**ANDREW YULE & COMPANY LIMITED   
(A Government of India Enterprise)  
Chennai Operation, Electrical Division  
5/346 OLD MAHABALIPURAM ROAD**

**PERUNGUDI, CHENNAI: 600 096**

**TENDER DOCUMENTS FORSUPPLY OF NEUTRAL GROUNDING TRANSFORMER**

**50 KVA, 4KV/400 V, A/c KPCL**

**ANDREW YULE & CO. LTD.** invites limited e-Tender under single stage two-part system **(Part I: Techno-Commercial Bid and Part II: Price Bid)** for supply ofNeutral Grounding Transformer, “**Scope of Work / Technical Specification”** as specified in this tender document.

Tender document may be downloaded from MSTC website [www.mstcecommerce.com/eprochome/aycl](http://www.mstcecommerce.com/eprochome/aycl). Corrigenda or clarifications, if any, shall be hosted on the above mentioned websites only.

AYCL reserves the right to accept or reject any tender.

NEUTRAL GROUDING TRANSFORMER 50 KVA, 4KV/400 V A/c KPCL AS PER ENCLOSED TECHNICAL SPECIFICATIONS(18Pages)

Quantity Required: 2 Nos

Delivery Required: October -2017

**Schedule of Tender**

|  |  |  |
| --- | --- | --- |
| 1. | **TENDER NO.** | **ET-0016/2017-18** |
| 2. | **MODE OF TENDER** | e-Procurement System  Online submission of **Part I** - **Techno-Commercial Bid** and  **Part II - Price Bid** through www.mstcecommerce.com/eprochome/aycl  The intending bidders are required to submit their offer electronically through this e-tendering portal.  **No physical tender is acceptable by AYCL/MSTC** |
| 3. | **E-Tender No. / Event No.** | **AYCL/Electrical Division CO/19/17-18/ET/47** |
| 4. | **Date of publication of e-Tender through publication MSTC/AYCL websites and Central Public Procurement Portal** | **12.06.2017** |
| 5 | **Date of availability of NIT to the Vendors for downloading** | **12.06.2017** |
| 6 | **Earnest Money Deposit** | * **Earnest Money Deposit”** of **Rs.3,000 (Rupees Three Thousand only)**should be paid by thro’ NEFT/RTGS * **Other document as described Other document as described in Annexure II, Sl. No.1** |
| 7 | **Date of Starting of e-Tender for submission of Online Techno-Commercial Bid and Price Bid at** [**www.mstcecommerce.com/eprochome/aycl**](http://www.mstcecommerce.com/eprochome/aycl) | **12.06.2017– 3.00 PM** |
| 8 | **Date of closing of Online e-tender for submission of Techno-Commercial Bid & Price Bid at** [**www.mstcecommerce.com/eprochome/aycl**](http://www.mstcecommerce.com/eprochome/aycl) | 27.06.2017 -11.00AM |
| 9 | **Last date of submission/ uploading details of EMD & other documents at** [**www.mstcecommerce.com/eprochome/aycl**](http://www.mstcecommerce.com/eprochome/aycl) | 27.06.2017 -11.00 AM |
| 10 | **Date & time of opening of Part-I (Techno-Commercial Bid)** | **27.06.2017 – 11.10AM** |
| 11 | **Date & time of opening of Part-II (Price Bid )** | **To be intimated to the eligible vendor separately by email.** |

**List of Annexure**

**Important Instructions for E-procurement Annexure-I**

**Terms& Conditions Annexure-II**

**Online Techno commercial terms Annexure-III**

**Price Sheet Annexure-IV**

**Specification Annexure -V**

**Annexure-I**

**Important Instructions for E-procurement**

**This is an e-procurement event of ANDREW YULE & COMPANY LTD Ltd.**

**You are requested to read the Terms & Conditions** (Annexure- II,III,IV) **of this tender before submitting your online tender. Tenderers who do not comply with the Conditions with documentary proof (wherever required) will not qualify in the Tender for opening of Price Bid.**

1. **Process of E-tender:**

A) **Registration:** The process involves vendor’s registration with MSTC e-procurement portal which is free of cost. Only after registration, the vendor(s) can submit his/their bids electronically. Electronic Bidding for submission of Techno-Commercial Bid as well as Price Bid over the internet will be done. The Vendor should posses Class III signing type Digital Signature Certificate. Vendors are to make their own arrangement for bidding from a PC connected with Internet. MSTC is not responsible for making such arrangement. (Bids will not be recorded without Digital Signature).

**SPECIAL NOTE**: THE PRICE BID AND THE COMMERCIAL BID HAS TO BE SUBMITTED ON-LINE AT www.mstcecommerce.com/eprochome/aycl

**1) Vendors are required   to register themselves online with** [www.mstcecommerce.com](http://www.mstcecommerce.com/)**→ e-Procurement → PSU / Govt. depts. → Register as Vendor under AYCL- Filling up details and creating own user id and password → Submit**.

