# TES

#### Annex 1 - GG3 GENERATOR ROTOR REWINDING

Locations: ÚFP (Demounting Site) TES + WKV (Technical Repair Services)

### **Expected Outcome:**

- Increased rotor lifespan
- Improved reliability
- Enhanced electrical performance

#### Detailed Scope of Work:

- 1. Demounting Site (UFP) Work
- 1.1 Preparation Stage dismantling in covered building
- Cooling circuit drainage
- Partial piping dismantling
- Workspace preparation
- Electrical connections and terminal boxes removal
- Generator and flywheel heat exchangers removal
- Upper covers of of stator and wlywheel removal
- 1.2 Component Dismantling
- Generator and flywheel exchanger removal
- Stator and flywheel top cover removal
- Rotor component disconnection
- End sensor dismantling
- Collecting assembly disconnection
- Drive disconnection
- **1.3 Bearing Operations**
- Dismantling of upper parts of all three bearings
- Bearing shell removal
- Wooden transport shell installation
- 1.4 Flywheel Dismantling
- Rotor-flywheel connection removal
- Pin extraction

All work in the first stage takes place in a covered building, 5t bridge crane is required for disassembly. Dismantled components will be stored in the ÚFP premises (weight of all components less than 5t). Due to their dimensions, the generator and flywheel heat exchangers will remain in the building together with the flywheel (dismantling in the 2nd stage).

## Roof removal (ŽS OHLA)

- 2. Heavy-tonnage manipulation with a truck crane
- 2.1 Dismantling the flywheel (mobile crane)
- Removing the flywheel from the axial position
- Placing the flywheel outside the machine (in the building)

TES VSETIN a.s. Jiráskova 691 755 01 Vsetín Czech Republic



Company ID: 175029069 VAT-No.: CZ17529069 The company is incorporated in the Commercial Register administered by the Ostrava Regional Court, Section B, File 11505.



- 2.2. Handling the stator and rotor
- Lifting the rotor and stator
- Placing it on a transport frame
- Packing
- Loading it on a truck for transport to Vsetín
- 3. Rotor Processing
- 3.1 Rotor Disassembly
- Component disconnection
- Complete rotor winding dismantling
- Paint removal and cleaning
- 3.2 New Component Manufacturing
- Rotor spacers
- Winding supports
- Winding material
- 3.3 Rewinding Process
- Rotor rewinding with quality enhancement measures
- Impregnation
- Balancing
- Electrical testing
- Rotor centrifugal process and control run
- 4. Quality Enhancement Measures
- 4.1 Winding End Insulation Improvements
- Additional insulation sleeves
- Glass textile insert for precise conductor positioning
- Prevents contact between first winding turn and iron
- Enables better conductor compression and tensioning
- Increases axial structural integrity
- 4.2 Wire Bandaging
- Locking system bandaging
- Polyglass H200 tape application on last two conductor layers
- 4.3 End Winding Reinforcement
- Non-calendered Nomex inserts
- Material: ISONOM NMN 2035-0.3 or Nomex 411
- Enhances end winding stiffness
- Allows impregnation varnish absorption and thus glue the layers of conductors together
- 4.4 Technological Compression
- Controlled end winding compression during impregnation (compression of the windings with spacers between the poles can cause a slight bulge of the conductors at the front. Therefore, during impregnation, straight parts of the winding faces will be similarly compressed)
- PTFE foil separation of the last layer of winding and tooling

The rotor will be inserted into the stator and transported to the UFP for reassembly.

5. Reassembly at UFP Site

5.1 Heavy-Tonnage Manipulation



Company ID: 175029069 VAT-No.: CZ17529069



- Stator and rotor transportation and positioning
- Bearing installation
- Bearing shell replacement and bearing assembly
- Hydraulic system connection
- Flywheel installation and connection

#### Roof assembly

- 5.2 Final Assembly Stage
- Cover installation
- Collector assembly
- Drive connection
- Heat exchangers installation
- Terminal board and boxes mounting
- Electrical installation and connection





TES VSETIN a.s. Jiráskova 691 755 01 Vsetín Czech Republic



Company ID: 175029069 VAT-No.: CZ17529069 The company is incorporated in the Commercial Register administered by the Ostrava Regional Court, Section B, File 11505.

www.tes.cz