and/ or blacklisting for all Companies,

Every bidder, at the time of submission of bid submission, has to give a declaration that bidder and/or proprietor/ partner/ director of the firm has not been placed on Stop dealing/Banned for business dealing / blacklisting by GUVNL or/and it's any Subsidiary Companies.

49.0 ELECTRICAL TESTING SAFETY CONSIDERATIONS

49.1 Training

Employees should be trained for a safe operation of all the equipment they are expected to use in their daily activities. This includes all test equipment, tools, and lifting or handling equipment. Training should be provided using relevant equipment, operation manuals, hands-on training and/or video training tapes. When properly

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trained in the use of the service-centre equipment, employees should be expected to carry out their activities in a safe manner.

49.2 Clothing

Local regulatory requirements for workplace safety should be followed. As a minimum, clothing should be suitable for the work to be performed. Flame retardant material is recommended. Wearing exposed jewellery should be avoided. Safety glasses and safety shoes should be worn at all times.

49.3 Supervision

Unexperienced employees should work under the guidance of an experienced and qualified person within the test area. At least two persons should be present in the test area at all times.

49.4 First Aid

Personnel should be trained in the procedure for obtaining/providing emergency medical aid.

49.5 Enclosure

The test area should be enclosed by a fence or painted (preferably yellow). Red or yellow warning lights may also be placed at the corners of the test area.

49.6 Gates

When a metallic fence is used for the enclosure, it should be grounded. If the fence is made from many standalone sections, or includes gates, then separate sections should be interlocked with the power source. The power source will be shut off when one of the sections is parted or the gate opened.

49.7 Signs

Electrical hazard signs should be posted around the perimeter of the test area. Unauthorized personnel should not enter the test area.

49.8 Lighting

The test area should be well illuminated.

49.9 Safety Equipment

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Fire equipment and first aid equipment should be readily available, and personnel should be trained in their use. When oil-filled equipment is being tested, an emergency oil spill response kit should be available if there is risk that a large oil leak will occur.

49.10 Test Unit Clearance

The test area should be large enough to allow personnel to move around the equipment with ease to facilitate setup and inspection. Proper electrical clearances between energized test equipment and adjacent apparatus must be maintained. Proper electrical clearances between energized test equipment and personnel performing the test must be maintained.

49.11 Exclusivity

Only the unit under test and the pertinent test equipment should be in the test area at the time of test.

49.12 Grounding

Items on the test unit that are normally at ground potential should be grounded. In addition, portable ground and appropriate “hot stick” should be available to ground the energized components when the tests are complete.

49.13 Suitability for Test

Test personnel should verify that the unit is physically and electrically suitable to undergo the proposed test procedures.

49.14 Construction

All test panels should be constructed to protect the operator from the energized equipment they contain (dead front design). There should be no exposed, bare, energized items that the operator can accidentally touch. The test panel should also contain appropriate fault current interrupting equipment (fuses or circuit breakers) to limit the fault current to the test panel capacity or less. A separate interrupting device is preferred for high voltage ac or dc tests that can restrict the fault current to very low values, thus avoiding excess damage.

49.15 Test Voltage

The voltage level on all voltage sources should be clearly marked. For voltage levels above 600 V, a special interlock procedure should be incorporated to prevent

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inadvertent application of the wrong test voltage. Voltage sources should be free of harmonics, and the phase voltages and currents should be balanced.

49.16 Indication of energization

It is recommended that a light, clearly visible in the vicinity of the test area, be illuminated when the test panels are energized and voltage may appear on the unit under test.

49.17 Disconnect

A means of providing a visible disconnect between the panel and the power source should be clearly seen from the test area. The purpose of this device is to provide isolation of the test panel from the power source. This is often a manually operated switch or thermal-magnetic breaker.

49.18 Safety Switch

A highly visible switching device should be mounted on the panel that will disconnect it from the power source. This is frequently an electrically operated device such as a contactor or breaker. It is usually operated by a clearly identifiable and easily accessible push button. A hand-held push button or foot operated switch should also be available to one or more of the test participants to provide an additional means of interrupting the test.

49.19 Test Leads

Test leads and clips used for testing should be used for that purpose only. They should have the proper current and voltage rating for the test to be performed and should be maintained in good physical condition.

ANNEXURE G

REFERENCE INFORMATION ON CORRECTION FACTORS AND WINDING CONNECTIONS

E-1 TEMPERATURE CORRECTION FACTORS ON MEASURED VALUES FOR INSULATION RESISTANCE TESTS AND INSULATION POWER FACTOR TESTS FOR LIQUID-FILLED TRANSFORMERS ARE GIVEN IN TABLE 5

Table 5 Temperature Correction Factors for Insulation Resistance Tests

(Clause A-3.1 and E-1)

SR No.	Temperature (°C)	Transformers
Signature of the Tenderer		

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Liquid filled Dry-type

(1)	(2)	(3)	(4)
i)	0	0.25	0.40
ii)	5	0.36	0.45
iii)	10	0.50	0.50
iv)	15	0.74	0.75
v)	20	1.00	1.00
vi)	25	1.40	1.30
vii)	30	1.98	1.60
viii)	35	2.80	2.05
ix)	40	3.95	2.50
x)	45	5.60	3.25
xi)	50	7.85	4.00
xii)	55	11.20	5.20
xiii)	60	15.85	5.40
xiv)	65	22.40	8.70
xv)	70	31.75	10.00
xvi)	75	44.70	13.00

Table 6 Temperature Correction Factors for Insulation Power Factor Tests for Liquid-filled Transformers

(Clause A-3.1 and E-1)

Sl No.	Test Temperature (°C)	Correction Factor K
(1)	(2)	(3)
i)	10	0.80
ii)	15	0.90
iii)	20	1.00
iv)	25	1.12
v)	30	1.25
vi)	35	1.40
vii)	40	1.55
viii)	45	1.75