**2) Vendors will receive a system generated mail confirming their registration in their email which has been provided during filling the registration form.**

**In case of any clarification, please contact MSTC/AYCL (before the scheduled time of the e-Tender).**

***Contact person ( ANDREW YULE & COMPANY LTD):***

1. **Mr. A T E Pandian 2. Mr Kingsley Rueben**

**Manager (Materials) Technical Assistant (EDP)**

**Ph. No: (044) 2496-0793 Mobile No: 91 9884446378**

**Email: atepandian@andrewyule.com Email: reuben@andrewyule.com**

1. **Mr. R.Tamilselvan**

**Engineer (Materials)**

**Mobile. No: 91 9788520864**

**Email: tamilselvan@andrewyule.com**

***Contact person (E-Commerce, MSTC Ltd):***

**1. Mr. ArindamBhattacharjee 2) Mr. Sabyasachi Mukherjee**

**Deputy. Manager (E-commerce) Assistant Manager (E-commerce)**

**MobileNo: 09330102643 Mobile- 07278030407**

**Email: arindam@mstcindia.co.in Email:smukherjee@mstcindia.co.in**

**Landline: (033) 22901004**

1. **MsSumonaMaity**

**Management Trainee (E-Commerce)**

**Mobile-09831155225**

**Email: smaity@mstcindia.co.in**

**System Requirement:**

**i) Windows XP-SP3 or above / Windows 7 Operating System**

**ii) IE-7 or above Internet browser.**

**iii) Signing & Encryption type digital signature**

**iv) JRE 7 update 79 software to be downloaded and installed in the system. Security level should be medium**

**v) To enable ALL active X controls and disable ‘use pop up blocker’ under Tools → Internet Options → custom level** (Please run IE settings from the page [www.mstcecommerce.com](http://www.mstcecommerce.com) once)

1. **Part-I: Uploading of EMD & other Documents:**

**Within specified Date & time the vendor must submit the following documents at**

[**www.mstcecommerce.com/eprochome/aycl**](http://www.mstcecommerce.com/eprochome/aycl)

* **Earnest Money of Rs. 3,000.00 (Rupees Three Thousand only), Payment should be made through RGTS/ NEFT and the UTR details should be uploaded. If EMD exemption is sought the necessary, document (MSME certificate/ Turnover details) should be uploaded.**

**In case of failure to submit the EMD within the stipulated time, the Tender may be rejected.**

**Bidding in e-Tender**:

**a.** No interest will be paid on EMD. EMD of the unsuccessful bidder(s) will be refunded by ANDREW YULE & COMPANY LTD.EMD to be paid along with the Document within the last date as mentioned in SOT.

**b.** The process involves Electronic Bidding for submission of Techno Commercial Bid as well as Price Bid.

**c.** The bidder(s) should submit their Techno Commercial Bids and Price Bid through internet in MSTC website [www.mstcecommerce.com](http://www.mstcindia.com/)→ e-procurement → Psu / Govt depts. → Login under AYCL→ My Menu → Auction Floor Manager → live event → Selection of the live event.

**d.** The bidder should allow to run an application namely enApple by accepting the risk and clicking on run. This exercise has to be done twice immediately after opening of Bid floor. Then they have to fill up Common terms /Commercial specification and save the same. After that clicking on the Techno-Commercial bid, if this application is not run then the bidder will not be able to save / submit his Techno-Commercial bid.

**e.** After filling the Techno-Commercial Bid, bidder should click ‘save’ for recording their Techno-Commercial bid. Once the same is done, the Price Bid link becomes active and the same has to filled up and then bidder should click on “**Save**” to record their Price Bid. Then once both the Techno-Commercial bid & Price Bid has been saved, the bidder can click on the “**Submit**” button to register their bid.

**f.** Vendors are instructed to use link in **My Menu** to ***Upload Documents*** in document library. Multiple documents can be uploaded. Maximum size of single document for upload is 5 MB.

**g.** Once documents are uploaded in the library, vendors can attach documents through *Attach Document* link against the particular tender. For further assistance, please follow instructions of vendor guide.

**h.** In all cases, bidder should use their own ID and Password along with Digital Signature at the time of submission of their bid.

**i.** During the entire e-tender process, the bidders will remain completely anonymous to one another and also to everybody else.

**j.** The e-tender floor shall remain open from the pre-announced date & time and for as much duration as mentioned above.

**k.**  Techno-Commercial bid will be opened electronically on specified date and time as given in the NIT. Bidder(s) can download Technical Comparative statement.

**l.** Price bid will be opened electronically on specified date and time given in the NIT. Bidder(s) can download Price Comparative statement.

**m.**All entries in the tender should be entered in online Technical & Commercial Formats without any ambiguity.

**n.** All electronic bids submitted during the e-tender process shall be legally binding on the bidder. Any bid will be considered as the valid bid offered by that bidder and acceptance of the same by the Buyer will form a binding contract between Buyer and the Bidder for execution of supply. Such successful tenderer shall be called hereafter **SUPPLIER**.

**o.** It is mandatory that all the bids are submitted with Digital Signature Certificate otherwise the same will not be accepted by the system.

