

	SCOPE OF WORK (SOW)	TURBO GEN SERVICES (TGS)
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1 Introduction

During recent generator outages and breakdowns, it has been noted with concern that preservation of generator rotors and stators is not consistently adhered to. This non-compliance is mainly driven by:

- Time constraints during outages and breakdown recovery
- Unavailability or defective preservation equipment (e.g. CRR blankets, dehumidifiers)
- Preservation activities not being formally included in the outage scope of work

Consequently, several generator components have exhibited **low insulation resistance (IR)** values during pre-RTS testing. This has resulted in:

- Extended drying cycles
- Delays to electrical barring and synchronization
- Increased risk to insulation systems and long-term asset health

Moisture ingress, uncontrolled ambient conditions, and temperature fluctuations remain key contributors to insulation deterioration when preservation controls are not applied.

2 Objectives

This document aims to motivate for the formal inclusion of generator rotor and stator preservation activities into the approved scope of work during generator outages and forced breakdowns. Furthermore, this submission aims to mitigate insulation degradation risks, reduce extended outage durations, and support reliable and predictable return-to-service (RTS) of generating units.

3 Documentation

- A service report will be compiled and provided to ERI, to the ERI TGS standard. The report will contain a high level description of the work done during the refurbishment. It will contain the approved PQP for work to be executed and all related check sheets and reports. All technical notifications will be shown as well. It will contain a section on spares used report.
- PQP to be compiled and presented to Engineering (Eskom and ERI TGS) for approval before start of work. Report to be accepted by ERI TGS Engineering.

4 Scope of Work (SOW)

Technical Specifications

Coil Retaining Ring (CRR) Heating Blanket – Component Specification		
Item	Component	Technical Requirements / Specification
1	Carpet	Lightweight and flexible; easy to roll up for storage
		Non-slip textile floor covering
		Upper layer of pile attached to backing
		Material to be wool or fibre, twisted tuft construction
2	Aluminium Foil	Durable, reliable, and flexible
		Free of halogens and PVC
		Must be installed between the outer carpet and the electric foil heater
3	Aluminium Heater	Wire conductors spaced a minimum of 70 mm apart
		Wires must be SABS approved
		All components to comply with relevant EMC and LVD British and European standards
		Heating cable: 2-core, grounded, fluoropolymer plastic insulation jacket
		Connecting leads: 2-core, 17 AWG with grounded braid
		Connecting lead length: 4 metres
4	Isolator	Must be installed together with the thermostat
		Installation to comply with electrical specifications
5	Thermostat	Temperature control via dial setting: 5–40 °C
		On/Off switch
		Power consumption: 5 W
		Switching differential: 0.5 K
		Protective housing: IP20
		Housing material: Anti-flammable PVC
		Floor sensor: Rubber-thermoplastic NTC sensor
		Minimum sensor cable length: 3 metres
6	Calico	Sensor cable to be connected with a 4 m wire and isolator switch
		Forms the outer skin of the blanket between the retaining rings and carpet
		Material: 100% cotton