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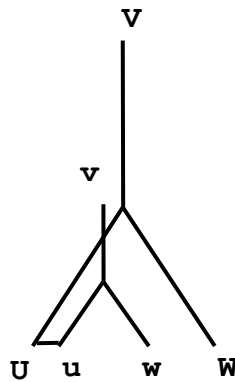
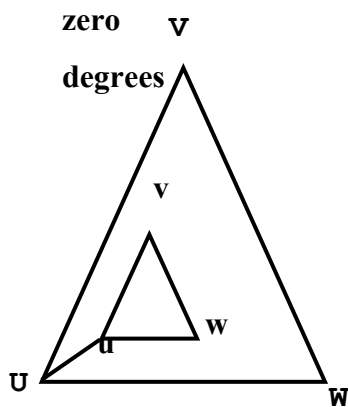
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ix)	50	1.95
x)	55	2.18
xi)	60	2.42
xii)	65	2.70
xiii)	70	3.00

E-2 VARIOUS WINDING CONNECTIONS FOR A PHASE SEQUENCE TEST ARE SHOWN BELOW IN FIG. 1

Connect U to u:

FIG 1 VARIOUS WINDING CONNECTIONS FOR A PHASE SEQUENCE TEST



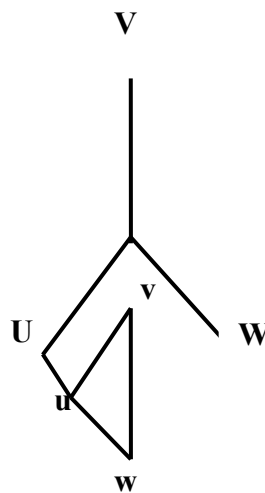
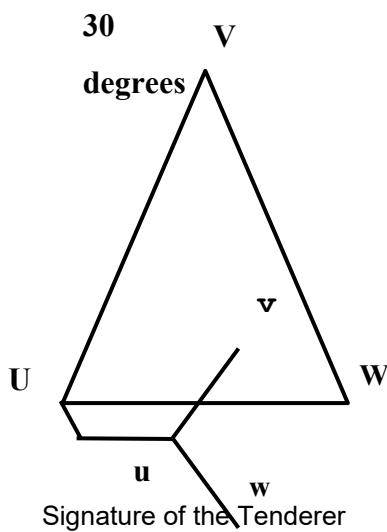
Measure V - v, W - v, U - V, V - w, W - w

$$V_w = W_v$$

$$V_v < U_V$$

$$V_v < V_w$$

$$V_v = W_w$$



Connect U to u:

Measure W-v, W-w, U-W, V-v, V-w

$$W_v = W_w$$

$$W_v < U_W$$

$$V_v < V_w$$

$$V_v < U_w$$

Date:

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ANNEXURE F

GUIDELINES FOR RE-UTILIZATION OF MINERAL OIL

Reconditioning of normal used oil is carried out by vacuum dehydration wherein the oil is circulated from transformer tank to vacuum dehydration plant and back to transformer repeatedly till water ppm and BDV values are within specified limits. Reconditioning can also be carried out on-site. Reclaiming can be done off line or online. In online mode, the used oil from transformer is pumped into a column of sorbents consisting of Fuller's Earth or Bauxite or combination of proprietary sorbent and the outlet of the sorbent column can be fed into vacuum dehydration plant. The oil from vacuum plant goes back to transformer. This circulation is continued till TAN Value, IFT, DDF, BDV, water ppm are reached within the specified range.

Note: The minimum breakdown voltage (BDV) should be as per the requirement specified in IS 1866 and maximum value of acidity should be 0.03 mg KOH/g.

In off-line mode, the oil from transformer is collected in a storage tank from the transformer and the above operation is carried out in off-site facility. Online mode is preferred if the oil quantity is small.

Notes:

1 Reconditioning eliminates only water and particle contamination while reclaiming removes polar impurities such as acids from the oil. Reconditioning is preferred when only water and BDV are off-limits in a transformer in service as per standards. Reclaiming is generally done if TAN, DDF, IFT also go outside limits of specs. Re-refining is done if the oil is unfit for reclaiming also.

2 IS 1866 provides guideline for maintenance and supervision of mineral insulating oil which includes reconditioning or reclaim.

Signature of the Tenderer

Date:

Place:

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PART-V

The schedule-A of prices is attached as under.

SCHEDULE-A (DGVCL-2023)								
ITEM-WISE RATE FOR REPAIRING OF DAMAGED 11/22 KV, 5 to 500 KVA CRGO								
(STACK /Wound/DRY/PAT/SDT) / Amorphous Core DIST. TRANSFORMERS								
SR No.	NATURE OF WORK TO BE CARRIED OUT	Unit	Rates per unit-in Rs.					
			5 KVA	10 & 16 KVA	25 KVA	50, 63, 75 KVA	100 KVA	above 100 KVA
1	2		3	4	5	6	7	8
1a	Labour charge only : Loading & unloading of transformer, draining out oil, opening bolt-nuts of top cover, untanking of the active part, disconnecting of leads, removal of top cover, removal of core yoke and windings, and re-assembly of the same, dismantling of bushings & metal parts & other fittings on cover or tank and re-fitting of the same, tanking of the active part, bolting of top cover. This does not include any material or other consumable charge except labour charge. Rate per No.	Job	1347	1571	2020	2020	2020	2020
1b	Replacement of top cover gasket, oil gauge gasket, air plug gasket, oil cap gasket, breather cap, thermometer pocket cap, explosion vent flat gaskets etc.	No.	28	39	45	45	45	45
1c	Replacement of HV/LV rod gaskets, viz Flat gasket, D bush, cone bush	rod	20	28	33	33	33	56
1d	Replacement of insulation : core-LV wrap, LV-HV wrap, phase barriers, yoke-channel barrier, wedges, inter coil spacers, top-bottom blocks, main lead insulation, interlayer insulation of LV-HV coils etc.	Job	113	224	280	280	280	381
1e	Replacement of M.S. bolt-nuts: viz top lid bolts, HV bushing studs, oil gauge studs, conservator bolts, explosion vent bolts & nuts.	Job	33	45	56	56	56	78
1f	Drying of active part by ovening for 48 to 72 hours at 90-100°C temperature for removal of moisture of the repaired transformer	Job	134	179	224	224	224	337
2	Outside painting of the tank :	No.						