**p.** Buyer reserves the right to cancel or reject or accept or withdraw or extend the tender in full or part as the case may be without assigning any reason thereof.

**q.** No deviation of the terms and conditions of the tender document is acceptable. Submission of bid in the e-tender floor by any bidder confirms his acceptance of terms & conditions for the tender.

**s.** Unit of Measure (UOM) is indicated in the e-tender Floor. Rate to be quoted should be in Indian Rupee as per UOM indicated in the e-tender floor/tender document.

E-tender cannot be accessed after the due date and time mentioned in NIT.

All notices / corrigendum and correspondence to the bidder(s) shall be sent by email only during the process till finalization of tender by ANDREW YULE& COMPANY LTD/MSTC LTD. Hence the bidders are required to ensure that their corporate email I.D. provided is valid and updated at the stage of registration of vendor with MSTC. Bidders are also requested to ensure validity of their DSC (Digital Signature Certificate).

Any order resulting from this open e-tender shall be governed by the terms and conditions mentioned therein.

No deviation to the technical and commercial terms & conditions are allowed.

ANDREW YULE & COMPANY LTD has the right to cancel this e-Tenderwithout assigning any reason thereof.

The online tender should be submitted strictly as per the terms and conditions and procedures laid down in the website [www.mstcecommerce.com/eprochome/aycl](http://www.mstcecommerce.com/eprochome/aycl) of MSTC Ltd.

The bidders must upload all the documents required as per terms of NIT. Any other document uploaded which is not required as per the terms of the NIT shall not be considered.

The bid will be evaluated based on the filled-in technical & commercial formats.

Bidders are requested to read the vendor guide and see the video in the page www.mstcecommerce.com/eprochome/mstc of MSTC Ltd. to familiarize them with the system before bidding.

**Annexure-II**

**The following documents are to be uploaded online at**

[www.mstcecommerce.com/eprochome/aycl](http://www.mstcecommerce.com/eprochome/aycl)

1. EMD:Rs. 3,000/= \* by way of RGTS/ NEFT

\* Bidders may request for exemption from submitting EMD (Refer details given in General terms & conditions)

1. Bidder should have supplied transformer of rating 500 KVA/11 KV or above, documentary evidence of transformer in service for minimum 3 years should be enclosed.

**GENERAL & TERMS AND CONDITIONS**

1. EMD:Rs. 3,000.00 (RupeesThree thousandonly), by way of RGTS/ NEFT. Bank Guarantee from any nationalized / scheduled / Multinational Bank for the EMD amount can also be accepted.

For bidders already enlisted with AYCL- Chennai Operation, having outstanding amount morethan the EMD amount or who have already submitted the EMD against our earliertenders or those who have security deposit with Andrew Yule may apply foradjustment of the same. The total EMD should be Rs: 3,000/=

Bidders who are MSMED units may apply for exemption from furnishing EMD bymaking a specific request in writingand enclosing the necessary document in supportof the same**.**

Bidders whose turnover is more than Rs: 50 crores may apply forexemption from furnishing EMD by making a specific request in writingandenclosing the necessary document in support of the same

If reason for non-submission of EMD or adjustment against the outstanding balancefor EMD is not mentioned in Techno-commercial bid of tender, the tender will berejected.

2. THE RIGHTS OF THE COMPANY

Bidders who have quote other payment terms & condition having financial implication will be loaded as per Andrew Yule’s norms.

We reserve the right to accept or reject any or all the tenders or to waive any informality, minor deviation or omission without assigning any reasons whatsoever.

Our Bank details for making RTGS payment.

|  |  |
| --- | --- |
| **Bank Name and Address** | **ALLAHBAD BANK**  **CHENNAI ADYAR BRANCH**  **19,1ST STREET, PADMANABHA NAGAR**  **CHENNAI 600 020** |
| **IFSC Code** | **ALLA0211103** |
| **Account No** | **20276303182** |
| **Account Name** | **ANDREW YULE & COMPANY LIMITED** |

