

# **IDCOL FERRO CHROME & ALLOYS LIMITED**

(A Wholly Owned Subsidiary of IDCOL)  
A Govt. of Odisha Undertaking  
Regd. Office: Ferro Chrome Project – 755 020  
Jajpur Road, Dist: Jajpur (Odisha)  
Tel. No. 06726-220212 / 220508, Fax No. 06726-220524  
E-mail ID: [ifcal@nic.in](mailto:ifcal@nic.in) / ifcal.electrical2019@gmail.com

**Tender Ref No. IFCAL/Elect/1913**

**Date:16.01.2020**

**4 th CORRIGENDUM TO  
TENDER NOTICE NO IFCAL/ELECT/1102 dated 04.09.2019  
FOR  
[PROCUREMENT OF FURNACE TRANSFORMER]**

Due date of downloading & submission of tender for “**Design, Manufacture, Testing, Supply and supervision of Erection and Commissioning of 9 MVA, 11 KV/90-115-155V Submerged Electric Arc Furnace Shell Type Transformer**” have been extended as per the following schedule.

Date of downloading of Corrigendum Tender	: 18.01.2020 to 03.02.2020
Last date & time of submission of tender	: 05.02.2020 upto 5 P.M.
Availability of Corrigendum Tender document :	<a href="http://www.ifcal.nic.in">www.ifcal.nic.in</a> / <a href="http://www.idcorissa.com">www.idcorissa.com</a>

**MANAGING DIRECTOR**

***Signature & Seal of Tenderer***

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E-mail ID: [ifcal@nic.in](mailto:ifcal@nic.in) / ifcal.electrical2019@gmail.com

**Tender Ref No. IFCAL/Elect/1680**

**Date:11.12.2019**

**3 rd CORRIGENDUM TO  
TENDER NOTICE NO IFCAL/ELECT/1102 dated 04.09.2019  
FOR  
[PROCUREMENT OF FURNACE TRANSFORMER]**

Due date of downloading & submission of tender for “**Design, Manufacture, Testing, Supply and supervision of Erection and Commissioning of 9 MVA, 11 KV/90-115-155V Submerged Electric Arc Furnace Shell Type Transformer**” have been extended as per the following schedule.

Date of downloading of Corrigendum Tender	: 12.12.2019 to 09.01.2020
Last date & time of submission of tender	: 11.01.2020 upto 5 P.M.
Availability of Corrigendum Tender document :	<a href="http://www.ifcal.nic.in">www.ifcal.nic.in</a> / <a href="http://www.idcorissa.com">www.idcorissa.com</a>

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E-mail ID: [ifcal@nic.in](mailto:ifcal@nic.in) / ifcal.electrical2019@gmail.com

**Tender Ref No. IFCAL/Elect/1537**

**Date:21.11.2019**

**2 nd CORRIGENDUM TO  
TENDER NOTICE NO IFCAL/ELECT/1102 dated 04.09.2019  
FOR  
[PROCUREMENT OF FURNACE TRANSFORMER]**

Due date of downloading & submission of tender for “**Design, Manufacture, Testing, Supply and supervision of Erection and Commissioning of 9 MVA, 11 KV/90-115-155V Submerged Electric Arc Furnace Shell Type Transformer** have been extended as per the following schedule.

Date of downloading of Corrigendum Tender	: 25.10.2019 to 08.12.2019
Last date & time of submission of tender	: 10.12.2019 upto 5 P.M.
Availability of Corrigendum Tender document :	<a href="http://www.ifcal.nic.in">www.ifcal.nic.in</a> / <a href="http://www.idcorissa.com">www.idcorissa.com</a>

**MANAGING DIRECTOR**

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Jajpur Road, Dist: Jajpur (Odisha)

Tel. No. 06726-220212 / 220508, Fax No. 06726-220524

E-mail ID: [ifcal@nic.in](mailto:ifcal@nic.in) / ifcal.electrical2019@gmail.com

**Tender Ref No. IFCAL/Elect/1370**

**Date:24.10.2019**

**CORRIGENDUM TO  
TENDER NOTICE NO IFCAL/ELECT/1102 dated 04.09.2019  
FOR  
[PROCUREMENT OF FURNACE TRANSFORMER]**

Due date of downloading & submission of tender for “**Design, Manufacture, Testing, Supply and supervision of Erection and Commissioning of 9 MVA, 11 KV/90-115-155V Submerged Electric Arc Furnace Shell Type Transformer**” have been extended as per the following schedule.

Date of downloading of Corrigendum Tender	: 25.10.2019 to 08.12.2019
Last date & time of submission of tender	: 10.12.2019 upto 5 P.M.
Availability of Corrigendum Tender document :	<a href="http://www.ifcal.nic.in">www.ifcal.nic.in</a> / <a href="http://www.idcorissa.com">www.idcorissa.com</a>

**MANAGING DIRECTOR**

***Signature & Seal of Tenderer***

# **IDCOL FERRO CHROME & ALLOYS LIMITED**

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A Govt. of Odisha Undertaking

Regd. Office: Ferro Chrome Project – 755 020

Jajpur Road, Dist: Jajpur (Odisha)

Tel. No. 06726-220212 / 220508, Fax No. 06726-220524

E-mail ID: [ifcal@nic.in](mailto:ifcal@nic.in) / ifcal.electrical2019@gmail.com

## **TENDER DOCUMENT**

FOR

Design, Manufacture, Testing, Supply & Supervision of

Erection and Commissioning

Of

9 MVA, 11KV/ 90 – 115 – 155 V

Submerged Electric Arc Furnace Shell Type

Transformer

***Signature & Seal of Tenderer***

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***Signature & Seal of Tenderer***

**IDCOL FERRO CHROME & ALLOYS LIMITED**

(A Wholly Owned Subsidiary of IDCOL)

A Govt. of Odisha Undertaking

Regd. Office: Ferro Chrome Project – 755 020

Jajpur Road, Dist: Jajpur (Odisha)

Tel. No. 06726-220212 / 220508, Fax No. 06726-220524

E-mail ID: ifcal@nic.in

**Tender Ref No. IFCAL/Elect/19-20/1102**

**Date:04.09.2019**

**TENDER CALL NOTICE**

FOR

Procurement of Furnace Transformer

Sealed bids are invited from Manufacturers for design, manufacturing, testing, supply & supervision of erection & commissioning of 9 MVA, 11KV / 90 – 115 – 155 V Submerged Electric Arc Furnace Shell Type Transformer as per the specification & scope of supply mentioned in our tender document. Tender document can be downloaded from our website [www.ifcal.nic.in/www.idcorissa.com](http://www.ifcal.nic.in/www.idcorissa.com). The tender should accompany the cost of the tender documents of Rs.1,000/- (inclusive of GST) and an EMD of Rs `600,000/- (Rupees Six Lakhs only) in shape of separate D.D/Banker's Cheque/Pay Order drawn in favour of "IDCOL Ferro Chrome & Alloys Limited" payable on any Nationalised Bank at Jajpur Road.

Tender submitted other than the manners prescribed in the tender document shall be out rightly rejected. Last date & time of submission of tender is 21.10.2019 at 5.00 p.m.