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	a) Cleaning dirty tank outside surface & preparing the outer surface for painting.	No.	23	28	33	33	33	33
	b) Spray painting by synthetic enamel paint	No.	84	113	146	146	146	191
3	Inside painting of tank	No.	113	134	153	153	153	172
4	Replacement of valve (Gun metal brass)							
	i) Size ¾"	No.	134	134	134	134	134	134
	ii) Size 1 ¼"	No.	199	199	199	199	199	199
5	Replacement of glass of oil level gauge, each	No.	45	45	45	45	45	45
6	Replacement of breather dully charged, each	No.	0	303	303	303	303	303
7	Replacement of tap changing switch, each	No.	0	0	0	3366	3928	5050
8-A	Replacement of HT bushing porcelain, per piece, 11 KV	No.	172	172	172	172	172	172
8-B	Replacement of HT bushing porcelain, per piece, 22 KV	No.	260	260	260	260	260	260
9	A. Replacement of HT Metal parts complete per piece, brass metal parts	No.	128	128	128	128	128	128
	B. Providing HV connectors for cable connection	No.	78	78	78	78	78	78
10	Replacement of LT bushing porcelain	No.	59	59	59	59	59	96
11	A. Replacement of LT Metal parts complete set	No.	153	153	153	153	153	283
	B. Providing LV connectors for cable connection	No.	146	146	146	146	146	179
12A	Cost of replacement of HT coils Rate per Kg.	Original coils are not missing and damaged coils will not be returned to the DISCOM as quoted rates are net of the salvage value						
	a) Copper coil rate per kg Without S.E.	Kg	350	350	350	350	350	350
	a-1) Copper coil rate per kg With S.E.	Kg	399	399	399	399	399	399
	b) Aluminium coil rate per kg Without S.E.	Kg	160	160	160	160	160	160
	b-1) Aluminium coil rate per kg With S.E.	Kg	209	209	209	209	209	209
12B	-do but original coils are missing							
	a) Copper coil rate per kg Without S.E.	Kg	509	509	509	509	509	509
	a-1) Copper coil rate per kg With S.E.	Kg	558	558	558	558	558	558
	b) Aluminium coil rate per kg Without S.E.	Kg	215	215	215	215	215	215
	b-1) Aluminium coil rate per kg With S.E.	Kg	264	264	264	264	264	264

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		.						
12 C	Labour charge for HV coil Winding :							
	a) Copper coil rate per kg	Kg	11	11	11	11	11	11
	b) Aluminium coil rate per kg	Kg	33	33	33	33	33	33
13A	Cost of replacement of LT coil rate per kg	Original coils are not missing and damaged coils will not be returned to the DISCOM as quoted rates are net of the salvage value						
	a) Copper coil rate per kg Without S.E.	Kg.	308	308	308	308	308	308
	a-1) Copper coil rate per kg With S.E.	Kg.	357	357	357	357	357	357
	b) Aluminium coil rate per kg Without S.E.	Kg.	146	146	146	146	146	146
	b-1) Aluminium coil rate per kg With S.E.	Kg.	195	195	195	195	195	195
13B	-do but original coils are missing							
	a) Copper coil rate per kg Without S.E.	Kg.	481	481	481	481	481	481
	a-1) Copper coil rate per kg With S.E.	Kg.	530	530	530	530	530	530
	b) Aluminium coil rate per kg Without S.E.	Kg.	201	201	201	201	201	201
	b-1) Aluminium coil rate per kg With S.E.		250	250	250	250	250	250
13 C	Labor charge for LV coil Winding :							
	a) Copper coil rate per kg	Kg.	17	17	17	17	17	17
	b) Aluminium coil rate per kg	Kg.	51	51	51	51	51	51
14	Re-insulation of LV coils with existing conductor (Where ever it is intact but using new insulating material for all type of LV coils rate per kg)							
	i) Copper	Kg.	99	99	99	99	99	99
	ii) Aluminium	Kg.	113	113	113	113	113	113
15	Insulation Washer ring for coils	No.	53	53	53	53	53	53
16	Rating Plate charge for WNP transformer	No.	140	140	140	140	140	140
17	Extra payment for conversion of sealed transformer into bolted type transformer	No.	1481	1481	1481	1481	1481	1481
18a	Tank replacement charge	Kg.	53	53	53	53	53	53
18b	Conservator tank replacement charge	Kg.	53	53	53	53	53	53
19	Testing of Transformer	No.	113	113	169	169	169	169

Signature of the Tenderer

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Company's Round Seal Contd. (PTO)

20	Replacement of radiator, Rate per radiator	No.	0	1031	1031	1223	1417	1932.26 (FOR 200 KVA) 2577.46 (FOR 500 KVA)
21	Overhauling of transformer including outside cleaning and painting. (Physical damages will be charged extra as above rates).		1952	2411	3099	3099	3099	3411
22	Arcing Horns	Set						

N.B.:-

- Rates quoted by Bidder have to be on percentage above/below/at par the estimated rates specified.
- The rates quoted by bidder will be exclusive of GST. Any escalation in rate of GST during the tenure of the contract will be paid by DGVCL as part of statutory variation on production of Document.
- Above rates quoted are net of the salvage value.

For CRGO / Amorphous Core Transformers

In Figures % Above /below/at par the estimated rate of DGVCL

In Words Above/below/at par the estimated rate of DGVCL

**CHIEF ENGINEER (O&M)
DGVCL-SURAT**

Signature of the Tenderer

Date:

Place:

Company's Round Seal Contd. (PTO)

Rate for Overhauling of the transformer			
Sr. No	Rate for Overhauling of the transformer (11 KV / 22 KV)	Unit	RATE IN RS.
7	Overhauling of complete transformer: During overhauling, following works are required to be carried out:- Overhauling charges shall be paid for below works which includes the opening & closing/refitting of transformer including minor repairing works and loading & unloading of Transformers, repairing of Tanks & radiators by welding to stop leakage of oil, replacement of burnt /damaged external parts like bushing/ nut-bolts /breather if any with Dismantling of bushing replacement of all the old gaskets by new , opening welding of top cover plate if necessary un-tanking of the winding, removal of the core plate assembly and reassembly of the same including replacement of all types of insulations whenever necessary replacement of diaphragm of explosion vent, testing of the same, Cleaning of transformer tank, removal of sludge, filtration of transformer oil, Strengthening / brazing of joints of winding, Fitting/tightening of internal joints at the HV/LV bushing, Internal painting of transformer, Drying of the active parts of the transformer to ensure proper IR value as mentioned herein , fixing of name plates and as per conditions wherever mentioned in this tender.	<u>Each Transformer</u>	As per Sr. No 21 of Schedule-A

N.B.:-

- Rates quoted by Bidder have to be on percentage above/below/at par the estimated rates specified.
- The rates quoted by bidder will be exclusive of GST. Any escalation in rate of GST during the tenure of the contract will be paid by DGVCL as part of statutory variation on production of Document.
- Above rates quoted are net of the salvage value.