**Annexure-III**

TECHNO-COMMERCIAL TERMS FOR NEUTRAL GROUNDING TRANSFORMER

**(To *be filled online in MSTC portal***)

|  |  |  |  |
| --- | --- | --- | --- |
| SL NO | TERMS & CONDITIONS | | VENDOR RESPONSE |
| 1 | The rate quoted should be firm. | | AGREE |
| 2 | The rate quoted should be F.O.R. Designation (Inclusive of Packing, Forwarding and Insurance) | | AGREE |
| 3 | Neutral Grounding Transformer supplied shall be as per our Technical Specification(Page No 11 to 28) | | AGREE |
| 4 | The NGR should be guaranteed for minimum period of 36 months from the date of receipt at our customer site or 42 months from the date of supply whichever is earlier. During the period if the product is found defective due to any of the above reason you shall undertake to repair the same at FREEOF COST. | | AGREE |
| 5 | Validity period of the offer: Your offer should be valid for acceptance for a minimum period of 60 days from the date of tender opening. | | AGREE |
| 6 | Security Deposit - The EMD amount of the successful Bidder will be retained as security deposit towards the execution of the contract and the same will be released after completion of contract | | AGREE |
| 7 | Liquidated damage - If the delivery is delayed beyond the date of scheduled date of dispatch in the purchase order, penalty will be levied @ 1/2% per week subject to a maximum of 5%. Please confirm acceptance. | | AGREE |
| 8 | | Legal condition: Any contract entered against this tender will be as per the following legal condition-  -It is recorded that this purchase order / contract / agreement is executed and concluded by and between the parties hereto at premises No.5/346, Old Mahabalipuram Road, Perungudi, Chennai 600 096 and in the event any dispute arises out of this agreement between the parties only the appropriate Civil Court in the City of Kolkata shall have the exclusive jurisdiction to entertain, try and determine the said proceedings in exclusion of all other courts. Please confirm acceptance-. | AGREE |
| 9 | | When GST is implemented then GST will be applicable as against the existing taxes & duties | AGREE |
| 10 | | OGA ,Name Plate and Marshalling box drawingto be submitted (Attached) | Remarks Field |
| 11 | | On beingawarded the contract filled Data sheet-C to be submitted (Page No:27-28 ) | AGREE |
| 12 | | EMD : Rs.3,000/= (Attached)  Bidders may request for exemption from submitting EMD (Refer details given in General terms & conditions) | Remark field |
| 13 | | PAYMENT TERMS: - Direct Credit  In case it is agreed fill 14 with number of days of direct credit. | AGREE |
| 14 | | Please indicate the number of days of direct credit.  (Andrew Yule payment terms is minimum 90 days direct credit. If the offered payment terms is less than 90 days, bids will be opened at the sole discretion of Andrew Yule & price will be loaded as per Andrew Yule norms) | Remarks Filed |

**Annexure-IV**

**PRICE FORMAT FORNEUTRAL GROUNDING TRANSFORMER 50 KVA, 4KV/400 V, A/c KPCL AS PER ENCLOSED TECHNICAL SPECIFICATION.**

PRICE FORMAT: -

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Sl.NO | DESCRIPTION | **Quantity** | **BASIC PRICE PER No**  (Rs) | **ED (In %)** | **CST (%) (If not applicable please enter Zero)** | **TN VAT (%) (If not applicable please enter Zero)** | **Landed cost per No (In Rs)** |
|  |  |  |  |  |  |
|  |  | No | A | B | C | D | **Landed Cost = a+((a+(a\*b/100))\*c/100)** |
| 1 | Neutral Grounding Transformer 50 KVA,4KV/400 VA/C KPCL as per enclosed technical specification | 2 |  |  |  |  |  |

**Annexure-V**

**NEUTRAL GROUNDINGTRANSFORMERS**

|  |  |
| --- | --- |
| **ClauseNo.** | **Description** |
| 1.0 | Scope |
| 2.0 | CodesAndStandards |
| 3.0 | DesignRequirements |
| 4.0 | Tests |
| 5.0 | ConstructionalDetails |
| 6.0 | Design |
| 7.0 | Tests |
| 8.0 | Drawings |
| 9.0 | Bushings |
| 10.0 | CableBoxes |
| 11.0 | Marshalling Box |
| 12.0 | ElectricalAndPerformanceRequirements |
| 13.0 | Oil |
| 14.0 | Fittings&Accessories |
| 15.0 | AdditionalFittings |
| 16.0 | OffCircuitTapChangingMechanism |
| 17.0 | Valves |
| 18.0 | Tests |
| 19.0 | Rejection |
| DATASHEET A | |
| DATASHEETS A1 | |
| DATASHEETS B | |
| DATASHEETS C | |

**1.0 SCOPE**

This specification covers the requirements of Neutral Grounding

Transformersandaccessoryequipment.

**2.0 CODESANDSTANDARDS**

2.1 Thedesign,manufactureandperformanceofequipmentshallcomplywith all currentlyapplicablestatutes,regulationsandsafetycodesinthe locality wheretheequipmentwillbeinstalled. Nothinginthisspecificationshallbe construedtorelievethecontractorofthisresponsibility.

2.2 Theequipment shallconform tothelatesteditionofapplicable standards mentionedinDataSheet A1ofSection D1. Incaseofconflictbetween theapplicablestandardsandthisspecification,this contractshallgovern.

**3.0 GENERALCONSTRUCTIONALFEATURES**

All materialusedshallbeofbestqualityandoftheclassmostsuitablefor workingunderthe conditionsspecifiedandshallwithstandthevariationsof temperatureand atmosphericconditions,overload,over-excitation,short- circuitsas perspecifiedstandardswithoutdistortionor deteriorationor the setting upof undue stresses inany part, and also without affecting the strengthandsuitabilityof thevariousparts fortheworkwhichtheyhaveto perform.

**4.0 TANKS**

4.1 Theexteriorof tankandothersteelsurfaceexposedtothe weathershallbe thoroughlycleanedandhavea primingcoatofzincchromateapplied.The secondcoatshallbeofanoilandweather-resistant nature,preferably ofdistinctcolorfromtheprimeandfinishcoats.Thefinalcoatshallbeof glossy,oilandweatherresistingnon-fading paintofspecifiedshade.The interiorofthetankshallbecleanedbyshotblastingandpaintedwithtwo coatsofheatresistantandoilinsolublepaint.

