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Electricity Specification 328

Issue 2 November 2021

11/6.6kV Inter-System Transformers

Amendment Summary

ISSUE NO. DATE	DESCRIPTION
Issue 2 **November 2021**	This ES has been moved into the new template. All references to ENA TS 35-1 have been updated and corrected to cover Parts 1 and 2 as marked. Section 14 has been updated to clarify drawing dimensions required on all Tendered drawings. All losses in Appendix A has been updated to cover tier 2 of the EcoDesign Regulations and PEI. Prepared by: Matthew Kayes Approved by: Policy Approval Panel and signed on its behalf by Steve Cox, Engineering and Technical Director

Contents

1 Introduction

This specification sets out the requirements for 11/6.6kV inter-system transformers that are to be connected to the electricity distribution network owned by Electricity North West Limited (Electricity North West).

2 Scope

The inter-system transformers covered in this specification are 11/6.6kV ground mounted units with ratings not exceeding 6MVA and suitable for outdoor installation. They shall be suitable for reverse power flow and the vector group shall be specified on a per site basis.

3 Definitions

Approval	Sanction by the Electricity North West Plant Policy Manager that specified criteria have been satisfied.
Contract	The agreement between Electricity North West and the Contractor for the execution of the Works including therein all documents to which reference may properly be made in order to ascertain the rights and obligations of the parties under the said agreement.
Contractor	The Tenderer (may be one or more) whose tender has been approved and accepted by Electricity North West.
Specification	The Specifications and schedules (if any) agreed by the parties for the purpose of the Contract.
Tender	An offer in writing to execute work or supply goods at a fixed price.
Tenderer	The person or person's firm or company, including personal representatives, successors and permitted assigns, invited by Electricity North West to submit a Tender.

4 Compliance with Standards

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The equipment shall be in accordance with the requirements of IEC 60076, except where otherwise stated. References to Energy Networks Association (ENA) Technical Specifications (TS) 35-1 Parts 1 and 2 are provided to clarify the critical interfaces where connections of a specific method are required.

Tenderers are requested to confirm that the equipment complies with the Electromagnetic Compatibility (EMC) Directive or to state those items that are not considered a requirement for EMC Conformity.

5 Requirements for Type and Routine Testing

5.1 Product not to be Changed

No change in the product, packaging or labelling shall be made after Approval has been granted without prior notice to the Electricity North West Plant Policy Manager, and receipt of a written agreement to the proposed change from the Electricity North West Plant Policy Manager.

5.2 Electricity North West Technical Approval

The Tenderer shall submit, with this Tender, proposals for testing which will demonstrate, to the satisfaction of the Electricity North West Plant Policy Manager, compliance with this Specification. Such tests shall be carried out without expense to Electricity North West.

Alternatively, technical reports and other data may be submitted that the Tenderer considers will demonstrate, to the satisfaction of the Electricity North West Plant Policy Manager, compliance with this Specification. Acceptance of this evidence shall be at the discretion of the Electricity North West Plant Policy Manager but will not be unreasonably withheld.

Approval shall be 'factory specific' and is not transferable to another factory without the written Approval of the Electricity North West Plant Policy Manager.

The Supplier and product shall comply with all the relevant requirements of Electricity North West document CP311.

5.3 Quality Assurance

The Tenderer shall confirm whether or not Approval is held in accordance with a quality assurance scheme accredited under ISO 9000. If not, the Tenderer shall submit a statement of the quality assurance procedures employed to control the quality of the product, including the performance of Suppliers and Sub-Contractors.

The right is reserved for the repeat of such tests, from time to time, that the Electricity North West Plant Policy Manager may deem to be reasonably necessary to demonstrate continued compliance with the Specification.

The Tenderer shall submit, with the Tender, a list of tests and inspections which are carried out on the product prior to despatch which shall demonstrate, to the satisfaction of the Electricity North West Plant Policy Manager, fitness for installation and service.