**MANAGING DIRECTOR**

*Signature & Seal of Tenderer*

**IDCOL FERRO CHROME & ALLOYS LIMITED, JAJPUR ROAD**  
**Tender Ref No. IFCAL/Elect/19-20/1102** **Date:04.09.2019**

**IMPORTANT INFORMATION**

1. Name of the work : Design, Manufacture, Testing, Supply & Supervision of Erection and Commissioning Of 9 MVA, 11KV / 90 – 115 – 155 V Submerged Electric Arc Furnace Shell type Transformer
2. Nature & description of work : As given in tender document
3. Availability of tender document : To be down loaded from our website. <http://www.ifcal.ori.nic.in/www.idcorissa.com>
4. Last date and time of receipt of sealed offer : 21.10.2019 at 5.00P.M.
5. Mode of submission of offer : By Regd. post / Speed Post / Courier
6. Cost of tender document : Rs 1,000.00 (Rupees One Thousand Only) inclusive of GST in cash to be deposited at our Cash Counter. Tender document downloaded from our website should accompany the cost of tender paper in shape of DD /Banker's Cheque/ Pay order in favour of IDCOL Ferro Chrome & Alloys Limited payable at Jajpur Road, drawn on any Nationalized Bank.
7. Amount of Earnest Money Deposit : The Earnest Money Rs 6,00000/- (Rupees Six Lakhs) only should be deposited in shape of Demand Draft/ Bankers cheque/ Pay order drawn in favour of IDCOL Ferro Chrome & Alloys Ltd, drawn on any Nationalised Bank payable at Jajpur Road, alongwith Technical bid
8. Address where the tender document is to be submitted. : The Managing Director, IDCOL Ferro Chrome & Alloys Ltd., PO; Ferro Chrome Project, Jajpur Road, Dist: Jajpur, Odisha, Pin-755020.

***Signature & Seal of Tenderer***



**IDCOL FERRO CHROME & ALLOYS LIMITED, JAJPUR ROAD**  
**Tender Ref No. IFCAL/Elect/19-20/1102** **Date:04.09.2019**

**GENERAL CONDITIONS OF THE CONTRACT(GCC)**

- 1) The word “IFCAL” wherever mentioned in the tender document shall mean the company “IDCOL Ferro Chrome & Alloys Limited” having its Regd Office at Ferrochrome Project, Jajpur Road, Dist: Jajpur (Odisha),Pin-755 020.
- 2) The “legal status” of the bidder i.e. proprietary concern, partnership firm, private or public limited company or any other as per the case may be, shall be specified with documentary proof attached.
- 3) The person signing the tender document shall either be the Managing Director or the Proprietor of the company or the Active partner, as the case may be. Otherwise the Letter of Authority, to sign the tender on behalf of the company/Partnership firm shall be enclosed.
- 4) The tenders (also called bids) not submitted in the manner prescribed in this document, shall be rejected at the risk & responsibility of the bidder.
- 5) All the information, as called for in the tender document, should be submitted truly, clearly, legibly, transparently, unambiguously and without the use of abbreviations. It shall be submitted in English.
- 6) All the crucial figures, like rates and amount shall be written in figures followed by words in a bracket.
- 7) There shall be no over writing in the tender document and other papers submitted. All additions, alterations, deletions, cuttings, corrections etc. should be initialed and rubber-stamped (or seal) by the same person, who signs the tender document. Failing so, the tender may be rejected.
- 8) All the rates and amounts shall be quoted in Indian Rupees (INR) and shall be presumed to be in Indian Rupees. In case of any reduction in taxes, duties or levies announced subsequent to submission of bid, the prices quoted shall stand reduced by the corresponding amount.

***Signature & Seal of Tenderer***

- 9) Each page of this tender document should be signed by the bidder with seal in token of having read, understood and accepted the terms and conditions of this contract and shall be returned in original alongwith the bid submitted. The bidder may, in his own interest, visit the buyer's site to assess various elements of cost before filling in the Price Bid.
- 10) All documents and papers submitted with the bid should be in English and shall be authenticated under the seal and signature of the bidder unless specified otherwise in this tender document. If the documents are in other language, a true translation in English, duly certified by an independent person of repute, shall also be submitted.
- 11) Use separate piece of paper, where the space provided in the formats in this tender document for submission of information, is not sufficient.
- 12) All information submitted or supplied in the formats of this tender document shall be presumed to be true to the best of knowledge of the bidder.
- 13) The bidder shall submit the self-certified legible photocopy copies of his PAN Card, GST Registration Certificates alongwith the bid.
- 14) The bidders can send tenders or bids **by person, post or courier**. However, the authorities shall not be responsible for postal and any other delays in receipt of bids.
- 15) If the last date for submission of the tender/bid turns out to be a holiday, it will automatically be extended to next Govt. working day.
- 16) A bid submitted cannot be withdrawn. The bidder or his authorized representative (one person only) will be allowed to be present at the time of opening of tenders. However, they shall not participate in the discussions. They may provide clarifications sought, if any.
- 17) Entire tender document, duly filled in, shall be treated as part of the contract agreement for supplies in case of the successful bidder.
- 18) The tender submitted shall remain valid for a minimum period of 90 (ninety) days from the last date of submission of bids.

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- 19) IFCAL management reserves the right to accept / reject any or all tenders without assigning any reason thereof. No claim, whatsoever, shall be admissible for the loss / damage suffered by the bidders on account of such rejection. Management also reserves the right to split the total order quantity between more than one parties as per its choice.
- 20) No conditional tender shall be entertained. However, a deviation statement of variations from the technical specification may be submitted along with the Guaranteed Technical Particulars vide **Annexure – B** of the Technical Specification.
- 21) This tender document has prescribed a Technical Bid format and a Price Bid format. The “Price Bid” shall be submitted in a separate sealed cover after detaching its formats from this tender document. Technical Bid format duly filled up, alongwith the remaining part of the tender document (i.e. General Conditions of the Contract & Special Conditions of the Contract including EMD) signed on each page should be put inside another sealed cover. **Both the sealed covers superscribed as Technical Bid & Price Bid, should be enclosed in a bigger envelope and should be addressed and submitted. The name of the Bidder, Tender Notice No. & last date of submission shall be boldly written in all the sealed covers / envelopes.**
- 22) The Technical Bid shall be opened first.
- 23) “Price bid” shall be opened thereafter only in those cases, where the bidders are found to have fulfilled all the requirements / specifications asked for in the Technical Bid format and in the tender document.
- 24) Price negotiations, other than with the lowest bidder shall not be held without obtaining prior approval of M.D, IFCAL.
- 25) The purchaser is not bound to accept the lowest price bids.
- 26) All transit risks shall be the responsibility of the supplier.
- 27) Failure to supply the order quantity within the stipulated period may lead to forfeiture of Security Deposit and blacklisting of the supplier.

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- 28)** All clarification sought from the bidders/suppliers on technical specifications of the products or otherwise shall be promptly submitted in a transparent and unambiguous manner.
- 29)** Terms & conditions of this tender document cannot be changed without obtaining the prior approval of M.D, IFCAL.
- 30)** Entire tender document duly filled in, shall be treated as part of the contract agreement for supplies in case of the successful bidders. No separate contract agreement shall be executed.
- 31)** The supplier should give the address of the nearest Service Centre and the period required for deputation of Service Engineer, on receipt of request of the Purchaser.
- 32)** Before submitting the offer the supplier may visit the plant& get himself acquainted with the site condition of IFCAL.
- 33)** Settlement of dispute: In the event of any dispute/differences between the parties arising under or in connection with the contract/agreement or any associated agreement entered into pursuant to this contract/agreement, they shall use all reasonable endeavours to resolve the matter on an amicable basis. If one party serves formal written notice on the other than a dispute /difference of such a description has arisen and the parties are unable to resolve the dispute within a period of [thirty (30)] days from the service of such notice, then the dispute shall be referred to an Arbitrator to be appointed by the parties with their mutual consent for arbitration of the dispute.
- i.** The parties here to mutually agree that notwithstanding the place of execution, the contract shall be taken to have been entered into by the parties at Jajpur Road, (Odisha) and for the purpose of any legal dispute, the jurisdiction shall be limited to any court of law under the jurisdiction of the Hon'ble High Court of Odisha.
  - ii.** The venue of arbitration will be at Bhubaneswar.
- 34)** All legal proceedings in any manner arising out of or in relation to the contract between the parties can only be initiated in a Court situated within the territorial jurisdiction of the State of Odisha and none of the parties shall have the liberty of initiating any legal proceeding any where beyond the territorial limits of the state of Odisha.