4.2 Steelboltsandnutsexposedtoatmosphereshallbegalvanized.

4.3 Thetanktogether with radiators, conservator, bushings andother fittings shall bedesigned towithstand without permanent distortion thefollowing conditions:

a) Fullvacuumof760mmofHg,for fillingwithoil byvacuum.

b) Internalgaspressureof0.35Kg/cm2(5lbs/sq.in)withoilatoperating level.

4.4 Thetankcovershallbesuitablyslopedsothatitdoesnotretain rain water.

4.5 The materialused for gaskets shall be cork neoprene orapproved equivalent.

**5.0 CORE**

5.1 Themagneticcircuitshallbeconstructedfromhighgradecold-rollednon-



5.2 Thelaminationstructureforthecoretoboltsandcoretoclampplatesshall besuchastowithstandavoltageof2000Vforoneminute.

**6.0 WINDING**

6.1 Windingsshallbeofcopperonly.

6.2 Windingsshallbesubjectedto ashrinking andseasoningprocess,sothatno furthershrinkageoccursduringservice.

6.3 Thecompletedcoreandcoilassemblyshallbedriedin vacuumandshallbe immediately impregnated withoilafter the drying process toensure eliminationofairandmoisturewithin theinsulation.

**7.0 INTERNALEARTHING**

The framework and clamping arrangements of core and coil shall be securelyearthed inside thetankbycopperstrapconnectiontothetank.

**8.0 TERMINATION**

TransformersshallbefittedwithcableboxesasspecifiedinDataSheet-Aof

Section D1.

**9.0 BUSHINGS**

9.1 Bushings shallbe designed and tested to comply with the applicable standards.If typetest certificatesarenotavailable,thesetestsshallalsobe carriedoutinadditionto theroutinetests.

9.2 Bushings ratedfor 400A and above shall have non-ferrous flanges and hardware.

9.3 Fittingsmadeofsteelormalleable iron shallbegalvanized.

9.4 Whenever specified inDataSheet-A ofSection D1,bushingsshallbe suppliedwithterminalconnectorclampsuitableforconnectingthebushing terminal to the purchaser specified conductor.

**10.0 CABLEBOXES**

WhenspecifiedinDataSheet-A,cableboxesshallbesuppliedtosuitthe cablejointfittingsoresealing endsasrequired,tinnedcopperlugstosuit

Specifiedcable compoundandallotheraccessoriesincludingcompressiontypeglands,armourearthclampsandbodyearthterminal.

**11.0 MARSHALLING BOX**

11.1 Wheneveroptionalfittingsas perclause 7.0(e.g.Dialtypethermometerwith auxiliary contactsandBuchholz relay) arespecified inDataSheet-A, the CONTRACTOR shallprovide amarshalling boxandmarshalltoitallthe contacts/terminalsofelectricaldevicesmountedon thetransformer.It shall be in the contractor’s scope to providetheinterconnectioncablingbetween the marshalling box andtheaccessory devices by either PVCinsulatedwiresinGI conduitsorPVC Insulated,brasscableglandsatthe marshallingboxfortheabovementioned,cablesaswellasforterminating the purchaser’s incoming cables from remote panels.

11.2 Themarshalling boxshall be tankmounted, outdoor, andweather-proof, sheetsteel(2 mm thick)enclosed,withhingeddoorhavingpadlockingfacility andpaintedasperclause3.2. Alldoors,coversandplatesshallbefitted withneoprenegaskets. Bottomshallbeatleast 600mm from floorleveland providedwithglandplateand cableglandsasrequired. Top surfaceshallbe sloped.

11.3 Allcontactsforalarm, trip and indication circuits shall each be electricallyindependent,wiredfor auxiliaryD.C.supplyasspecifiedandbroughtoutto separateterminalsattheterminalblocksin themarshallingbox. Terminals shallberatedfor10A. Wiringshallbewith stranded, copperconductorsof sizesnotsmallerthan1. 5sq.mm forcontrolcircuits.

**12.0 ELECTRICALANDPERFORMANCEREQUIREMENTS**

12.1 Transformersshall operatewithoutinjuriousheatingat the ratedKVAat any voltagewithin+/-10%oftheratedvoltageofthatparticulartap.

12.2 Transformersshallbedesignedfor110%continuousoverfluxingwithstand capability

12.3 Overloadsshallbeallowedwithintheconditionsdefinedintheloadingguide oftheapplicablestandard. Undertheseconditions,nolimitationsby terminal bushings,Tapchangersorotherauxiliaryequipmentshallapply.

12.4 Theneutralterminalofwindingswithstarconnectionshallbedesignedfor thehighestovercurrentthatcanflowthroughthiswinding.

12.5 Everycareshallbetakentoensurethatthedesignandmanufactureofthe transformers shallbesuch astoreduce noise andvibration tothe level obtainedingoodmodernpractice. Thecontractorshall ensurethatthe noise levelshallnotbemorethan80db.