The Tenderer shall provide free of charge to Electricity North West such samples as may, in the opinion of the Electricity North West Plant Policy Manager, be reasonably required for inspection and/or retention as quality control samples. The Electricity North West Plant Policy Manager will confirm the requirement for samples at the time of Tendering.

The right is reserved for inspections to be made of Tenderer's facilities, from time to time, as deemed reasonably necessary by the Electricity North West Plant Policy Manager to ensure compliance with this Specification and any Contract of which it forms a part.

The Tenderer shall submit, with the Tender, such details of product packaging disposal, as will enable Electricity North West to comply with the requirements of BS EN ISO 14001 - Environmental Management Systems.

5.4 Formulation

The Tenderer shall submit, with the Tender, such details of the formulation and use of the product and associated substances as will enable Electricity North West to comply with the obligations of the Health and Safety at Work Act and the Control of Substances Hazardous to Health Regulations, in the use, storage and disposal of the product. The Tenderer may stipulate, prior to submission of such information, that it is to remain confidential, and the Electricity North West Plant Policy Manager will, if requested, confirm agreement to this prior to receipt of the information.

5.5 Identification Markings

The Tenderer shall submit, with the Tender, details of markings which it is proposed to apply to the product or packaging to identify manufacturing batches or items. The forms and content of such markings shall be subject to the Approval of the Electricity North West Plant Policy Manager and shall in all cases include the Electricity North West approved description and commodity code number.

The Tenderer shall submit, with the Tender, such details of marking gross weight on components, assemblies and packages, as will enable Electricity North West to comply with the Health and Safety Manual Handling Operation Regulations, for components, assemblies and packages supplied with a gross weight over 1kg. The forms and content of such markings shall be subject to the Approval of the Electricity North West Plant Policy Manager.

5.6 Minimum Life Expectancy

The minimum life expectancy of all products covered by this Specification is 40 years.

5.7 Product Conformity

Preference will be given to those Suppliers who can provide suitable product conformity certification to a recognised or specified standard, or an equivalent certification.

6 Requirements for Type and Routine Testing

The Electricity North West Plant Policy Manager shall set out the requirement of the following tests to be carried out by the Supplier at the Supplier's cost.

6.1 Requirement for Type Tests at Suppliers Premises

These are a series of one-off type tests, which are carried out to ensure the satisfactory performance of the product design, under extremes of operating stresses, and of endurance, as may be appropriate, to be determined by the Electricity North West Plant Policy Manager.

These may or may not be destructive tests.

6.2 Requirement for Routine Tests at the Supplier's Premises

These tests may be required to be carried out on every individual unit or component, as specified, or at some regular frequency to be determined by the Electricity North West Plant Policy Manager.

The results of these tests may be required to be supplied to Electricity North West with each unit purchased or retained for inspection, at a period to be determined by the Electricity North West Plant Policy Manager.

NOTE:

Further details of the tests required are provided in Section 12.

7 Technical Requirements

7.1 General

The technical details of the particular enquiry are set out below and the information required to be provided by the tenderer is as shown on the schedule in Appendix C.

7.2 System

The 11/6.6kV inter-system transformer will be connected to an electricity distribution system with the system neutral earthed either directly or through an impedance.

The 11/6.6kV inter-system transformer will generally be operated in the step-down mode although operation in the reverse mode may be necessary at times.

7.3 Rated Power

The rated power shall be specified on an individual site basis using Appendix B. Examples of acceptable values are shown in Appendix A. Cyclic and overload capabilities of the inter-system transformers shall comply with the requirements of IEC 60354 Loading Guide for Transformers, unless otherwise stated.

7.4 Rated Voltage

The voltage ratios shall be 11/6.6kV.

7.5 Tapping Range

Tappings are required on the 11kV winding for a variation of the no-load primary voltage of ±2.5% and ±5.0%. The tap changer shall be capable of reverse power flow.

7.6 Tapping Methods

Tap changing shall only be carried out with the 11/6.6kV inter-system transformer in the de-energised state by means of an externally operated, self-positioning tapping switch. Switch position number 1 shall correspond with the maximum +% tapping.