***Signature & Seal of Tenderer***

**IDCOL FERRO CHROME & ALLOYS LIMITED, JAJPUR ROAD**  
**Tender Ref No. IFCAL/Elect/19-20/1102** **Date:04.09.2019**

### **SPECIAL CONDITIONS OF THE CONTRACT (SCC)**

#### **1) Eligibility of Bidder:**

- a) The bidder should be a reputed & experienced manufacturer of Shell type/Core Type Transformer (Documentary evidence to be enclosed).
- b) The bidder should have prior experience in supply of at least 01 (One) nos of 9 MVA, 11KV / 33KV or higher capacity Submerged Electric Arc Furnace Shell type Transformer to any Industries during last 10(ten) years (Enclose copies of Purchase Orders & Performance Certificates).
- c) The bidder must possess valid GSTIN. (A copy of such registration certificate is to be enclosed).
- d) The bidder should have a total turnover of Rs 10 Crores minimum over the last 3 (three) financial years i.e., 2016–17, 2017–18 & 2018–19. Please enclose audited balance sheet for these financial years.

#### **2) Material to be Supplied : 9 MVA, 11KV / 90 – 115 – 155 V Shell type Transformer suitable for Submerged Electric Arc Furnace duty. Quantity : One Number**

- 3) Price:** The price shall be quoted on the basis of supply F.O.R IFCAL Site. However the price breakup shall be furnished as follows:
- a) Ex-factory price, including packing and forwarding charges.
  - b) Amount of GST. The Purchaser shall avail Input Tax Credit.
  - c) Amount of any taxes & duties other than GST.
  - d) Total freight charges from supplier's workshop/Factory to IFCAL premises at Jajpur Road, Dist: Jajpur, Odisha.
  - e) Transit Insurance
  - f) Total price F. O. R IFCAL site.

#### **4) Price Variation:**

- a) The ex-factory price of the transformer as well as the freight charges upto Jajpur Road, shall remain “**firm**” till validity of the contract. No upward revision in respect of ex-factory price shall be allowed.

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- b) However, statutory variation in any taxes, duties, levies during contractual delivery period may be considered against documentary evidence.
- 5) **Period of Supply at Jajpur Road:** - Buyer should indicate a delivery period for supply of the transformer from the date of approval of the drawings. Drawings shall be submitted within 30 (Thirty) days from the date of placement of Purchase Order. However the bidder should indicate shortest delivery period in form of a BAR chart mentioning completion time of all activities. The time of completion shall be the essence of the contract.
- 6) **Liquidated Damage:** - In case of delay in the supply of the transformer beyond the delivery period, liquidated damages @0.5% of the total order value excluding taxes & duties shall be levied per week of delay subject to a maximum of 5%.
- 7) **Termination of the Contract:** Purchaser shall have the right to terminate the contract by giving 15 days notice without assigning any reason there of. In such case, the supplier shall have no claim for any loss sustained by them.
- 8) **Technical Specification for 9 MVA, 11KV / 90 – 115 – 155 V Submerged Electric Arc Furnace Shell type Transformer:** The Technical Specifications are attached and marked as ANNEXURE I.

The Bidder shall submit their offer based on the requirements specified in these Technical Specifications.

The Bidder shall submit the confirmation and data along with the Tender vide Clause 4.0 of the Technical Specification.

- 9) **Service Charges:** The purchaser may require personnel for supervision of erection, testing and commissioning of the transformer. The approximate period for erection, testing and commissioning personnel shall be stated, along with the per diem charges and other charges in the Tender. IFCAL shall provide the following to the erection and commissioning personnel, on a free of charge basis.
- a) Boarding and lodging in the guest house of IFCAL at the plant site.  
b) Local transport.

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- 10) **Site Visit:** The bidders are advised to visit the site, prior to submission of bid, to assess the site conditions, particularly relating to the available clearances for installation and connections on the LV side, to design the new Furnace Transformer, as a replacement of the existing Furnace Transformer.
- 11) **Bill of Material:** The bidders are required to submit details and quantity of the bought out equipment / components along with the Tender.
- 12) **Safety of Workmen/Equipments:** Bidder has to follow safe working procedure at site. On the occurrence of any accident at site while working, which results in injury, disability or death of workman, engaged by the bidder for which compensation may become payable under Workmen's Compensation Act the same is to be borne by the bidder. IFCAL will not be liable for such accident in any way.

The bidder shall also be liable for any damage caused to the property of IFCAL, while executing the work at site and the compensation towards the same as finalized by the IFCAL management shall be final & binding and shall be recovered from the bills/pending dues/security deposit.

- 13) **Delivery:** The supplier is to deliver the transformer alongwith all accessories as per the finalized specification and scope of supply at IFCAL Plant Site, Jajpur Road by Road Transport.
- 14) **Despatch Documents:** Despatch documents must include excise invoice (transporters copy, challan, L.R/G.R, packing list and copy of test certificate), a complete set of dispatch documents along with excise gate pass & invoice in duplicate is required to be sent to IDCOL Ferro Chrome &Alloys Limited, P.O- Ferrochrome Project, Jajpur Road, Dist. Jajpur (Odisha) by courier immediately on dispatch of the consignment in order to avail CENVAT credit.

**15) Payment:**

**I. SUPPLY:**

- a) Advance payment shall be limited to 10% of the basic value(i.e the ex-factory price) against Bank Guarantee.
- b) 70% of basic value alongwith 100% of freight, taxes & duties shall be released after inspection & delivery of material at site.

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- c) Balance 20% of basic value after completion of the erection & commissioning against submission of performance Bank Guarantee as per IFCAL format for a period of 18 months.

**II. SUPERVISION OF ERECTION, TESTING & COMMISSIONING:**

Necessary assistance at site will be provided by IFCAL for one Supervisor/Engineer during commissioning. After successful erection, testing & commissioning, 100% payment shall be released within 30(thirty) days.

**16) Validity Period:** The bid shall remain valid for a period of 180(One Hundred Eighty) days from the last date of submission of bids.

**17) Pre-Delivery Inspection :** The buyer shall be entitled to inspect the furnace transformer at any stage of the manufacturing process at the Supplier's Works. The buyer or his authorized representative will carry out the inspection and testing relevant to all aspects of the contract, for which purpose the supplier shall allow access at all reasonable times during the manufacture and testing to the premises in which the work is being carried out, the drawings and/or tooling involved and instruments/testing equipments etc required for inspecting the transformer. The delivery must not take place until the buyer has been notified and written dispatch release of transformer is obtained. Pre-Delivery Inspection charges at manufacturer's company site by the officials of IFCAL should be borne by the Firm.

**18) Inspection & Testing:** All the inspection and tests shall be carried out as per requirements of the specifications governing the tender document. Final inspection shall be carried out at IFCAL premises. However, the bidder shall remain responsible for the quality assurance of the equipments to be supplied by them. The inspection of the component parts/materials of the transformer at the supplier's work do not relieve the Supplier of their responsibility towards quality/performance of the transformer delivered by them.

The Routine Tests, in accordance with IS: 2026 (Part – I) and IS: 12977:1990/ IEC 60076 including the latest Amendments, shall be carried out in the works of the Manufacturer, in the presence of the buyer and / or his authorized representatives to check and witnessed during such testing with smooth performance at site.