Signature of the Tenderer

Date:

Place:

Company's Round Seal Contd. (PTO)

**ANNEXURE-1
DETAILS REQUIRED TO BE FURNISHED BY THE BIDDERS**

SR NO	PARTICULAR	
1	Whether the Bid submitted is on item wise rate for CRGO Core (STACK/WOUND/DRY/PAT/SDT) & Amorphous Core of various ratings on item wise rate including internal parts and external parts.	YES / NO
2	Whether the tender Price Bid is submitted <u>ON LINE</u> only.	YES / NO
3	Whether all pages of Tender Specifications / offer are sealed and signed by the Bidders.	YES / NO
4-a	Whether the Bidder is registered with DGVCL or its subsidiary company for repairing of Transformer.(Vendor)	YES / NO
4-b	In case of yes in above, please furnish following details	
4-b-i	Registration Letter No. & Date. Enclosed the copy of the same	
4-b-ii	Validity of registration up to.	
5-a	Whether Tender fee paid	YES / NO
5-b	In case of Yes, please furnish details M.R. No. & Date	
5-c	Whether EMD paid	YES / NO
5-d	In case of Yes, please furnish details (D.D./Cash)	
6	Whether following documents of General terms and condition are submitted	YES / NO
6-a	Human Resources details	YES / NO
6-b	Availability of machinery and instruments as per the Anx B ,B1	YES / NO
6-c	Details of experience of firm & detail of qualified engineer.	YES / NO
6-d	Financial capability	YES / NO
6-e	Transformer repairing capability	YES / NO
6-f	Last three years audited annual account	YES / NO
6-g	Company's Article Of Association / Partnership deeds	YES / NO
6-h	Details of Partners / Directors	YES / NO
6-i	Board Resolution / P.A. Authorizing Person to sign on behalf of firm	YES / NO
7	Vendor Registration fee Paid	YES / NO
8	Solvency Certificate enclosed	YES / NO
9	Self-declaration as never been black listed and defaulted by any Organization, Bank and Police station.	YES / NO

Signature of the Tenderer

Date:

Place:

Company's Round Seal Contd. (PTO)

ACKNOWLEDGEMENT

To,
The Chief Engineer (O&M),
Dakshin Gujarat Vij Company Limited,
Corporate Office,
Surat.

Sub: Rate Contract for Repairing of failed / damaged 11/22 KV Distribution Transformers having CRGO Core (STACK/WOUND/DRY/PAT/SDT) & Amorphous Core of various ratings (5 KVA to 500 KVA) on item wise rate including internal parts and external parts.

Ref.: (1) Tender No. **DGVCL/EE-T-1/TRANS-REP/-2023-25/04**. Opened on
.....
(2) Our rate consent letter dated

Dear Sir,

We acknowledge with thanks receipt of your above referred order No :
..... dtd _____, for repairing of failed Distribution (cited as reference 3). Transformers of various rating of Dakshin Gujarat Vij Company Limited. We agree with the terms and conditions mentioned by you in your order No : dtd _____, for undertaking the work of repairing of failed Dist. Transformer of Dakshin Gujarat Vij Company Limited.

In case of not fulfillment of any of the terms and conditions of the above said order for repairing of damaged distribution transformers, our order shall be cancelled and the decision of the DGVCL shall be binding to us. We shall also not claim for the conditions mentioned in any of our letters written to the Company against this tender.

Thanking you,

Yours faithfully,

Place:

Date:

Seal of the Company:

Signature of the Tenderer

Date:

Place:

Company's Round Seal Contd. (PTO)

ANNEXURE –A
PROCESS CARD FOR REPAIRING OF DISTRIBUTION TRANSFORMERS

CUSTOMER:

DATE:

WORK ORDER NO:

MAKE:

EST. NO.

KVA/KV

APP. NO.

SERIAL NO:

BOLTED/SEALED.

SR. NO	PROCESS STAGE	PASSED	DEFECT INITIALS & DATE
1	CORE		
2	LV ASSEMBLED		
3	HV ASSEMBLED		
4	FIRST RATIO TEST A. (BEFORE B. CONNECTION) C.		
5	FULL YOKE, CORE CLAMPING		
6	CONNECTION		
7	SECOND RATIO TEST A. (AFTER CONNECTION) B. C.		
8	OVENING IN DATE OUT DATE		
9	I.R VALUE (BEFORE TANKING) HV/EARTH LV/EARTH HV/LV		
10	FITTING ON TANK & COVER. a) HV BUSHING b) HV METAL PARTS c) HV TOP METAL PARTS d) LV BUSHING. e) LV METALPARTS. f) LV TOP METAL PARTS. g) OIL LEVEL GAUGE h) CONSERVATOR CLEANING i) EXPLOSION VENT j) VALVE (0.75")1.25")		
11	B.D.V. OF OIL IN KV.		
12	TANKING DATE		
13	I.R VALUE (AFTER TANKING) HV/EARTH LV/EARTH HV/LV		
14	PRE-SEALING TESTS a) NO LOAD TEST b) D.V.D.F. TEST. c) FULL LOAD TEST. d) H.V. TEST.		
15	SEALING & TEST.		
16	FINAL TESTING		

Signature of the Tenderer

Date:

Place:

Company's Round Seal Contd. (PTO)

ANNEXURE – B

LIST OF TESTING INSTRUMENTS.