Tap selector switches shall be capable of being securely locked in any position rendering the switch inoperable. The locking method shall be by a padlock of 5mm diameter shackle.

7.7 Windings and Connections

The 11kV and 6.6kV windings shall be of wire wound copper construction. Alternative designs may be acceptable subject to the Tenderer clearly demonstrating a satisfactory service history over a significant period of time, subject to the Approval of the Electricity North West Plant Policy Manager.

The Vector Group shall be specified on a site by site basis and in accordance with Vector group references of IEC 60076. The Vector group shall be specified by Electricity North West in Appendix B. The windings can be either two winding or auto-transformer construction depending on the vector group.

Transformer designs with BS EN 50180 type separable connectors shall be fitted with a mechanical protection cover designed to prevent inadvertent contact or damage to the connectors.

7.8 Losses

Losses shall be specified on an individual site basis using Appendix B. They will be subject to Approval of the Electricity North West Plant Policy Manager. Examples of acceptable values are shown in Appendix A.

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The loss values in the table shall be taken as the guaranteed losses and shall be compliant with Tier 2 of the European Union Commission Regulation for Transformers No 548/2014 as part of the European Union Ecodesign Directive (2009/125/EC). The tolerances shall be measured in accordance with EcoDesign Directive.

The total actual losses for inter-system transformers supplied in any one year will be monitored. Overall losses exceeding the tolerances in the EcoDesign Directive will be subject to a penalty requiring a refund of the same percentage on the total value of inter-system transformers supplied.

7.9 Sound Power Level

The sound power level derived from measurements made in accordance with IEC 60551 shall be specified on an individual site basis using Appendix B. They will be subject to Approval of the Electricity North West Plant Policy Manager. Examples of acceptable values are shown in Appendix A.

7.10 Impedances

The guaranteed impedances measured on the principal tap position shall be as stated on an individual site basis using Appendix B. They will be subject to Approval of the Electricity North West Plant Policy Manager. Examples of acceptable values are shown in Appendix A which are subject to the tolerances specified in IEC 60076.

7.11 Insulation Levels

Completed transformers arranged for service shall be capable of withstanding test voltages, which shall be 75kV.

7.12 Flux Density

The maximum flux density in any magnetic part shall not exceed 1.9 Tesla with a system voltage of 110% and at a frequency of 47 Hz. Inter-system transformers shall not over flux under these conditions.

7.13 Protection

The protection requirements for use with inter-system transformers will be specified on an individual site basis using Appendix B. All protection used will be subject to Approval by the Electricity North West Protection Policy Manager.

8 Rating and Connection Plates – Terminal Marking

8.1 Rating and Connection Plates

Inter-system transformers shall be fitted with a rating plate generally in accordance with IEC 60076-1 Clause 7.1.

A connection plate is required to show the winding connections and tappings and shall be generally in accordance with IEC 60076-1 Clause 7.2(e). The connection plate may be part

Rating and connection plates shall be of durable and non-corrodible material and shall be securely fixed to suitable supports without forming water traps. The use of adhesives is not permitted as a means of fixing the rating and connection plate.

8.2 Marking of Terminals

Terminals shall be clearly marked and identified. The method of marking shall be subject to the Approval of the Electricity North West Plant Policy Manager. The phase markings on the 6.6kV side shall be a, b, c, and on the 11kV shall be marked A, B, C. For two winding construction inter-system transformers the Neutral shall be marked yn on the 6.6kV side and YN on the 11kV side. For auto-transformer winding construction inter-system transformers the Neutral shall be marked YN. Phase colours shall not be used.

9 Insulating Oil

Inter-system transformers shall be supplied complete with the first filling of insulating oil, unless otherwise specified. For testing and commissioning, the oil shall be naphthenic base and comply with the requirements of IEC 60296 with the following additions:

(a) Gassing tendency shall be less than 5mm^3/min.

(b) Polycyclic aromatics shall be less than 3%.