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- 19) Guarantee/Warranty:** The equipments shall be guaranteed for satisfactory and trouble free operation for a period of 18 months from the date of commissioning. Any defects noticed during the guarantee period shall be repaired / replaced, without any cost to the purchaser.
- 20) Rejection:** If the transformer /its component parts after delivery at our site are found not confirming to our specification, the same shall be rejected. The supplier is to take back the transformer/ its component parts at their own cost & risk within 7 (seven) days of delivery beyond which IFCAL authority shall not be responsible for its safe custody and a demurrage charges as per norms will be charged on the supplier beyond 48 hours.
- 21) Risk Purchase:** In case the supplier fails to supply the transformer as per our order/intimation, IFCAL shall be at liberty to purchase the same from any other sources and extra expenditure incurred, if any, for such purchase, shall be recovered from the supplier i.e. either from pending bills or from the Security Deposit.
- 22) Force Majeure:** Either party shall not be in any way liable for non-receipt, non-supply of the furnace transformer & its component parts in whole or part of our ordered quantity in consequence of any strike, lockout, stoppage, fire, breakdown, accident or whatever in nature beyond the control of Buyer and Seller.
- 23) Earnest Money Deposit (EMD):** Earnest money Rs. 600,000/- (Rupees Six Lakhs Only) shall be furnished in the form of Demand Draft /Banker's Cheque/Pay Order drawn on any nationalised bank in favour of IDCOL Ferro Chrome &Alloys Limited payable at Jajpur Road. No request for adjustment of EMD against any outstanding dues with IFCAL shall be entertained.
- a) In case of unsuccessful bidders, the EMD shall be refunded to the bidder without any interest immediately after issuance of the order and its acceptance by the successful bidder.
- b) **Forfeiture of EMD:** In case the bidder opts to withdraw from the tendering process after opening of the tender and while the same is under consideration of IFCAL during the tender validity period of 180(One Hundred Eighty) days, the Earnest Money as deposited by the bidder shall be forfeited without any reference to the bidder.

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**24) Security Deposit:**

- a) The EMD of the successful bidder shall be converted to Security Deposit after they confirm acceptance of the Purchase Order with other terms & conditions.
- b) The Security Deposit shall remain at the entire disposal of the IFCAL as a security for satisfactory execution and completion of the work in accordance with the conditions of the contract. IFCAL shall be at liberty to deduct and appropriate from the Security Deposit such penalties and dues as may be payable by the contractor under this contract.

On due and satisfactory performance and completion of the contract in all respect, the Security Deposit will be returned to the contractor without any interest.

***Signature & Seal of Tenderer***

**ANNEXURE I****TECHNICAL SPECIFICATION****FOR****9 MVA, 11kv / 90 – 115 – 155 V SUBMERGED ELECTRIC ARC FURNACE SHELL TYPE****TRANSFORMER****C O N T E N T S**

<b>CLAUSE NO.</b>	<b>DESCRIPTION</b>	<b>PAGE NO.</b>
<b>1.</b>	<b>INTENT OF SPECIFICATION</b>	<b>15</b>
<b>2.</b>	<b>DESIGN CRITERIA</b>	<b>15-20</b>
<b>3.</b>	<b>MANDATORY SPARES</b>	<b>20</b>
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**ANNEXURES**

<b>ANNEXURE A</b>	<b>: GENERAL INFORMATION OF THE TECHNICAL REQUIREMENTS</b>	<b>22-23</b>
<b>ANNEXURE A1</b>	<b>: RATED LV VOLTAGE AND CURRENT AT DIFFERENT TAP POSITIONS</b>	<b>24</b>
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**TECHNICAL SPECIFICATION  
FOR  
9 MVA SUBMERGED ARC FURNACE SHELL TYPE TRANSFORMER**

**DISCLAIMER**

No review or approval of plans, specifications or other information or documentation by IFCAL shall constitute a representation or warranty by IFCAL that such plans, specifications or other information or documentation satisfy any applicable laws or other requirements or will provide for a safe operation or ensure the desired performance and no such review or approval shall make IFCAL otherwise liable with respect thereto. The contractor shall be solely responsible for determining whether its plans, specifications, supplies, procedures and construction meet the objectives of the project, satisfy applicable laws and other requirements and will provide for a safe operation.

Notwithstanding the informations or indicative plans furnished by IFCAL in the tender solely as a likely alternative and not as an ultimate basis for design, the onus of a proper result-oriented design, engineering, supply and installation of the transformer rests entirely on the supplier and the supplier shall be solely liable for non-performance or non-delivery of the desired results.

**1.0 INTENT OF SPECIFICATION**

This specification is intended to cover the design, engineering, manufacture, stage inspection, assembly, testing at manufacturer's works, packing, loading on trailer at manufacturer's works, supply & delivery at IFCAL premises, supervision of erection and successful commissioning including testing at site of one no. Three-Phase 9 MVA Submerged Arc Furnace Shell Type Transformer complete with all fittings, accessories & auxiliary equipments for efficient and trouble free operation.

**2.0 DESIGN CRITERIA**

- 2.1** The loading on the transformer is Submerged Arc Furnace, whose secondary is often short circuited & unbalance loading is a predominant factor. Hence the supplier has to take special precaution in design of the core and winding to withstand heavy short

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circuit & unbalance forces. This is also be demonstrated by the supplier through calculation.

- 2.2** The transformer shall conform to the latest Revisions of IEC – 60076 / IS: 2026 / IS: 12977. The terminal marking, temperature rise, insulation level shall conform to IS: 2026, Part – 4, Part – 2, Part – 3 respectively/IEC 60076. The furnace transformer, including its' tap changing equipments, etc, shall be designed to withstand, without damage, the thermal and dynamic effects of external short circuit, in accordance with Clause 8 & 9 of IS: 2026 (Part. 1), including latest Revisions.

The transformer shall be installed indoors in hot, heavily polluted, humid atmosphere. For Design purpose, fault level at 11KV source shall be considered as 500 MVA. The 11KV network is Un-earthed.

- 2.3** The transformer shall withstand short time current surges, in accordance with Clause 12.2 of IS: 12977/IEC 60076.
- 2.4** The transformer shall be free from annoying hum or vibration. The design shall be such as not to cause any undesirable interference with radio or communication circuits. The noise level shall be limited to the value specified by NEMA Standard Publication No. TR-1-1993 when measured in accordance with conditions outlines in ANSI/IEEE C57.12.90-1999/IS13964/CBIP publication.
- 2.5** The transformer shall be capable of continuous operation at specified rating in accordance with Clause 4.3.1, 4.3.2 and 4.4 of IS: 2026 (Part 1)/IEC 60076.
- 2.6** The transformer shall be copper wound, two winding, ODFW, Vector Group III/III, 11 KV / 90 – 115 - 155 V with three phase OLTC in primary winding. The OLTC shall be of reputed make with minimum current rating of 800 Amps. For star connection, corresponding tap voltage will be divided by 1.732. Guaranteed positive sequence impedance between HV – LV at 75° Celsius shall be 6.5% maximum at 90 V tap. The supplier has to submit the calculated impedance at principal tap (115V) and 155 Volt tap.
- 2.7** i) The transformer shall have the following over flux withstand capability.
- a. 110% for continuous operation.
  - b. 125% for one minute.

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- ii) The transformer shall be suitable for the following duty cycle.
  - a. 120% of the continuous apparent power for 2 hours.
  - b. 60% of the continuous apparent power for 1 hour.
  - c. No power for ½ hour.

Total period for the load cycle is 3 ½ hours.

**2.8** Marshalling box shall be provided for housing pump and cooler control. Auxiliary supply of 415V AC and 110V DC shall be made available. Pump and OLTC Driving mechanism motor shall be designed for 415V, 3 phase, 50 Hz rated, with class F or H insulation and control shall be arranged through MCCB (with trip feedback contact) and contactor.

The marshalling box shall also contain all auxiliary devices & wide glass window for reading of temperature gauges. All terminal blocks for cable connection, with 20% spare blocks shall be located in the marshalling box. The marshalling box shall be provided with cubicle LED lamps with a door switch, space heater with thermostat and removable gland plate & printed connection drawing on the door.

**2.9** The transformer shall be painted with enamel paint, dark admiralty gray (No. 632) of IS 5/1978, over 2 coats of anti-corrosive primer.

**2.10** The transformer shall be equipped with One (1) shock recorder for transportation. This shock recorder should be returned upon arrival at site and analyzed by the experts of the Firm.