Sr. NO	ITEM	QTY	MAKE	SR. NO OF METER	RANGE	Accuracy	DATE OF Calibration	Lab.Report No & Date
1	RATIO METER RANGE 111.1	1 No						
2	MEGGAR 5000 VOLTS	1 No						
3	H.V. TRANSFORMER 0-50 KV	1 No						
4	L.V. TRANSFORMER 0-3 KV	1 No						
5	OIL TESTING SET	1 No						
6	DOUBLE VOLTAGE GENERATOR 100 CYCLE 250 500, 1000 V	1 No						
7	STOP WATCH	1 No						
8	CLIP ON METER	1 No						
9	PANEL METERS OF TEST BENCH	1 No						
10	POWER ANALYZER (with panel)	1 No.						
11	Portable HV tester	1 No						
12	Intermediate testing transformer	1 No						
13	Current transformers	1 No						
14	Potential transformers	1 No						
15	Thermometer/RTD	1 No						

NOTE – ALL THE TESTING INSTRUMENTS SHALL BE CALIBRATED ONCE IN A YEAR IN GOVERNMENT/NABL APPROVED LABORATORY. CALIBRATION CERTIFICATE SHOULD BE MADE AVAILABLE TO INSPECTOR WHENEVER ASKED FOR DURING TESTING / INSPECTION.

All testing equipment's should be 0.5 class accuracy or better.

Power analyzer should be provided 0.5 class accuracy or better, duly calibrated at third party Government/NABL approved laboratory within 12 months.

Signature of the Tenderer

Date:

Place:

Company's Round Seal Contd. (PTO)

ANNEXURE-B-1
LIST OF MACHINERY

SR. NO.	DESCRIPTION	QTY.	MAKE	SR. NO.
1	H.V. WINDING MACHINE 1 HP	1 NO.		
2	L.V. WINDING MACHINE 2 HP	1 NO.		
3	AIR COMPRESSOR WITH MOTOR & OTHER ACCESSORIES	1 NO.		
4	SPRAY GUN	1 NO.		
5	DRILLING MACHINE	1 NO.		
6	FLEXIBLE SHAFT GRINDER	1 NO.		
7	JIB CRANE 1 TON CAPACITY	1 NO.		
8	CHAIN PULLEY BLOCKS WITH LOADING & UN LOADING ARRANGEMENT 2 TON CAPACITY.	1 NO.		
9	OVEN/DRIER WITH 1 HP MOTOR 8 KW CAPACITY 100 DEG. C TEMP (Temp. controlled oven)	1 NO.		
10	OIL FILTER MACHINE 120GPH CAPACITY	1 NO.		
11	VARNIER CALIPERS AND GUAGE METER	1 NO.		
12	WELDING MACHINE-300 AMP	1 NO.		
13	GAS CUTTING CYLINDER AND EQUIPMENT.	1 NO.		
14	CIRCLE CUTTING MACHINE	1 NO.		
15	DIGITAL WEIGHING MACHINE	1 NO.		
16	SHEARING MACHINE	1 NO.		
17	FLY PRESS AND DIE FOR CUTTING DOVETAIL BLOCKS.	1 NO.		
18	Coil Cutting M/C.	1 No.		
19	EOT Crane	1 No.		
20	Oil Storage Tank	1 No.		
21	Other Zigs, Tools and Accessories	1 No.		

Signature of the Tenderer

Date:

Place:

Company's Round Seal Contd. (PTO)

Annexure -C

Repairing works detail

No.	Particulars	Description
1.	Name of Repairing Agency/Firm	
2.	Address & Phone No:	
	A) Office: B) Works:	
3.A	Udhyam registration No. & Date & valid up to	
3.B	NSIC/CSPO/DGS&D Registration No. & Date & valid up to	
4.	Details of Shed A) Open Area B) Built up Area C) Total Area	
5.	Type of shed- own / rental	
6.	Proprietorship / Partnership / Company A) Name of Proprietor/ partners / Directors B) Residential Address C) Office Address	
7.	A) Name of Engineer B) Address C) Qualification D) Experience	
8	No. of workers	

Signature of the Tenderer

Date:

Place:

Company's Round Seal Contd. (PTO)

	a) Skilled.	
	b) Unskilled.	
9	List of machinery / equipments, (List as per appendix – A is to be uploaded)	
10	Plant machinery lay out - to be submitted.	
11	Electricity Supply	
	a)Name of consumer.	
	b) Consumer No.	
	c)Connected load (Copy of light bill is to be submitted)	
12	Details of failure rate of last contract.(As on date of issue of tender documents) as per following format . Separate details for 11 KV and 22 KV are to be submitted. (Format 1. Sr. No. 2. Name of Circle 3. Name of Divn. 4. No. of X'mers issued. 5. No. of X'mers repaired. 6. No. of X'mers failed (GP) 7. No. of X'mers failed (OGP). 8. % of failure. 9. % of failure (OGP)	
13	Preferential Circle for allotment.	
	Preference 1)	
	Preference 2)	
	Preference 3)	

Signature of the Tenderer

Date:

Place:

Company's Round Seal Contd. (PTO)

Annexure -D (Under taking & Validity)

Subject: - Rate Contract for Repairing of Distribution Transformers having CRGO Core (STACK/WOUND/DRY/PAT/SDT) & Amorphous Core of various ratings (5 KVA to 500 KVA) on item wise rate including internal parts and external parts.

In connection with the above subject, I / We confirm the following:

- 1 I / We the undersigned have read and examined the Tender Document No. **DGVCL/EE-T-1/TRANS-REP/-2023-25/04** for **Rate Contract for Repairing of Distribution Transformers having CRGO Core (STACK/WOUND/DRY/PAT/SDT) & Amorphous Core of various ratings (5 KVA to 500 KVA) on item wise rate including internal parts and external parts.**
- 2 I / We declare that our offer is strictly in line with Tender scope of work. Further, I / We also agree that additional conditions/ deviations, if any, found in bid, the offer shall be out rightly rejected without assigning any reason thereof.
- 3 I / We hereby submit our bid and undertake to keep our bid **valid for a period of 120 days** from the date of opening of technical bid. I / We hereby further undertake that during the said period I / We shall not vary/ alter or revoke my/ our bid.