(c) Additives shall not be used.

(d) It shall be certified free from Polychlorinated Biphenyls (PCB).

(e) Corrosive sulphur and potentially corrosive sulphur content shall be classified as “Non-corrosive” as determined by the test methods prescribed in IEC 62535 and ASTM D 1275B.

For compatibility, the oil shall conform to the requirements of Electricity North West’ current type of oil, particulars of which shall be obtained from Electricity North West at the Contract stage. In the event that the oil to be supplied is other than the Electricity North West’ standard oil, the Contractor shall substantiate its

compliance with IEC 60296 and that there will be no long-term detriment to the mixing of oils as a result of chemical reaction between additives from his oil and additives from Electricity North West' oil.

Electricity North West reserves the right to enter into a separate contract for the supply of insulating oil for use in any inter-system transformers ordered as a result of this enquiry. The names of oil suppliers shall be stated and alternative prices less oil quoted in the price schedule. Should this method be adopted it is envisaged that Electricity North West will order oil to be delivered in reasonable bulk quantities to the works of the Tenderer, free of charge. The timing of such delivery or deliveries is to be negotiated.

10 General Construction and Fittings

10.1 General Construction

The 11/6.6kV inter-system transformers shall comply with ENA TS 35-1 where applicable and shall normally be free-breathing and may be either with or without a conservator. Alternative designs may be acceptable subject to Approval.

10.2 Tank Covers

Tank covers shall be designed and constructed to prevent the ingress and accumulation of water. Fixings shall be suitably protected to prevent corrosion.

10.3 Radiators

Radiators shall be of the directly mounted bolt-on type.

10.4 Gaskets

All gaskets shall be capable of providing a service life of 40 years without leaking. Gasket compression shall be limited so that the compressed thickness is not less than 50% of the uncompressed thickness.

10.5 Fittings

11/6.6kV inter-system transformers shall be equipped with the following items as standard:

(a) Earthing terminal (which shall not be painted).

(b) Combined drain/sampling valve.

(c) Rating and connection plate.

(d) Lifting lugs.

(e) Tapping switch handle.

(f) Oil level gauge with indication of oil level at 15°C, visible range -10°C to +80°C, and fitted with internal anti-vandal baffles.

(g) Plain weatherproof breathing device as detailed in ENA TS 35-1 Part 1 Fig 2 or similar.

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(h) Base skids drilled for roller axles (to allow access to difficult sites the transformer shall have the capability of being fitted with wheels and the wheels being removed from the transformer prior to commissioning).

(i) Sufficient jacking points at each corner of the unit suitable for accepting toe type jacks to engage axle/wheels (jacking points under the main tank are not acceptable).

The following items may be specified depending on individual site requirements:

(a) Oil conservator.

(b) Gas and oil actuated relay.

(c) Oil temperature indicator and contacts.

(d) Marshalling box.

(e) Oil filling hole and cover.

(f) Thermometer pocket.

10.6 Connections and Cable Terminations

Connections shall comprise a three-pole input, three pole output and a neutral connection as detailed below. The 11kV and 6.6kV connection bushings shall be enclosed in a metallic three pole cable box complete with pre-drilled gland plate, suitable for fully insulated dry terminations and capable of accepting 3 x 1c 300mm^2 cables entering from below. The gland plate shall have three pre-drilled 55mm holes. The gland plate shall be supplied complete with the earthing bar as described in Section 10.7. A suitable method of securely supporting the cables is required.

The 11kV and 6.6kV connection bushings shall comply with BS EN 50180 Table 14 Type C complete with stud suitable for use with separable connectors. Separable connectors will be supplied by Electricity North West.

Tenderers shall provide details of the cable box as part of their submission.

For auto-transformer windings, the neutral shall be brought out to a separate single bushing assembly mounted within a metallic chamber suitable for the reception of a single core cable entering from below.

