

TRANSNET ENGINEERING

SCOPE OF WORK FOR THE AC TRACTION MOTOR STATOR REWIND

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SUMMARY OF REVISION

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The following revisions have been made in this version:

Change	Description

Document Control

Distribution List	
Document Availability	
Related Policy Documents	
Supporting Procedure	

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1. SCOPE

This Scope of Work (SOW) outlines the requirements, processes, and deliverables for the rewinding and repair of a traction motor stator. It defines the responsibilities of the repairer, the standards to be followed, and the quality benchmarks to ensure the motor is restored to its original operating condition.

The work includes dismantling and inspection of the stator, thorough cleaning, removal of old windings, rewinding with specified copper conductors and insulation materials, Vacuum Pressure Impregnation (VPI) and curing to achieve durable insulation, and comprehensive electrical and mechanical testing.

Upon completion, the contractor will deliver a fully repaired and tested traction motor stator, accompanied by inspection records and test certificates.

2. PURPOSE

Its purpose is to specify the required processing of the referenced component.

3. GLOSSARY

SOW: Scope of Work
AC: Alternating Current
VPI: Vacuum Pressure Impregnation

4. RESPONSIBILITY AND ACCOUNTABILITY

It is the responsibility of the competent Personnel to ensure that the instructions outlined in this SOW are adhered to.

5. RECORD SHEET

All components must be accompanied by a suitable checksheet during the delivery to the client. Checksheet shall be signed off by the persons that conduct the repair and by the Quality Controllers and Quality Assurers.

6. COMPONENT INSPECTION

All integral component parts should be inspected and tested for excessive wear and/or damage. Repair or replace any component which exhibits conditions beyond those stated, or typically accepted, as per instructions.

7. SCOPE OF WORK

The repairer shall perform the following activities:

7.1 Inspection

7.1.1 Inspect stator core, slots, and insulation for damage.

7.1.2 Record winding data and connection

7.2 Cleaning and disassembly

7.2.1 Mechanically and chemically clean stator core and slots.

7.2.2 Remove any rust, grease, and contaminants.

7.2.3 Strip old windings and insulation.

7.3 Rewinding

7.3.1 The stator windings shall be pre-formed wound coils manufactured from a copper conductor using insulation class 200.

7.3.2 Prepare slots with new class 200 insulation material.

7.3.3 Rewind using stator coil.

7.3.4 The stator windings shall be pre-formed wound coils manufactured from a copper conductor.

7.3.5 All coil connections shall be brazed and insulated.

7.3.6 Ensure brazed connections for durability.

7.4 Vacuum Pressure Impregnation & Curing

7.4.1 Apply Vacuum Pressure Impregnation (VPI) with insulation class 200 resin.

7.4.2 Oven cure to remove moisture and achieve void free insulation.

7.5 Testing

7.5.1 Insulation Resistance (IR) Test

- Measure the insulation resistance between terminals of U and V or U and W or V and W and stator frame in order. For the winding, cold insulation resistance shall be more than 200MΩ.

7.5.2 Polarization Index (PI) Test

- Ratio of IR values at 10 minutes and 1 minute.
- Indicates insulation condition and aging.
- PI ≥ 2 is generally considered acceptable.

7.5.3 High-Potential (Hi-Pot) Test

- Apply high potential 50Hz AC test voltage on the winding and frame for 1min.

7.5.4 Winding Resistance Test

- Measures resistance of each phase winding.
- Ensures uniformity and balance across phases.
- Measure the cold resistance of the winding between terminals of U and V or U and W or V and W.

7.5.5 Surge Comparison Test

- Applies high-frequency pulses to windings.
- Compares waveforms between phases.
- Identifies shorted turns, inter-turn faults, or incorrect coil connections.

7.5.6 Core Loss Test

- Measures losses in the stator core due to eddy currents and hysteresis.
- Ensures the core is not damaged or deteriorated.

7.6 Brazing, cables and terminal lug

7.6.1 Replace the power cables and lug terminals with the same component of same specification, if necessary.

7.6.2 Braze the terminal box connection.

7.7 Paint Work

7.7.1 Paint the interior frame.

7.7.2 Paint the exterior frame.

7.7.3 Protect all machined surfaces

7.8 Materials & Standards

7.8.1 All consumables and spares shall be supplied by the repairer, unless otherwise stated.

7.9 Quality Assurance

7.9.1 Stage inspections at dismantling, rewinding, and testing.

7.9.2 Documentation of test results.

7.9.3 Acceptance criteria: IR ≥ 2 balanced winding resistance

7.10 Deliverables

7.10.1 Fully repaired and tested traction motor stator.

7.10.2 Test certificates and inspection reports.

7.10.3 Old stripped copper winding returned to Transnet.

7.10.4 Stator frame protected against damages and moisture.

DOCUMENT AUTHORITIES

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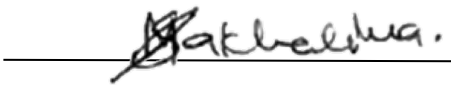
SIGNATURE: 

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