This undertaking is in consideration of DGVCL agreeing to open my bid and consider and evaluate the same for the purposes of award of rate contract as per the bid documents.

Should this bid be accepted, I / We also agree to abide by and fulfill all the terms, conditions and provisions of the above mentioned bid documents.

Signature along with Seal of Co.

(Duly authorized to sign the Tender
On behalf of the Company)

Name: _____
Designation: _____
Name of Co. _____
(In block letters)

Witness:
Signature _____
Date _____
Name & Address _____

Date & Postal Address
Telegraphic Address:

E Mail Address: _____ Telephone No. _____
Fax No. _____

Signature of the Tenderer

Date: _____ Place: _____ Company's Round Seal Contd. (PTO)

Annexure -E (Under taking for new agency)

To,

The CHIEF ENGINEER (O&M)

DAKSHIN GUJARAT VIJ COMPANY LTD.

CORPORATE OFFICE

KAPODRA, SURAT-6

Subject :- Establishment of factory set-up for Rate Contract for Repairing of Distribution Transformers having CRGO & Amorphous core

Dear Sir,

We are hereby applying for vendor registration as new repairing agency for participating in the tender for repairing of CRGO (STACK /WOUND/DRY/PAT/SDT) / Amorphous Transformers & submitting VR fees of Rs.15000/-with applicable GST (non-refundable) or as applicable by DD payable at Kapodara-Surat along with tender technical bid and proposed location of factory.

We are hereby giving undertaking to establish the factory set-up along with all testing instruments & machinery as stated below within 120 days time limit from the date of LOI/LOA at proposed location. If we will fail to establish factory set-up within time frame or will not be considered for vendor registration then in such case, **we agree that our EMD & SD shall stand forfeited.**

We are also submitting solvency certificate from nationalized Bank for Rs.5 Lacs with Tender Documents.

Before issue of order, security deposit, insurance and performance guarantee will be submitted.

List of Testing Instruments and Machinery is as under.

Signature of the Tenderer

Date:

Place:

Company's Round Seal Contd. (PTO)

Name: _____
Designation: _____
Name of Co. _____

(In block letters)

The Chief Engineer (O&M)
 DGVCL, Corporate office,
 Surat.

ANNEXURE - 2

I / WE, confirm that following documents are uploaded in electronic form with the offer.

Sr. No.	Details	Confirmation (Tick ☒ any one)
1	‘Annexure-1’ Details required to be furnished by bidders	YES / NO
2	‘Annexure-B’ List of Testing Instruments	YES / NO
3	‘Annexure-B-1’ List of Machinery	YES / NO
4	‘Annexure-C’ Repairing Works Detail	YES / NO
5	‘Annexure-D’ Undertaking and Validity	YES / NO
6	‘Annexure-E’ Undertaking for New Agency	YES / NO
4	‘Annexure-2’ Details of documents attached	YES / NO
5	‘Annexure-3’ Details of Firm	YES / NO
6	‘Annexure-4’ Details of repairing capacity	YES / NO
7	‘Annexure-5’ Details of experience	YES / NO
8	‘Annexure-6’ Details of Human resources	YES / NO
9	‘Annexure-7’	YES / NO
10	‘Annexure-8’ Details of technical deviation	YES / NO
11	‘Annexure-9’ Undertaking regarding Stop deal/Black list	YES / NO
12	‘Annexure-10’ Banker’s Detail	YES / NO

Signature of the Tenderer

Date:

Place:

Company’s Round Seal Contd. (PTO)

ANNEXURE - 3

DETAILS OF THE FIRM

Tenderer may MANDATORILY fill all the details in this form.
(These details are necessary to create the database of Repairer)

Repairer Name			
Within Gujarat / Outside Gujarat			
Repairer Category		Manufacturer/ Repairer	
GST Registration No. and GST Date			
MSEs / Udhyam registration Certificate / EM No. and Date			
NSIC/DGS&D/CSPO Certificate No. (Should be revalidated since last 3 yrs.)			
NSIC/DGS&D/CSPO Certificate Date.			
Whether under NSIC/DGS&D/CSPO scheme. If Yes then Monetary limit.		Rs.	
License Type (ISO9001/9002)		ISO 9001 / ISO 9002 (Tick Applicable)	
License Validity Period		From Date_____ to Date_____	
Address of	Registered Office	Factory Works	Authorized Representative
Contact person name			
Designation			
Address			
City & Pin code			
State			
Country			
Phone Nos.(Office)			
Phone Nos.(Residence)			
Fax Nos.			
STD Code.			
Mobile No.			
Web site address			
Email-id			

Signature of the Tenderer

Date:

Place:

Company's Round Seal Contd. (PTO)

ANNEXURE - 4

Sr. No.	<u>Details of the Services Offered</u>	<u>Firm's Per Annum Repairing Capacity for offered Service (In Nos.)</u>
1.	CRGO (STACK /WOUND/DRY/PAT/SDT) / Amorphous Transformers	

Signature of the Tenderer

Date:

Place:

Company's Round Seal Contd. (PTO)

ANNEXURE- 5

DETAILS OF THE EXPERIENCE FOR REPAIR OF SIMILAR TYPE OF ITEMS IN LAST FIVE YEARS FROM THE DUE DATE OF TENDER:

Sr. No	ITEMS REPAIRED TO	ORDER REFERENCE No. & DATE	ITEMS	QUANTITY	ORDER FULLY EXECUTED. YES/NO	STATUS, IF ORDER UNDER EXECUTION	REMARKS
A	GEB (Now GUVNL)/PGVCL/UGVCL/DGVCL/MGVCL/PGVCL						
1)							
2)							
3)							
4)							
5)							
B	OTHER STATE ELECTRICITY Board's:						
1)							
2)							
3)							
4)							
5)							
C	PRIVATE FIRMS:						
1)							
2)							
3)							
4)							
5)							

Signature of the Tenderer

Date:

Place:

Company's Round Seal Contd. (PTO)

ANNEXURE - 6

Details of Human Resources available with Firm.