For two winding transformers the 6.6kV neutral shall normally be earthed with the 11kV neutral floating. However, for reverse power flow operation we require the availability to swap the neutral arrangement over using an externally operable off load selector. The neutral selector shall be capable of being securely locked in either position rendering the selector inoperable. The locking method shall be by a padlock of 5mm diameter shackle. The 11kV and 6.6kVneutral cable connections shall be brought out to individual separate single bushing assemblies mounted within two separate metallic chambers suitable for the reception of a single core cable entering from below.

The neutral connection bushing shall comply with BS EN 50180 Table 14 Type C complete with stud suitable for use with separable connectors. Separable connectors will be supplied by Electricity North West.

10.7 Earthing Bar for the use with Inter-System Transformers

An Earthing Bar shall be provided and positioned on the cable box gland plates on all Inter-System Transformers. The bar shall be tested to a fault rating of 21kA.

The bar is to be constructed from flat copper and minimum dimensions are 30mm wide x 8mm deep x 250mm long. A 90-degree bend is to be positioned at 160mm / 90mm along the length.

Drilled holes are to be made along the bar. The long section requires 3 x 12.5mm and 2 x 9.6mm holes evenly spaced. The short length requires 1 x 10.5mm hole at a position of 15mm from the edge of the bar.

Corresponding slot and fixing holes are to be drilled into the cable box gland plates to allow Earth Bar mounting using the spacing washers. (As shown in Appendix F).

Accessories to be provided with the bar:

(a) 3 x M12 zinc plated steel bolts 30mm in length

(b) 3 x M12 zinc plated steel hexagonal nuts

(c) 6 x M12 zinc plated steel washers

(d) 3 x M12 zinc plated steel single coil spring washers

(e) 2 x M8 zinc plated spacing washers

(f) 2 x M8 zinc plated steel bolts 50mm in length

(g) 4 x M8 zinc plated steel hexagonal nuts

(h) 4 x M8 zinc plated steel washers

(i) 2 x M8 zinc plated steel single coil spring washers

(j) 1 x M10 zinc plated steel bolt 30mm in length

(k) 1 x M10 zinc plated steel hexagonal nut

(l) 2 x M10 zinc plated steel washers

(m) 1 x M10 zinc plated steel single coil spring washer

11 Cleaning and Painting

Cleaning and painting shall be in accordance with ENA TS 35-1 as a minimum requirement. Although the preferred colour is Dark Admiralty Grey, colour no. 632 of BS 381C, Tenderers shall offer the colour which reflects the most economic offer. Where the offer is based on a colour different from Dark Admiralty Grey,

the Tenderer is requested to indicate the additional cost of supplying a single transformer in Dark Admiralty Grey. The alternative colour shall be subject to Approval by the Electricity North West Plant Policy Manager.

Where the Tenderer proposes an alternative method of protection that can be demonstrated to have a superior performance, then this will be acceptable subject to Approval. Tenderers shall provide details of service experience of departures from the requirements of ENA TS 35-1.

12 Tests

Electricity North West reserves the right to witness any of the routine or type tests. This will comprise a minimum of all tests on the first of a new design from any factory shall be witnessed by Electricity North West. The Contractor shall cover travelling, accommodation and other reasonable expenses incurred whilst two Electricity North West representatives are witnessing the type tests. The Contractor shall provide a minimum of four weeks' notice of any intended type testing elements.

Electricity North West also reserves the right to return at random one unit of each type or design supplied to the factory for repeat witnessed type tests where all costs shall be covered by the Contractor.

Electricity North West reserves the right to witness routine tests on any subsequent units.

Routine tests as specified in IEC 60076 are required to be carried out on all inter-system transformers. Test results shall be provided on test certificates with key parameters included in the transformer rating plate. One copy of the routine test data should be supplied in electronic format to the Electricity North West Plant Policy Manager.

Type tests in addition to routine tests shall be carried out on the first unit of any design and shall include lightning impulse tests in accordance with IEC 60076, including chopped impulses. The sequence being 1 Reduced Full Wave, 1 100% Full Wave, 1 Reduced Chopped Wave, 2 115% Chopped Waves, 2 100% Full Waves, based on the basic lightning impulse level as defined in Appendix A of this specification.