**2.11** The terminal arrangements shall be as follows.

- i) HT Porcelain bushings shall be provided on top cover of the transformer. Total of 6 HT Bushings shall be provided for Star Delta connection. The Bushings shall be suitable for connecting single core 2 X 300 sq.mm Aluminium Cable.
- ii) LV bushing will be extended copper flat terminals 12mm thick from top of the transformer. Nos. of terminals per phase shall be 8 nos. with alternate polarity (Total 24 nos.). Each bushing copper flat shall be 250 mm wide with 9 drilled holes (3 x 3 array). Gland type arrangement with leak proof flexible packing around each terminal shall be provided to avoid leakage of oil / breakage of insulation, etc, due to vibrations from outgoing secondary bus bars connected to these terminals. Cross section of each terminal shall match to the existing

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system. Suitable rating copper flexible shall be provided inside transformer for each secondary raiser.

Details of secondary bushings need the approval of the purchaser before manufacture.

**2.12** The On Load Tap Changer (OLTC) shall conform to the following specifications.

- i) It shall be suitable for operation in (a) Manual Local, (b) Electrical Local, (c) Electrical Remote.
- ii) Tap changer shall be mounted in a separate enclosure having separate conservator, Oil Surge Relay, etc.
- iii) The RTCC Panel to be supplied by the bidder shall be installed in the Furnace Control Room. It shall have all annunciators as specified below and with one loose digital tap position indicator to be mounted on the Furnace Control Desk. No AVR is required in the RTCC panel.

Window No.	Window Name	Window Colour
1.	Buchholtz TRIP	RED
2.	Main Tank PRD Operated	RED
3.	OLTC PRD Operated	RED
4.	Winding Temperature high Trip	RED
5.	Oil Temperature high Trip	RED
6.	Oil Surge Relay Operated	RED
7.	Oil Level Low Low Trip	RED
8.	Oil Flow Low Low (both) Trip	RED
9.	Water Flow Low Low (both) Trip	RED
10.	Oil Flow Low (both) Alarm	YELLOW
11.	Water Flow Low (both) Alarm	YELLOW
12.	Tap change Time Exceeded	YELLOW
13.	Tap changer Problem	YELLOW
14.	Oil Temp. high alarm	YELLOW
15.	Winding temp. high alarm	YELLOW
16.	Air Seal Rubber Bellow Leakage	YELLOW
17.	Differential Pressure High	YELLOW
18.	Oil Level High Alarm	YELLOW
19.	Oil Level Low Alarm	YELLOW
20.	Buchholtz Alarm	YELLOW
21.	Oil Pump No. 1 Trip	YELLOW
22.	Oil Pump No. 2 Trip	YELLOW

**2.13** The grounding pads, located on the opposite sides of the tank, shall be provided for connection to plant grounding system. Grounding pad shall have clean buffed surface

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with two tapped holes, M10 G.I. bolts and spring washers for connection to 50mm x 6mm G.S. flats. Ground terminals shall also be provided on marshalling box and RTCC panel to ensure the effective earthing. For continuity of earth connection, all gasketed joints shall be provided with minimum two (2) no. of G.S. strip jumpers of adequate size.

- 2.14** The transformer shall be filled with mineral insulating oil suitably inhibited to prevent sludging. The oil shall comply with IS-335-1983/IEC-296. The Tank should be filled in oil so that the core and winding are totally submerged in oil during transportation. Adequate transformer oil in non-returnable containers shall be supplied with the transformer for commissioning and 10% spare. Oil preservation shall be by means of conservator tank complete with silica gel breather and oil seal. Breather bottom position shall be at a height of 1.5 Meters from wheel bottom level.
- 2.15** All control, alarm and indication devices provided with the transformer shall be wired up to the terminal blocks. Wiring shall be done with PVC wires in conduit or PVC armoured cable. Minimum wire size shall be 2.5 sq. mm. stranded copper. Not more than two wires shall be connected to a terminal. 20% spare terminals shall be provided. All devices and terminal blocks within the marshalling box and RTCC panel shall be identified by symbols corresponding to those used in applicable schematic or wiring diagram.
- 2.16** 415V AC (TPN), 50 Hz and 110V DC power supply shall be made available to transformer at one point only. MCCB / MCB shall be provided to receive the incoming supply.
- 2.17** 2 x 100% OFWF double tube oil-water coolers shall be mounted horizontally in one of the side faces of transformer except front (LV Terminal outlet direction) and rear faces. Provision of operating any pump with any cooler shall be made. Inlet and outlet Pipe lines of oil for the two Heat Exchangers should be totally independent and should be complete with shut off valves and non- return valves.

Required water pressure at the inlet of the Heat Exchangers should be lower than the minimum static head of oil in the transformer when the oil pump is not in operation. The Heat Exchangers should be mounted on the lowest level of transformer tank, so

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that higher static head of Oil is available. The Bidder shall consider mounting the oil coolers separately, **to be decided after making a Site visit.** Pressure drop across the water circuit of the heat Exchanger should be in the maximum range of 0.05 to 0.075Kgf/cm<sup>2</sup>. Disconnection of any pipe line (Oil or water) shall not be necessary to clean the Heat Exchangers.

Oil flow indicator for all heat exchangers with alarm and trip contacts at outlet side of heat exchanger & water flow indicators with alarm and trip contacts at outlet side are to be provided. Thermometer pockets for mercury in steel thermometers both for water and oil at inlet and outlet of all heat exchangers are to be provided. Differential Pressure gauges with alarm & trip contacts, Pressure gauges for oil and water for all heat exchangers, Filtering arrangement (strainer) for water inlet to heat exchanger to eliminate jamming of heat exchangers with a detachable system and a bypass system are to be provided.

**2.18** The transformer along with all fittings and accessories shall be subject to Routine Tests as per Clause 16.1.2 of IS 2026 (Part – 1)/IEC 60076, including latest Revisions. The tests shall be witnessed by the Purchasers and / or his authorised representatives. It is not proposed to carry out any Type Test or Special Tests [vide Clause 16.1.1 & 16.1.3 of IS 2026 (Part – 1)/IEC 60076] on the transformer to be supplied. The Type Test Reports of following tests conducted on transformers of similar ratings, in accordance with Clause 16.1.1 of IS – 2026 (Part – 1)/IEC 60076, shall be submitted.

- i. Temperature Rise Test
- ii. Impulse Test
- iii. Short Circuit Dynamic Withstand Test

**2.19** The General Information of the Technical Requirements is attached as **Annexure-A**.

### **3.0 MANDATORY SPARES**

<b>Sl.</b>	<b>Item/Equipment</b>	<b>Qty. Required</b>
1.0	Bushing HV	1
2.0	Winding Temperature Indicator	1

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3.0	Oil Temperature Indicator	1
4.0	Pressure Relief Device Main Tank & OLTC	1+1
5.0	Magnetic oil level gauge	1
6.0	Buchholz Relay	1
7.0	Silica gel breather (Main tank and OLTC)	1+1
8.0	Oil Surge Relay	1
9.0	Gasket Set	
	Cover gasket	1
	Manhole gasket	1
	LV Bushing gasket	5
	HV Bushing gasket	2

#### **4.0 DATA TO BE SUBMITTED ALONG WITH TENDER**

**4.1** The Bidder shall submit confirmation regarding the Design Criteria in accordance with Clause 2.1 to 2.18.

**4.2** The copies of the Type Test Reports of the following tests conducted on transformers of similar rating in accordance with Clause 16.1.1 & 16.1.3 of IS – 2016 (Part – I)/IEC 60076.

- a)** Temperature Rise Test in accordance with Clause 4 of IS: 2026 (Part – II)/IEC 60076.
- b)** Lightning Impulse Withstand Test as per Clause 12 of IS: 2026 (Part – III)/IEC 60076.
- c)** Short Circuit Dynamic Withstand Test in accordance with Clause 16.11 of IS: 2026 (Part – I)/IEC 60076.

**4.3** List of clients to whom transformers of similar ratings or above have been supplied, including the date of supply & commissioning, may be submitted in the following format.