Sr. No.	Name of employee	Designation	Educational qualification	Years of Experience
1	2		3	4

Signature of the Tenderer

Date:

Place:

Company's Round Seal Contd. (PTO)

ANNEXURE - 7

Repairer must fill up below details

1	<i>GST : [In percentage]</i> <i>(If opted for Composition under GST, please mention "C" instead of percentage)</i> (In case different rate of GST applicable on different , details shall be provided separate annexure) <i>Please quote your GST Registration No.& Date of the location wherefrom Repairer / Contractor intends to provide services)</i>	_____ %
2	PENALTY TERMS AGREED: (Please Specify YES / NO.)	
3	PERFORMANCE GUARANTEE TO COVER EXECUTION PERIOD (SECURITY) TERMS AGREED: (Please Specify YES / NO.)	
4	PERFORMANCE GUARANTEE TO COVER WARRANTY PERIOD TERMS AGREED:(Wherever applicable): Please Specify YES / NO.)	
5	DELIVERY, INTEREST & PAYMENT TERMS AGREED: (Please Specify YES / NO.)	
6	VALIDITY OF THE OFFER AGREED: (Please Specify YES / NO.)	
7	TELEPHONE NOS. & FAX NO:	
8	Authorized person of the firm:	
9	Name of the proprietor, partners, directors [as the case may be], along with address, telephone, fax no. etc.	
10	Financial Capability The financial turn over for the last three years	

Note: % age/amount of GST/Cess will be considered as offered in price bid.

Signature of the Tenderer

Date:

Place:

Company's Round Seal Contd. (PTO)

ANNEXURE - 8

TECHNICAL DEVIATIONS IF ANY TO BE FURNISHED IN THIS ANNEXURE ONLY AND TO BE UPLOADED WITH TECHNICAL BID.

Signature of the Tenderer

Date:

Place:

Company's Round Seal Contd. (PTO)

ANNEXURE - 9

(UNDERTAKING IN REGARD TO **STOP DEAL/ BANNED** FOR BUSINESS DEALING / BLACK LIST THEREOF)

Sub:-Undertaking In regard to Stop Deal / Banned for Business dealing / /Black List Thereof

Ref:- Tender No:

All bidders will have to furnish the following undertaking duly filled in, signed and stamped for each quoted item of the tender along with the Technical Bid.

I/We_____ authorized

signatory of M/s_____ hereby certify that

M/s_____ and their proprietor / any partner / any

directors of the firm is not stop deal and/or banned for business dealing and/or black listed

by GUVNL and/or their any subsidiary company viz.

GSECL/GETCO/DGVCL/MGVCL/UGVCL/PGVCL.

Seal of the Firm

Signature of the Tenderer

Signature of the Tenderer

Date:

Place:

Company's Round Seal Contd. (PTO)

ANNEXURE - 10

Repairer must upload the Banker's/Bank details along with technical Bid.
(This is Mandatory)

1	Name of Banker/Bank:-							
2	Full address of Banker/Bank with PIN Code:-	PIN Code <table border="1"> <tr> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> </tr> </table>						
3	Fax No. Of Banker/Bank:-							
4	Phone No. of Banker/Bank:-							
5	E-Mail Address of Banker/Bank:-							

Signature of the Tenderer

Date:

Place:

Company's Round Seal Contd. (PTO)

(on Non-judicial stamp paper of Rs.300/- duly Notarized)

AGREEMENT

THIS AGREEMENT made on this day of Two thousand

BETWEEN

..... (Name of the Company), having Registered Office at and represented by (Name and designation of the Authorized Officer (herein after called “**The Supplier/Repairer**”, which expression where the context so requires or admits shall include his legal heir, administrators, executors, assignees and legal representatives) of the **ONE PART**.

AND

..... (Name of the Company), having Registered Office at and represented by (Name and designation of the Authorized Officer (here in after called “**The Purchaser / purchaser Company**”, which expression where the context so requires or admits shall include his administrators, executors, authorized person, assignees and legal representatives) of the **OTHER PART**.

WHEREAS, the Supplier/Repairer willingly submitted bids for the Tender No.....of the Purchaser company for supply/Service of
[items to be Repairer by the Repairer] as specified and as per delivery instructions provided in the Acceptance of Tender (AT) / Letter of Acceptance (LOA) issued vide No.....dtd..... by the Purchaser company at the accepted respective prices or rates mentioned against the said items / materials.

AND WHEREAS THE PURCHASER Company has accepted the tender of the Supplier/Repairer for there pair for the total sum of Rs. _____ (Rupees _____ only)
 *including / excluding taxes upon the terms and subject to the conditions herein mentioned in the agreement.

AND WHEREAS, a list is made out in the “**SCHEDULE**” hereunder written and all of which said documents of the Schedule are deemed to form part of this agreement and included in the expression “**the repair**” wherever herein used, upon the terms and subject to the conditions hereinafter mentioned.

NOW THIS AGREEMENT WITNESSES AS UNDER AND IT IS HEREBY AGREED AND DECLARED THAT:-

- (1) The Supplier/Repairer has accepted the Terms and Conditions set out in the Tender Notice No. dtd. as well as in the form of Acceptance of Tender (AT) / Letter of Acceptance (LOA) No. dtd. which will hold good & valid during the period of this Agreement.
 - (2) The supplier/Repairer shall do and perform for all supplies and things in this agreement mentioned and described or which are implied therein or therefrom respectively or are
- Signature of the Tenderer

Date:

Place:

Company's Round Seal Contd. (PTO)