12.6 For transformers with tappings, fullpower tappings shall be provided.

**13.0 OIL**

Transformersshallbesuppliedcompletewithtransformeroilcomplyingwith latestapplicablestandard.

**14.0 FITTINGS&ACCESSORIES**

Foroilimmersedtypetransformers,followingfittingsshallbeprovided:

14.1 Bushings,Terminalscompletewithconnectorsfor the purchaser’s external conductorsorcableboxes,asspecifiedinDataSheet-A.

14.2 Neutralbushingterminalcompletewithconnectorforearthconductor specifiedinDataSheet-A.

14.3 Ratingandterminalmarkingplates.

14.4 Two earthing terminals.

14.5 Liftinglugsfor

a. Liftingcompletetransformerwithoiland

b. Liftingcoreandcoils

14.6 Drain-cum-samplingvalvewithplugorcoverplate.

14.7 Dehydratingbreather.Silicagelbreathershouldbeofmetaltypewithview glass.

14.8 Oillevelindicatorwithminimummarking.

14.9 Thermometerpocket.

14.10 Oilfillingholewithcap(fortransformerswithoutconservator).

14.11 Conservatorwithoilfillingholewithcapandadrainplug.

14.12 Air ReleaseDevice.

14.13 Filter Valves.

14.15 Explosionventwithdiaphragm/pressurereliefvalve. Thedeviceshallbe rainproofafteroperation.

14.16 The underbaseprovidedwithchannelforfixingonaplatformorplinth.

**15.0 ADDITIONALFITTINGS**

Followingtobefurnishedif statedinDataSheet-AofSection D1.

to separateterminals,rated220V DC, minimum0.5A. Plainoillevelgauge.



ughtout

Gas andoilactuated (i.e. Buchholz) relay, double float type with avalve betweentherelayandtheconservator.

Gassampling deviceatanaccessible height andanair release cockfor

Buchholzrelay.

**16.0 OFFCIRCUITTAPCHANGINGMECHANISM**

Itshallcomprise:

16.1 Operatinghandleorwheel, accessiblefromgroundlevel.

16.2 Tappositionindicator.

16.3 Padlockingarrangement.

16.4 The tap-changer connections and contacts shall be accessible through an access hole having a bolted gasketted cover.

**17 VALVES**

17.1 One(1)topfiltervalvewithblankingplate.

17.2 One(1)bottomfiltervalvewithblankingplate.

17.3 Fourplainrollersinplaceof fixingchannels

**18 TESTS**

Followingroutinetestsasperapplicablestandardsshallbecarriedoutand



18.1 Measurementofwindingresistance.

18.1 Measurementofvoltageratioandcheckofvoltagevectorrelationship.

18.2 Measurement of impedance voltage/short circuitimpedance (Principal tapping) andloadloss.

18.3 Measurementofnoloadlossandcurrent

18.4 Measurementofinsulationresistance

18.5 Separatesourcevoltagewithstandtest

18.6 Inducedovervoltagewithstandtest.

**19. REJECTION**

PURCHASERmayrejectany transformerifduringtestsor serviceanyofthe followingconditionsarise:

19.1 Noloadlossexceedstheguaranteedvalueby15%ormore.

19.2 Loadlossexceedstheguaranteedvalueby15%ormore.

19.3 Impedancevaluedifferstheguaranteedvalueby+/-10%ormore.

19.4 Oilorwindingtemperatureriseexceedsthespecifiedvalueby50C.

19.5 Transformerfailsonpowerfrequencyvoltagewithstandtest.

Transformeris provedtohavebeenmanufacturednotinaccordancewiththe agreedspecification.

ThePURCHASERreservestherighttoretaintherejectedtransformerand takeit intoserviceuntilthecontractorreplaces, atnoextracostto PURCHASER,the defectivetransformerbyanewacceptabletransformer.

The CONTRACTOR shall repair or replace the transformer within a reasonableperiod to purchaser’s satisfaction at no extra cost to the Purchaser.

**NEUTRAL GROUNDINGTRANSFORMER DATASHEET A**

|  |  |  |  |
| --- | --- | --- | --- |
| **I.** | **GENERAL:** | | |
| 1. | Application/Designation |  | Neutral  Grounding Transformer for ST |
| 2. | QuantityRequired |  | 2 |
| 3. | Installation(Indoor/Outdoor) |  | Outdoor |
| 4. | Degreeof protectionasper IS:2147 |  | IP55 |
| **II** | **RATINGS** |  |  |
| 1. | Rating | KVA | 50KVA |
| 2. | No. of phases&frequency |  | 1Ph.,50Hz |
| 3. | Typeofcooling |  | ONAN |
| 4. | Noloadvoltage HV LV | V V | 4000  400 |
| 5. | Vectorgroup |  | NA |
| 6. | Percentageimpedance | % | 4.5% |
| **III** | **SYSTEMVOLTAGE** |  |  |
| 1. | Nominalsystemvoltage HV LV | V V | 6600  415 |
| 2. | Highestsystemvoltage HV LV | V V | 7200  456 |
| **IV** | **INSULATIONWITHSTAND** |  |  |
| 1. | Impulse(1.2/50 microsec wave)HV | kV | 60 |