Sl. No.	Name of the Client	Transformer Rating		Date of Supply	Date of Commissioning
		MVA	Voltage		

**4.4** List of suppliers for bought out items.

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- 4.5** Guaranteed Technical Particulars and Design Details of the Transformer as per **Annexure – B** – To be filled in by the bidder.
- 4.6** The following shall be submitted along with the Tender.
- a) Dimensional drawing of the transformer in assembled condition.
  - b) Schematic diagram of Transformer.
  - c) Marshalling Box wiring diagram & valve schedule.
  - d) Schematic & wiring diagram for OLTC and RTCC.
  - e) Foundation Plan & Loading Data.
  - f) Losses and Impedances
  - g) Special transformer equipments like Current Transformer, Monitoring Equipments, Lighting arrestors etc
- 4.7** The transformer shall be installed on the existing foundation, having 90lb rails, with inside clearance between rails of  $1435 \pm 5$  mm. A sketch of the foundation is attached as **Annexure – C**.
- However considering the prolonged and constant loading of 30 MT of present transformer for more than 50 years, the existing structures and supporting transformer of IFCAL,jajpur Road has to be analyzed for safe carrying capacity.**

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**ANNEXURE – A****GENERAL INFORMATION OF THE TECHNICAL REQUIREMENTS****9 MVA 11KV SUBMERGED ARC FURNACE SHELL TYPE TRANSFORMER**

1.	Particulars of Specification	IS: 2026 (Part I –IV)& IS: 12977:1990 including the latest Amendments.
2.	Type	Two winding, 3 Phase-Furnace Transformer
3.	No. of Phases	3
4.	Frequency	50 Hz +/- 3%
5.	Liquid dielectric	Mineral Oil (paraffin based / naphtha based alternative)
6.	Location	indoor
7.	Type of cooling	OFWF
8.	Rated Power	9 MVA
9.	Rated voltage	a. HV b. LV
		11 kV As per Annexure A-1
10.	Tapping	21 Taps (20 positions) with OLTC on the primary winding
11.	Method of Tap Change Control	Manual Local / Electrical Local / Electrical Remote. AVR not required.
12.	Percentage Impedance at 75°C	6.5% Max at 90V Tap
13.	Terminal Arrangement	
	a) HV	Open (Suitable for 2 X 1 C XLPE UE 300sq. mm armoured Al. Cable)
	b) LV	For Bus Bar connection
14.	Highest voltage	H. V -12 kV
15.	Method of system earthing	Unearthed
16.	Insulation level	LI 110 / AC 34KV/ 3KV
17.	Connection	III/III
18.	Neutral terminal	No
19.	Special requirements	i. Please see the Special Requirements vide Paragraph 2 of this Specification.

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		<b>ii.</b> The transformer is to be dispatched by Road trailer and oil-filled.
<b>20.</b>	Auxiliary supply	415 volt, 3 ph AC and 110 volt DC.
<b>21.</b>	Fittings required	All fittings as per Appendix C-1 of IS 2026 (Part – 1)/IEC 60076
<b>22.</b>	Additional fittings / details are as follows:-	
	<p><b>i.</b> Magnetic Oil Level Gauge with Alarm &amp; Trip contacts for Main Tank and Prismatic Oil Level Gauge with a minimum and maximum marking for main tank and OLTC.</p> <p><b>ii.</b> Dial type thermometer – 150 mm with two independent adjustable contacts for alarm and tripping</p> <p><b>iii.</b> WTI with Alarm &amp; Trip contacts with 4 independent adjustable contacts for alarm, tripping and cabling control..</p> <p><b>iv.</b> OTI with Alarm &amp; Trip contacts</p> <p><b>v.</b> Buchholz relay with Alarm &amp; Trip contacts</p> <p><b>vi.</b> Pressure relief devices with spring loaded trip contacts on diverter switch tank and main tank.</p> <p><b>vii.</b> Atmosseal type Conservator (or Air Cell)</p> <p><b>viii.</b> Bi-directional wheels.</p> <p><b>ix.</b> Heat exchanger pump controls shall be MCCB and contactor arrangement to be actuated automatically from winding temperature indicator control, with provision for manual over ride from local control panel. Automatic changeover of the pumps incase of failure of one pump is to be provided with a time delay.</p> <p><b>x.</b> Ladder for access to the top of the transformer tank.</p> <p><b>xi.</b> Thermometer Pocket on cover including one spare</p> <p><b>xii.</b> Oil sample valves, 2 at transformer tank and 3 at conservator</p> <p><b>xiii.</b> Filter valves diagonally mounted on main tank one close to bottom and one close to top</p> <p><b>xiv.</b> Silica Gel breather for main tank and OLTC compartment</p> <p><b>xv.</b> Lifting Lug, Jacking pads, Rating plate, Earthing terminals(diagonally placed, stainless steel)</p> <p><b>xvi.</b> Marshalling cubicle class IP 54 with thermostat controlled heater</p> <p><b>xvii.</b> External cabling and wiring between the cabinet and the instrument</p> <p><b>xviii.</b> All external bolts and nuts are of hot galvanized steel. All flanges and vents are according to DIN standard.</p>	

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**ANNEXURE A – 1**  
**RATED LV VOLTAGE AND CURRENT AT DIFFERENT TAP POSITIONS**

WHEN HV IN DELTA					WHEN HV IN STAR			
TAP NO	LV VOLTAGE	KVA RATING	LV LINE CURRENT	HV LINE CURRENT	LV VOLTAGE	KVA RATING	LV LINE CURRENT	HV LINE CURRENT
1	89.07	5174	33540	271.5825	51.42	2987	33540	156.8028
2	91.10	5292	33540	277.7722	52.60	3055	33540	160.3765
3	93.22	5415	33540	284.2363	53.82	3127	33540	164.1087
4	95.44	5544	33540	291.0052	55.11	3201	33540	168.0169
5	97.78	5680	33540	298.1401	56.45	3280	33540	172.1363
6	100.23	5822	33540	305.6104	57.87	3362	33540	176.4494
7	102.80	5972	33540	313.4465	59.35	3448	33540	180.9738
8	105.52	6130	33540	321.7401	60.92	3539	33540	185.7622
9	108.37	6295	33540	330.43	62.57	3635	33540	190.7794
10	111.39	6471	33540	339.6382	64.31	3736	33540	196.096
11	114.56	6656	33540	349.3648	66.15	3843	33540	201.7118
12	117.65	6834	33540	358.7255	67.92	3946	33540	207.1164
13	120.88	7022	33540	368.5741	69.79	4054	33540	212.8026
14	124.29	7220	33540	378.9715	71.76	4169	33540	218.8057
15	127.91	7430	33540	390.0092	73.85	4290	33540	225.1785
16	131.74	7653	33540	401.6872	76.06	4419	33540	231.921
17	135.80	7889	33540	414.0665	78.41	4555	33540	239.0684
18	140.13	8140	33540	427.2691	80.90	4700	33540	246.6912
19	144.74	8408	33540	441.3254	83.56	4855	33540	254.8068
20	149.66	8694	33540	456.3269	86.41	5020	33540	263.4682
21	154.93	9000	33540	472.3957	89.45	5196	33540	272.7458

**NOTE: LV Voltages Are Subject To Tolerance Of  $\pm 0.5\%$**

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**GUARANTEED TECHNICAL PARTICULARS OF TRANSFORMER****9 MVA 11KV SUBMERGED ARC FURNACE SHELL TYPE TRANSFORMER**

<b>SL. NO.</b>	<b>PARTICULARS</b>	<b>DATA</b>
<b>1.0</b>	<b>GENERAL</b>	<b>:</b>
1.1	Make	:
1.2	Type	:
1.3	Reference Standard	:
<b>2.0</b>	<b>RATING</b>	<b>:</b>
2.1	Rated output	KVA :
2.2	Type of Cooling	:
2.3	Rated voltage	
	H.V. (KV)	:
	L.V. (Volt)	:
2.4	Rated Current (Phase)	Amps. :
	H.V.	:
	L.V.	:
2.5	No. of phases	:
2.6	Rated Frequency	Hz :
2.7	Vector Group reference	:
2.8	Voltage withstand time	Sec.
	a) 125% of rated voltage	:
	b) 125% of rated flux density	:

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<b>3.0</b>	<b>TEMPERATURE</b>		:
3.1	(a)	Reference ambient temperature	:
	(b)	Reference cooling water temperature	:
3.2	Temperature rise over reference ambient of 50°C & Reference Cooling Water Temperature		:
	a)	In oil by thermometer	°C :
	b)	In winding by resistance	°C :
<b>4.0</b>	<b>TAPPINGS</b>		
4.1	Type		:
4.2	Capacity		:
4.3	Range - Steps x % Variation		:
4.4	Taps provided on H.V. winding		:
4.5	Taps provided on L.V. winding		:
<b>5.0</b>	<b>INSULATION LEVEL</b>	<b>kV/kVP</b>	:
5.1	H.V.		:
5.2	L.V.		:
<b>6.0</b>	<b>IMPEDANCES AT PRINCIPAL TAP RATED CURRENT FREQUENCY</b>	<b>%</b>	:
6.1	Impedance		:
6.2	Reactance		:
6.3	Resistance at 75°C		:
6.4	Zero sequence capacitance of H.V. winding		:
<b>7.0</b>	<b>GUARANTEED LOSSES AT 155V TAP, FULL LOAD AND 75°C</b>	<b>kW</b>	:
7.1	No load losses	kW	:

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7.2	Load losses	kW	:
<b>8.0</b>	<b>EFFICIENCY AT 75°C &amp; 0.9 POWER FACTOR LAG %</b>		<b>:</b>
8.1	At full load		:
8.2	At 3/4 full load		:
8.3	At 1/2 full load		:
8.4	Maximum Efficiency		:
8.5	Load and power factor at which it occurs		:
<b>9.0</b>	<b>REGULATION AT FULL LOAD AND 75°C</b>	<b>%</b>	<b>:</b>
9.1	At unity power factor		:
9.2	At 0.9 power factor lagging		:
<b>10.0</b>	<b>NO LOAD CURRENT REFERRED TO H.V.</b>	<b>AMPS.</b>	<b>:</b>
10.1	At 90% rated voltage		:
10.2	At 100% rated voltage		:
10.3	At 110% rated voltage		:
<b>11.0</b>	<b>APPROXIMATE MAXIMUM FLUX DENSITY</b>		<b>:</b>
	<b>WEB/M<sup>2</sup></b>		<b>:</b>
11.1	At 90% rated voltage		:
11.2	At 100% rated voltage		:
11.3	At 110% rated voltage		:
<b>12.0</b>	<b>MAXIMUM CURRENT DENSITY</b>	<b>AMPS/CM<sup>2</sup></b>	<b>:</b>
12.1	H.V. Winding		:
12.2	L.V. Winding		:
<b>13.0</b>	<b>SHORT CIRCUIT WITHSTAND TIME</b>	<b>SEC.</b>	<b>:</b>

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13.1 Three phase dead short-circuit at terminal  
With rated voltage maintained on the other  
side :

13.2 Capability of transformer to remain  
in operation from hot conditions after failure  
of forced cooling with full load :

#### **14.0 DETAILS OF TANK**

14.1 Material :

14.2 Thickness of sides mm :

14.3 Thickness of bottom mm :

14.4 Thickness of cover mm :

#### **15.0 CORE**

15.1 Type :

15.2 Core material :

15.3 Thickness of lamination mm :

15.4 Insulation of lamination :

#### **16.0 COILS**

16.1 Type of coil :

a) H.V. :

b) L.V. :

16.2 Conductor material :

16.3 Insulating material :

a) H.V. - turn :

b) L.V. - turn :

c) L.V. - Earth :

d) H.V. - L.V. :

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**17.0 ON LOAD TAP-CHANGER**

- 17.1 Make :
- 17.2 Type :
- 17.3 Rated current, Voltage Amps. : Vol. :
- 17.4 (a) No. of Steps :
- (b) Step Voltage :
- 17.5 Time of operation between steps :

**18.0 INSULATING OIL**

- 18.1 Approx. volume litre :
- 18.2 10% excess oil furnished? :
- 18.3 IS to which the Oil conforms :
- 18.4 Paraffin based / Naphtha based :

**19.0 BUSHINGS : H.V. L.V.**

- 19.1 Make :
- 19.2 Type :
- 19.3 Reference Standard :
- 19.4 Voltage class kV :
- 19.5 Creep age distance mm/kV :
- 19.6 Weight :
- 19.7 Free space required for bushing removal :

**20.0 MINIMUM CLEARANCES : H.V. L.V.**

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20.1 Between phases

a) In air mm :

b) In oil mm :

**20.2 BETWEEN PHASE & EARTH**

a) In air mm :

b) In oil mm :

**21.0 TERMINAL CONNECTIONS**

21.1 H.V. :

21.2 L.V. :

**22.0 MARSHALLING BOX**

22.1 Weather proof, suitable for outdoor/indoor :

22.2 Degree of ingress protection :

**23.0 TERMINAL BLOCKS**

23.1 Make :

23.2 Type :

23.3 20% Spare terminals furnished? :

**24.0 WIRING**

24.1 Cable type :

24.2 Voltage grade volt :

24.3 Conductor size mm<sup>2</sup> :

**25.0 TRIP & ALARM CONTACTS RATINGS**

**110v Dc**

**240v Ac**

25.1 Voltage :

25.2 Rated/Making Current Amps. :

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**26.0 ACCESSORIES :****27.0 DETAIL OF CONSERVATORS (BOTH)**

27.1 Volume of conservator litre :

27.2 Volume of oil between the highest and lowest levels litre :

**28.0 PRESSURE RELEASE DEVICE**Minimum pressure the device is set to operate kg/cm<sup>2</sup> :**29.0 APPROXIMATE OVERALL DIMENSION**