- reasonably necessary for the in-time and in manner supplies as mentioned and subject to the general / commercial terms & conditions and stipulations contained in this agreement.
- (3) In consideration of the due provision, executions, completion of the Supply/repair, as agreed to by the Supplier/Repairer as aforesaid, the Purchaser company hereby agrees to pay all the sums of money as and when they become due and payable to the supplier/Repairer under the provisions of the agreement and such payment to be made at such times and in such manner as provided in the agreement.
 - (4) In respect of the said Tender as per the terms & conditions of this Agreement, the Supplier/Repairer has deposited amount in Cash or DD or has provided valid Bank Guarantee of Rs. (Rupeesonly) with the Purchaser Company towards performance guarantee of execution period i.e. for security deposit of the supply material / items.
 - (5) Upon breach by the Supplier/Repairer of any of the conditions of this Agreement, the Purchaser Company may give a notice in writing to rescind, determine and put to an end to the A/T without prejudice to the right of the Purchaser company to claim damages for antecedent breaches thereof on the part of the Supplier/Repairer and also to claim reasonable compensation / risk & cost purchase for the loss occasioned by the Purchaser Company due to failure of the Supplier/Repairer to fulfill the Order as certified in writing by the Purchaser for which Certificate shall be conclusive evidence of the amount of such compensation payable by the Supplier/Repairer to the Purchaser.
 - (6) The Purchaser Company shall not be bound to take the whole or any part of the ordered quantity herein or therein mentioned in the LOA / AT and may cancel the contract at any time after giving **TWO MONTH'S NOTICE IN WRITING** without compensating the Supplier/Repairer.
 - (7) This Agreement shall remain in force till the expiry of satisfactory performance of the Supply during Guarantee / Warranty period including for the quantity mentioned in the repeat order, if any as per the terms & conditions of the LOA / AT.
 - (8) Any Notice in connection with the repair including the Notice for termination may be given by the Purchaser or any Authorized Officer for the said purpose as per the Commercial Terms & Conditions of the LOA / AT.
 - (9) If subject to the circumstances beyond control i.e. Force Majeure conditions, the Supplier/repairer fails to deliver the materials/services, the same shall be governed as per the Tender Documents.
 - (10) The agreed value, extent of supply/repair, delivery dates, specifications, and other relevant matters may be altered by mutual agreement as per the policy of the purchaser Company and if so altered shall not be deemed or construed to mean or apply to affect or alter other general / commercial terms & conditions of the agreement and the agreement so altered or revised shall be and shall always be deemed to have been adhered subject to and without prejudice to said stipulation.
 - (11) The following is the Schedule forming part of this agreement as provided herein above:

SCHEDULE

List of documents:

- 1.
- 2.
- 3.
- 4.
- 5.

Signature of the Tenderer

Date:

Place:

Company's Round Seal Contd. (PTO)

6.
7.

In witness whereof the parties hereto have set their hands and seals this day, month and year first above written.

Place:

Date:

1. Signed, Sealed and delivered by :

(Signature with Name, Designation & official seal / stamp)

For and on behalf of M/s. _____ (Supplier/Repairer)
(Complete Name, Address of the authorized person of the Supplier/Repairer with Authority letter or Board's Resolution in case of company)

In the presence of Name, full Address & Signatures:

i) _____

ii) _____

2. Signed, Sealed and Delivered by :

(Signature with Name, Designation & official seal / Stamp)

For and on behalf of _____ (Purchaser),
(Complete Name, Designation & Location / Address of the authorized officer as per DOP of the Purchaser Company)

In the presence of Name, Full Address & Signature:

i) _____

ii) _____

Note:-

1. All successful Bidders will have to sign a Contract Agreement in above prescribed format, on Non-judicial stamp paper of Rs.300/- duly Notarized - .

2. From the successful Bidder's side the Agreement can be signed by the Authorized Representative as under:

- a) If the Authorized Representative is from a Partnership Firm, then a certified copy of the Registered Partnership Deed must be attached along with the signatures of other partners who have authorized the particular partner to execute and sign the Agreement;

Signature of the Tenderer

Date:

Place:

Company's Round Seal Contd. (PTO)

- b) If it is a Private or Public Limited firm, a copy of the Resolution, authorizing the person to execute and sign the Agreement on behalf of the firm, passed by the Board of Directors along with the Company's Seal must be attached with the Agreement; &
- c) If it is a Proprietary Firm, then the Proprietor himself should execute and sign the Agreement and his full residential address must be available in the file.

The Security Deposit, if any, is duly paid as stipulated in the Agreement and that meets with the Condition stipulated in the Tender;

Signature of the Tenderer

Date:

Place:

Company's Round Seal Contd. (PTO)

ANNEXURE - 11

(DECLARATION IN REGARD TO RELATIONSHIP WITH EMPLOYEE)

Sub:-Declaration In regard to Relationship with employee

Ref:- Tender No:

All bidders will have to furnish the following declaration duly filled in, signed and stamped for each quoted item of the tender along with the Technical Bid.

It is certified that,

I/We_____ authorized

signatory of M/s_____ do not have relationship

with any of the employees working in MGVCL. Further

I/We_____ authorized

signatory of M/s_____

_____disclose here, the interest (Shareholding in company and share in partnership firm) of no any employees of MGVCL or his/her relative as defined in section2(77) of the company's Act 2013 is 10% or more in our firm

M/s_____.

The above statement is true and is submitted against the Tender Enquiry

No._____Dated_____

Seal of the Firm

Signature of the Tenderer

(The following Declaration to be signed by the bidder and submitted along with the bid)

Description	YES/NO (If yes, give the following details)		
IF a Bidder has relations whether by blood or otherwise with any of employees of MGVCL, the Bidder must disclose the relation at the time of submission of Tender, failing which, MGVCL shall reserves the right to reject the Tender or rescind the contract.	Name and Designation of the Employee	Place of Posting	Relation with the Employee

Seal of the Firm
Signature of the Tenderer

Signature of the Tenderer

Date: Place: Company's Round Seal Contd. (PTO)

ANNEXURE - 12

(DECLARATION IN REGARD TO Conflict of interest (As per Tender Part-II, Qualifying Requirements of Bidders Clause (D))

Sub:-Declaration In regard to Conflict of interest

Ref: - Tender No:

All bidders will have to furnish the following declaration duly filled in, signed and stamped for each quoted item of the tender along with the Technical Bid.

“I/ We declare that we have separate ownership, different partners / proprietor and do not have Conflict of Interest with Other bidders”.

Confirm/Not Confirm: _____

Name of Bidder / Manufacture: _____

Address of the Works: _____

Signature of the Tenderer

Date:

Place:

Company's Round Seal Contd. (PTO)