|  |  |  |  |
| --- | --- | --- | --- |
| 2. | Powerfreq.(dry&wet) HV LV | KV KV | 20  3 |
| **V** | **TEMPERATURERISE** |  |  |
| 1. | Referenceambient | ◦C | 50 |
| 2. | Oilbythermometer | ◦C | 35 |
| 3. | Windingbyresistance | ◦C | 40 |
| **VI** | **TAPCHANGINGGEAR** |  |  |
| 1. | Taps(offload)required | Yes/No | Yes |
| 2. | Tappings on windings | HV/LV | HV |
| 3. | Total tappingrange |  | +/-5% |
| 4. | Steps | % | 2.5 |
| **VII** | **BUSHINGS** |  |  |
| 1.. | Voltageclass a) HV  b)LV | KV  KV | 7.2  1.1 |
| 2. | Impulse(1.2/50microsec).  Wavewithstand a)HVlineend | KV | 60 |
| 3. | Powerfrequencywithstand a) HV  b)LV | KV KV | 27  3 |
| 4. | Minimumclearanceinair (inmm)  a) HVphasetophase b) LVphasetophase c) HVphasetoearth d) LVphasetoearth |  | 178  25.4  115  25.4 |
|  | MinimumCreepagedistance (inmm)  a) HV  b) LV |  | 230  - |
| **VIII** | **TERMINALCONNECTIONS** |  |  |
| 1. | HVlineendbushing/cable box /cable box  Withdisconnectingchamber |  | Cable box |
| 2. | LVlineendbushing/cablebox/cable box with disconnecting chamber. The cable boxes shall facilitate duplicate cable connection from system neutral to NGT and from NGT to NGR |  | Cable box |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| 3. | BushingTerminals | | |  |
| a)Required | Yes/No | YES |
|  |  | Duringdetailed  engineering |
| 4. | Cable box,lugsandglands |  |  |
| a)Required | Yes/No | YES |
|  |  | Duringdetailed  engineering |
| **IX** | **EARTHINGTERMINAL** |  |  |
| 1. | Materialofconductor |  | GS |
| 2. | Sizeofconductor minimum |  | Later |
| **X** | **MISCELLANEOUS** |  |  |
| 1. | Wheels A.Plain/Flanged  B.Unidirectional /Bidirectional |  | Plain  Unidirectional |
| 2. | VacuumwithstandCapability |  | Main tankwith bushing radiators,  Fittings and  Accessories. |
| **XI** | **ADDITIONALFITTINGSREQUIRED** |  |  |
| a. | Dialtypethermometerwithtwo contacts for oil temp.asperclause7.1ofSection- | D | Yes |
| b. | Plainoillevelgaugewithlowoillevel  Alarmcontactasperclause7.2ofSection-D |  | Yes. |
| c. | Gasandoilactuated relay  (i.e. .Buchholz) |  | Yes |
| d. | Gassamplingdeviceasperclause7.4  of Section D |  | Yes |

|  |  |  |  |
| --- | --- | --- | --- |
| e. | Off circuit tap changing mechanism as clause7.6ofSection-D |  | Yes |
| f) | Valvesas perclause 7.7ofSection-D. |  | Yes |
| g) | Fourplainrollers inplaceof  Fixingchannels |  | Yes |
| h) | Thermometer pocketasperclause No.6.  OfSection-D |  | Yes |
| **XII** | **ESSENTIALSPARES** |  |  |
|  | **DESCRIPTION** |  |  |
| 1. | Completesetofgaskets | Set | One |
| 2. | Bushingof eachtypewithfullmetal  Parts&coppergaskets | No. | One |
| 3. | Dialtypethermometer | No. | One |
| 4. | Oillevelgauge(plain) | No. | One |
| 5. | Explosionventdiaphragms | No. | One |
| 6. | Silicagelbreatherofmetaltypewitha  Viewglass | No. | One |
| 7. | Buchholzrelayorfaultpressurerelay | No. | One |
| 8. | Onevalveofeachtype | Set | One |

**DATASHEET A1**

**APPLICABLESTANDARDS NEUTRALGROUNDINGTRANSFORMERS**

1 PowerTransformer IS:2026 BS:171 IEC:76

2. Fittings&Accessories IS:3639

3. DistributionTransformer IS:1180

4. Loading of oil immersed transformer

IS:6600 BS:CP:1010 IEC:354

5. OIL IS:335 BS:148 IEC:296

6. Bushingsfor>1000VAC IS:2099 .

7 Bushingsfor<1000VAC IS:7421

8. Degreeof protection IS:2147

9. Tests&Tolerancesonguaranteed particulars

IS:2026

10. Buchholzrelay IS:3637

11. Electrical Insulationclassified by thermalstability

|  |  |  |
| --- | --- | --- |
| 12. | ClimateProofing | IS:3202 |
| 13. | IEEEstdNo.32 | RequirementsTerminologyandtest |
|  |  | procedure for neutral grounding |
|  |  | equipment |
| 14. | IS:3043 1966 | Codeofpracticeforearthing |