29.1 Length mm :

29.2 Breadth mm :

29.3 Height mm :

29.4 Crane lift for un-tanking core and coil Assembly(including sling) mm :

**30.0 APPROXIMATE WEIGHTS**

30.1 Core and Coil : Core kg Coil Kg:

30.2 Tank and fittings kg :

30.3 Oil kg :

30.4 Total weight kg :

**31.0 SHIPPING DATA**

31.1 Mode of transportation :

31.2 Manufacturer's recommendation to ensure proper loading/unloading/ transportation enclosed :

31.3 Weight of the heaviest package kg :

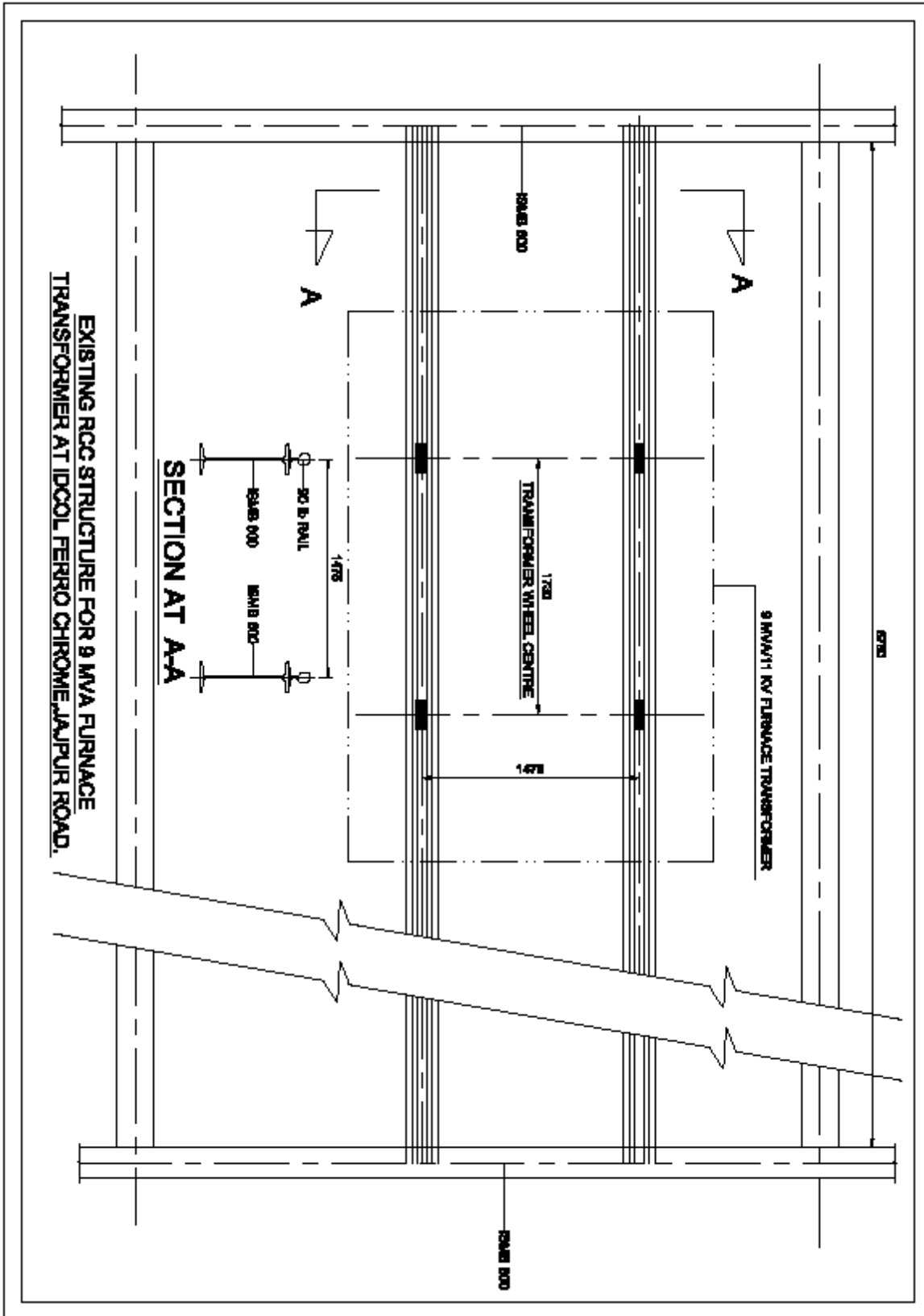
31.4 Dimension of the largest package (L x B x H)mm:

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**32.0 TESTS**

- 32.1 Routine Tests as per IS :
- 32.2 Type / Special Tests as specified :
- 32.3 Tank pressure test:
- a) Test Pressure mm hg :
- b) Duration Hours :
- 32.4 Tank Vacuum Test:
- a) Vacuum mm hg :
- b) Duration Hours :
- 32.5 Core bolt withstand voltage for 1 min. kV :

***Signature & Seal of Tenderer***



*Signature & Seal of Tenderer*

**IDCOL FERRO CHROME & ALLOYS LIMITED, JAJPUR ROAD**  
**Tender Ref No. IFCAL/Elect/19-20/1102** **Date:04.09.2019**

**TECHNICAL BID**

1. Name of Bidder :  
:  
Full address  
Telephone / Cell No. :  
Fax No. :  
E-mail ID :
2. Legal status of the bidder. Please specify whether the bidder is a public or private limited company or registered partnership firm or proprietary concern (Enclose documentary proof). : Submitted/Not submitted
3. Name of Managing Director / each partner / Proprietor as the case may be. : Submitted/Not submitted
4. Please mention the date of commencement of business of the company / firm / proprietary concern. : Submitted/Not submitted
5. PAN : Submitted/Not submitted  
(Enclose a Xerox copy of the PAN Card)
6. Whether visited the site to assess the actual ground condition. : Visited/Not visited
7. Company Profile : Submitted/Not submitted  
(Details of manufacturing facility to be submitted)
8. Proof of supply of at least 02(Two) No's 9 MVA, 11KV / 33KV or higher capacity Submerged Electric Arc Furnace shell Type Transformer . : Submitted/Not submitted  
(Enclose copies of P.O & performance Certificate)
9. Annual turnover of Rs10 Crores minimum during last 3 (three) years i.e, 2016–17, 2017–18 & 2018–19. Submitted/Not submitted  
(Enclose audited balance sheet for last 3 (three) years)

***Signature & Seal of Tenderer***



10.	Bill of material	:	Submitted/Not submitted
11.	Descriptive & illustrative literature of the equipment	:	Submitted/Not submitted
12.	Outline drawing of 9 MVA, 11KV / 90 – 115 – 155 V Submerged Electric Arc Furnace Shell type Transformer, indicating all fittings and accessories and confirming suitability to replace the existing transformer.	:	Submitted/Not submitted
13.	Completion period of Design, Manufacture, Testing, Supply & Supervision of Erection and Commissioning (Enclose BAR Chart of all activities)	:	Submitted/Not submitted
14.	Data to be submitted as per clause 4.0 of Technical Specification	:	Submitted/Not submitted
15.	Documents to be submitted as per clause 4.6 of Technical Specification	:	Submitted/Not submitted
16.	List of clients to whom transformers of similar rating or above have been supplied as per clause 4.3 of Technical Specification.	:	Submitted/Not submitted
17.	Guaranteed Technical Particulars of Transformer as per Annexure B	:	Submitted/Not submitted
18.	Deviation list, if any	:	Submitted/Not submitted
19.	EMD Details	:	
	D.D. No./Date/Amount/Drawn on	:	
20.	Cost of Tender Details	:	
	D.D. No./Date/Amount/Drawn on	:	
21.	BUY BACK offer for existing 9 MVA Transformer	:	Submitted/Not submitted

**N.B.:-**

- (i) **The bidder should enclose the required documents in support of above duly signed and sealed.**
- (ii) **The “Technical Bid” and the “Price Bid” shall be enclosed in separate sealed covers super scribed as “Technical” or “Price” as the case may be. Both the sealed covers and the remaining part of this tender document should be put inside a bigger sealed cover which shall be addressed and delivered as per instructions in Important Information Sheet.**

***Signature & Seal of Tenderer***

**IDCOL FERRO CHROME & ALLOYS LIMITED**

Tender Ref No. IFCAL/Elect/19-20/1102

Date:04.09.2019

**PRICE BIDFOR PROCUREMENT OF NEW TRANSFORMER****PART-I**

<b>Supply:</b>	<b>Quoted Price in INR</b>
1) Basic Price:	: -----
2) Packing & forwarding charges	: -----
3) GST (@ ..... % on Rs.....) (Buyer shall avail input tax credit)	: -----
4) Any other taxes & duties (@ ..... %) (Please specify and mention the rate and amount)	: -----
5) Transportation charges in lumpsum (FOR IFCAL Jajpur Road)	: -----
6) Transit insurance	: -----
Sub Total(Part-I)	: -----

(In words .....Rupees only)

**PART-II**

1) Supervision charges for Personnel for Erection, testing & commissioning	: -----
(No. of days : ..... Charges per diem :.....):	: -----
2) Taxes & duties (To be mentioned)	: -----
Sub Total(Part-II)	: -----

Total (Part-I + Part-II) :

(In words.....Rupees only)

**N.B:**

- 1) Entry tax to be paid by the buyer.
- 2) GST/Works Contract Tax shall be paid extra on supervision of erection, testing & commissioning if applicable.
- 3) Transit insurance to be arranged by the supplier at his own cost.
- 4) Evaluation will be done only on the basis of the total quoted cost of the new transformer.
- 5) In case of Import/Export declaration, all the charges shall borne by the Supplier and necessary assistance will be supported by IFCAL

**Signature & Seal of Tenderer**