Figure 1: Example of CRR Blanket

Coil Retaining Ring Dimensions Per Design

Station & component	Blanket length	Blanket diameter	Blanket width
Matla gen (Set of 2)	3926mm	1250mm	850mm
Koeberg gen rotor (Set of 2)	5487mm	1750mm	675mm
Kendal gen rotor (Set of 2)	3849mm	1225mm	735mm
Hendrina gen rotor (Set of 2)	3455mm	1100mm	620mm
Komati gen rotor (Set of 2)	3173mm	1010mm	740mm
Majuba gen rotor (Set of 2)	3933mm	1252mm	790mm
Tutuka gen rotor (Set of 2)	3933mm	1252mm	790mm
Grootvlei gen rotor (Set of 2)	3361mm	1070mm	670mm
Camden gen rotor (Set of 2)	3430mm	1092mm	723mm
Matimba Diode wheel (Set of 2)	3350mm	1066mm	720mm
Port Rex/Acacia gen rotor (Set of 2)	2978mm	948mm	470mm
Arnot gen rotor (Set of 2)	3898mm	1241mm	720mm
Ankerlig gen rotor (Set of 2)	3787mm	1206mm	890mm
Garikwa gen rotor (Set of 2)	3787mm	1206mm	890mm
Medupi gen rotor (Set of 2)	3926mm	1250mm	860mm
Kusele gen rotor (Set of 2)	3926mm	1250mm	860mm
Lethabo exciter (Set of 2)	2438mm	776mm	180mm
Duvha exciter rotor (Set of 2)	2293mm	730mm	320mm
Majuba exciter rotor (Set of 2)	2293mm	730mm	320mm
Tutuka exciter rotor (Set of 2)	2293mm	730mm	320mm
Duvha diode wheel (Set of 2)	3518mm	1120mm	980mm
Majuba diode wheel (Set of 2)	3518mm	1120mm	980mm
Tutuka diode wheel (Set of 2)	3518mm	1120mm	980mm
Koeberg diode wheel (Set of 2)			

5 Comply With Safety Health Environment and Quality Requirements

- Comply with the Occupational Health and Safety Act and Rotek Engineering SHE System requirements
- Comply with the Eskom Plant Safety Regulations.
- Stop unsafe work activities and report to the Project / Site Manager for rectification
- Control and maintenance of ISO Quality system in accordance with the Business Management System in relation to this Job Function.
- Comply with policies, procedures and instructions.

6 SHEQ Requirements

All service providers are expected to comply with, but not limited to the following:

- Compliance with the Occupational Health and Safety Act 85 of 1993 is compulsory.
- Adherence to Quality Management System Policies, Procedures and related requirements of ISO 9001.

- Adherence to Occupational Health and Safety Policies, Procedures and related requirements of the OHSAS 18001.
- Adherence to environmental aspects, related impacts and legal requirements associated with work activities in accordance with ISO 14001.
- Adherence to Life Saving Rules.
- Compliance with the Eskom Plant Safety Regulations.
- Only authorised documents and processes are to be used in the execution of duties.
- Continuously seek methods for improvements from a process, quality and safety perspective.
- Obey all instructions.
- Familiarize with:
 - The applicable work instructions and procedures in place.
 - Safe working conditions and procedures.
 - All legal and contractual requirements.
 - Discipline and integrity.
- Compliance to all ERI Work Instructions, processes, procedures, and standards
- Adherence to ERI's disciplinary code or practice.
- Set example to co-workers and others.
- Participate in Risk Assessments.
- Responsible for own safety.
- Responsible for Personal Protective Equipment issued.
- Execute duties promptly and safely.
- Safeguard tools and safety equipment issued.
- Keep good relationship with all personnel.
- Compile a HIRA for each and every activity that needs to be performed.
- Ensure the activities are carried out following a Works Instructions and Procedure.
- Adhere to clean condition policy where required.
- All activities to be carried out as per the documented processes and comply with the requirements of ISO and OHSAS certification
- Service provider to comply to Eskom PPE (Personal Protective Equipment) Policy with regards to issuing of PPE to resources
- Proper use of PPE to be followed
- Ensure that tools and equipment are stored correctly in a safe place.

7 Key Deliverables

The following deliverables are to be met by the service provider:

During the project duration:

- No customer complaints

- Compliance to all ERI Work Instructions, processes, procedures, and standards
- No SHEQ incidents
- Project Milestones are to be achieved on time, or earlier

8 Key Performance Indicators

The performance of the contractor will be evaluated on the KPIs in the table below:

- The service provider will be responsible for the successful commissioning of the blanket where services were required.
- The blanket must operate for a continuous 2 months without any defects to be effectively rendered a success.
- Any defects that are noted within the first 12 months on the service areas requested will be corrected by the service provider at own cost.