IS:1271 BS:2757 IEC:85

**DATASHEET B**

**NEUTRALGROUNDINGTRANSFORMERS**

|  |  |  |  |
| --- | --- | --- | --- |
| 1.0 | Manufacturer |  | |
| 2.0 | Transformerallocation/designation | Neutral Grounding  Transformer | |
| 3.0 | Quantityrequired | Nos. | 1 |
| 4.0 | Fullloadrating | KVA | 50 |
| 5.0 | Numberofphases | SINGL E | Single |
| 6.0 | Ratedno-loadvoltages   1. HV   b) LV | KV KV | 4.0  0.4 |
| 7.0 | Typeofcooling |  | ONAN |
| 8.0 | Ratedpercentageimpedance | % | 4.5 |
| 9.0 | Ratedfrequency | Hz | 50 |
| 10.0 | Installation |  | Outdoor |
| 11.0 | Windingconnections  HV LV | Series  Series | Series  Series |
| 12.0 | Highest systemvoltagesfor which transformer windingsare suitable a) HV  b) LV | KV KV | 6.6  0.415 |
| 13.0 | Tappingonwinding |  |  |

|  |  |  |  |
| --- | --- | --- | --- |
|  | Onload/offloadtapes  Total tappingrange % Tapping steps % OnHV/LVwindings | Off-load  +5to-5  2.5  HV | Off-circuit  +5to-5  2.5  HV |
| 14.0 | Maximumtemperatureriseof  a) Oil bythermometer  b)Windingsbyresistancemethod | Deg.CDeg.C | 35 degC  40 degC |
| 15.1 | Load lossat rated current at75 degC  Windingtemperature (guaranteed,subject to  +toleranceasper applicableStandard) | KW | 1.25 ±10% |
| 15.2 | No-load losses (core loss and dielectric loss)at 100%ratedvoltageandfrequency, subjectto toleranceas perapplicable standard | KW | 0.18 ±10% |
| 16.0 | Magnetization current at ratedvoltageand  Frequencyinpercentof fullloadCurrent | % | 5.0 |
| 17.0 | Weight |  |  |
| 17.1 | Windings | Kgs | 50 |
| 17.2 | Core | Kgs | 96 |
| 17.3 | Oil | Kgs | 110 |
| 17.4 | Tank,coolersandfittings | Kgs | 95 |
| 17.5 | Total(17.1to17.4) | Kgs | 351 |
| 18.0 | Efficiencyat75degCfullLoad,U.P.F | % | 97.22 |
| 19.0 | Maximumfluxdensity | Wb/Sq. Mtr |  |
| 19.1 | Atratedvoltage |  | 1.7 |
| 19.2 | At110%ofratedvoltage |  | 1.87 |

|  |  |  |  |
| --- | --- | --- | --- |
| 20.0 | Listofroutineteststobecarriedout |  |  |
|  | Measurementofwindingresistance |  | Yes |
|  | Measurementofvoltageratioandcheckof  Voltagevectorrelationship |  | Yes |
|  | Measurement ofimpedance voltage /short  circuit impedance (Principal tapping) and loadloss. |  | Yes |
|  | Measurementofnoloadlossandcurrent |  | Yes |
|  | Measurementofinsulationresistance |  | Yes |
|  | Separatesourcevoltagewithstandtest |  | Yes |
|  | Inducedovervoltagewithstandtest |  | Yes |

**DATA SHEET–C**

**NEUTRALGROUNDINGTRANSFORMERSINFORMATION**

**TOBEFURNISHEDBYTHECONTRACTOR**

**AFTER AWARDOFCONTRACT**

1. Efficiency at 75 deg.C windingtemperature

a) Atfullload

b) At75%fullload

At50%fullload

2. Maximumefficiencyandloadatwhich itoccurs

3. Regulation atfull load at 75 deg.C

Windingtemperature

a) Unitypowerfactor

0.85powerfactorlag

4. Resistanceperphaseof a) HVwinding :Ohms b)LVwinding :Ohms

5. Conductor area (sq.cm) and current density(Amps/cm2)

a) HVwinding b) LVwinding

6. Typeofwindings a) HV

b) LV

7.Insulating materials for interturn insulation:

a) HVWinding b) LVWinding

8. Insulatingmaterialsfor interwinding insulation

9. Insulatingmaterialsbetween:

a) Windingandcore

c) Laminationsofthecore

10.Make, type, dial size, number of contacts and contactratings (current andvoltage ratings) forthefollowing item,ifprovided:

a) Plainoillevelgauge

b) Dialtype thermometer

d) Gasand oil actuatedrelay

11.0. Thermalwithstandcapability under fullshortcircuit conditions,interms of numberof timesof occurrenceof shortcircuitand corresponding anticipatedpercentage reduction in transformer life.Relevant calculationsshallbesubmitted.