Temperature rise tests shall be carried out as part of the type test program and shall be carried out on the most onerous tap position.

Sound pressure level tests shall be carried out in accordance with IEC 60551 as part of the type test program.

Calculations demonstrating the short circuit withstand capabilities of the inter-system transformers units may be accepted in lieu of short circuit tests subject to the Approval of the Electricity North West Plant Policy Manager.

13 Tender Information

Tenderers are requested to complete the Schedules provided in Appendices C and D of this specification. During the tender assessment process further information may be requested from the Tenderers.

14 Drawings

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General arrangement drawings shall be provided electronically in .dxf or .dwg file format for each design type. Drawings may be supplied in CD-ROM or via E-mail. The drawings supplied with the Tender shall contain all

of the ENA TS 35-1 Part 2 Dimensions as a minimum. Where requested by the purchaser, the Tenderer may be required to provide more detailed drawings showing construction details or any associated features or fittings.

15 Tools and Equipment

Any specialist tools and equipment which may be required to operate and maintain the transformer shall be supplied as part of the contract. The quantity of each type of tool or equipment required shall be subject to agreement between the purchaser and supplier.

16 Training

The contract shall include for any training required as a consequence of the introduction of new types of transformer. Tenderers shall detail the level of training support offered.

17 Documents Referenced

DOCUMENTS REFERENCED	
Health and Safety at Work Act 1974	
Control of Substances Hazardous to Health Regulations 2002	
Health and Safety Manual Handling Operation Regulations 1992	
ISO 9000:2000	Management and Quality Assurance Standards
IEC 60076	Power Transformers
IEC 60354	Loading Guide for Transformers
IEC 60551	Determination of Transformer and Reactor Sound Levels
BS EN 14001	Environmental Management Systems
IEC 60296	Unused mineral insulating oils for transformers and switchgear

IEC 62535	Insulating liquids. Test method for detection of potentially corrosive sulphur in used and unused insulating oil
BS EN 50180	Specification for Bushings above 1kV up to 36kV and from 250A to 3,15kA for liquid filled transformers
BS 381C	Specification for colours for Identification, Coding and Special Purposes
ENA TS 35-1 Part 1	Distribution transformers – Common clauses.
ENA TS 35-1 Part 2	Distribution transformers – Ground mounted transformers – not close coupled.
CP311	Equipment Approval Policy and Process

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18 Keywords

Transformer;

Appendix A – Example Ratings

MVA Rating	3MVA	6MVA
Voltage Ration kV	11/6.6	11/6.6
Impedence	3.0%	3.5%
Highest Voltage for Equipment Um (r.m.s.) kV	12	12
Rated Lightning Impulse Withstand Voltage kV (peak	75	75
Power Frequency Withstand Voltage kV (r.m.s.)	28	28
Sound Power Level (dB(A))	56	58
Iron Loss (W)	1850	3787*
Copper Loss (W @ 75º C)	22000	20776*

NOTE:

(a) Sound Power Levels are maximum values. Refer to IEC 60552 for correlation between sound power level and sound pressure measurements

(b) Impedance voltages are corrected to 75ºC and expressed as a percentage of normal voltage.

(c) * Losses shall also be subject to a Peak Efficiency Index (PEI) as detailed in the Commission Regulation (EU) No 548/2014 Table 1.4 by linear extrapolation for transformers greater than 3.15MVA in rating.

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Appendix B – General Particulars of Definite Work

(Relevant details to be completed by Purchaser)

ITEM NO.	DESCRIPTION	VALUE	DETAIL
1	Sub Station Name and Address		
2	Number of Units Required		
3	Voltage Ratio	kV	11/6.6
4	Vector Group		
5	Continuous Maximum Rating	MVA	
6	Impedance	%	
7	Highest Voltage for Equipment	Um (r.m.s.) kV	12
8	Rated Lightning Impulse Withstand Voltage	kV (peak)	75
9	Power Frequency Withstand Voltage	kV (r.m.s.)	28
10	Sound Power Level	(dB(A))	
11	Iron Loss	(W)	
12	Copper Loss	(W @ 75º C)	
13	Protection		

Appendix C – Technical Details

ITEM NO.	ITEM	3MVA	6MVA
1	Guaranteed No-Load Loss 11kV (watts)		
2	Guaranteed Load Loss @ 75°C, 11kV (watts)		
3	Impedance @ 75°C, 11kV (% on rating) (a) On Nominal Tap (b) On Maximum Tapping (c) On Minimum Tapping		
4	Maximum Flux Density in any Magnetic Component (Tesla)		
5	Type of Core Steel Used Weight, thickness, grade?		
6	Core Construction Details e.g. step lapped, bolted, banded etc		
7	11kV Windings (a) Type (b) Conductor Material (c) Insulation Type		
8	6.6kV Windings (a) Type (b) Conductor Material (c) Insulation Type		
9	Current Density (a) In 11kV Winding (A/mm^2) (b) In 6.6kV Winding (A/mm^2)		
10	Type of Tap Changer e.g. rotary, linear etc.		

11	Tank Details e.g. welded steel, corrugated etc.		
12	Guaranteed Sound Power Level dB(A)		
13	Quantity of Oil (litres)		
14	Weight of Tank and Fittings (kg)		
15	Weight of Core and Winding Assembly (kg)		
16	Weight of Copper (kg)		
17	Tank Construction (a) Material (b) Thickness of Sides (c) Thickness of Base (d) Thickness of Cover		
18	Type of Radiators Bolt on or integral with tank		
19	Overall Dimensions (a) Length (b) Width (c) Height		
20	Oil Preservation System e.g. free breathing, sealed, hermetically sealed		
21	Oil Head Space Filler Material		
22	Tender Drawing Reference Number		

Appendix D - Schedules

Schedule D1 – Sub -Contractors

ITEM	MANUFACTURER	PLACE OF MANUFACTURE

Schedule D2 – Departures from Specification

Tenderer to state details of any departure from the requirements of this specification

SECTION AND CLAUSE NO	PROPOSED DEPARTURES FROM THE REQUIREMENTS OF THIS SPECIFICATION, WITH DETAILS OF ALTERNATIVE PROPOSALS

Appendix E – Conformance Declaration

SECTION-BY-SECTION CONFORMANCE WITH SPECIFICATION

The Tenderer shall declare conformance or otherwise for each product/service or range of products/services, section-by-section, using the following Conformance Declaration Codes.

Conformance Declaration Codes:

N/A =	Clause is not applicable/appropriate to the product/service.
C1 =	The product/service conforms fully with the requirements of this clause.
C2 =	The product/service conforms partially with the requirements of this clause.
C3 =	The product/service does not conform to the requirements of this clause.
C4 =	The product/service does not currently conform to the requirements of this clause, but the manufacturer proposes to modify and test the product in order to conform.

Manufacturer:
Product/Service Description:
Product/Service Reference:

Name: **Company:** **Signature:** **Date:**

SECTION-BY-SECTION CONFORMANCE			
Section	**Section Topic**	**Conformance Declaration Code**	**Remarks * (must be completed if code is not C1)**
4	Compliance with Standards		
5.1	Products not to be changed		
5.2	Electricity North West Technical Approval		
5.3	Quality Assurance		
5.4	Formulation		
5.5	Idenification Marking		
5.6	Minimum Life Expectancy		
5.7	Product Conformity		
6.1	Requirement for type Tests at the Suppliers' Premises		
6.2	Requirement for Routine Tests at the Suppliers' Premises		
7.1	General		
7.2	System		
7.3	Rated Power		
7.4	Rated Voltage		
7.5	Tapping Range		

7.6	Tapping Methods		
7.7	Windings and Connections		
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Additional Notes:

Appendix F – Earthing Bar and Gland Plate Example