GT generator electrical tests

Sorgenia Termoli CC Power Plant

Request for quotation specification

Compilatore	Data compilazione	Verifica	Verifica	Verifica	Approvazione	Data approvazione
S. Patrone Tecnologie	05/10/2015	**G. Bordiga** Tecnologie				

Rev.	data	Compilatore	Descrizione e motivazioni della revisione
0	05/10/2015	S. Patrone	Prima emissione

LISTA DISTRIBUZIONE			
	*		

1 Premises

Subject of this specification is the electrical tests to be carried out on the hydrogen cooled generator General Electric in service in Termoli combined cycle power plant, owned by Sorgenia Power Spa.

The generators went on duty in October 2006.

The activities covered by this specification must be done in August 2016.

The Customer is in possession of most of the drawings of the generator, the Contractor shall develop the activities from these or independently with its own documentation.

2 Scope of work

The activities that the Contractor shall perform and everything that is a prerequisite (e.g. insulation removal and reinstallation, instrumentation removal and reinstallation, possible cuts, tie-in's, weldings restoration, etc.) are distinguished as follows.

2.1 Engineering activities

The Contractor shall propose and quote any additional interventions if it will be deemed necessary.

It may also propose alternative interventions that will be motivated and quoted individually.

The Contractor must also indicate in the quotation the size of the work areas, around the generator and inside the power plant, needed for operation, storage and handling (see attached drawings). The steam turbine maintenance will be on going during the generators maintenance. Therefore the use of areas and shared tools in the facility shall be agreed by the parties (mainly the bridgecrane). Any issue will be discussed and fix at the periodically held coordination meetings.

The offer shall include the following:

- Detailed description of the activities;
- Detailed schedule both of materials / tools delivery and site works;
- List of exclusions;
- Economic estimation of the work;
- Estimation of the bill of quantity of man hours;
- Organizational chart and work planning (supervisors, workers, shifts, timing, etc.)
- Reference list;
- Guaranteed values;

In case of unexpected findings, the Contractor shall immediately notify the Customer and propose a corrective intervention, providing the economic estimation, the schedule and any need of spare parts.

2.2 Services by the Contractor

Interventions, which will be carried out by the Contractor on the generator and its auxiliaries, are divided as follows:

• Electrical tests listed in paragraph 3.

Preparation of a complete report with a description of the tests performed and the results.

2.3 Services by the Customer

The Customer will provide the Contractor the following:

- Personnel for the securing of the machine and for the electrical disconnections and, at the end of the works, for the connections and commissioning.
- Compressed air, service water and 400 Vac three-phase 50 Hz power supply;

3 Components involved in the inspection

3.1 Electrical tests

1 – Measurement of the operating characteristics and relative analysis.

Generator in operation
1 – Partial discharge testing online.
2 – Flux probe analysis.
3 – Relief of rotor shaft voltage and harmonic analysis, measurement of bearing current and grounding brushes voltage drop measurement.

Rotor at 0 rpm
1 – Detection of rotor winding inter turn short circuit with Time Dominion Reflectometry (after shutdown).
2 – Measurement of the rotor winding total static impedance.
3 – Measurement of rotor winding insulation resistance.
4 – Measurement of rotor winding ohmic resistance.
5 – Measurement of brush holders insulation resistance.
6 – Relief of rotor shaft current.

Stator at 0 rpm
1 – Measurement of the stator winding single phases insulation resistance and determination of the dielectric polarization.
2 – Tan delta test @ phase voltage and capacity measurement.
3 – Partial discharge testing offline.
4 – Measurement of stator winding ohmic resistance, of the single phase.

3 Guarantees

The Contractor shall ensure that the work will be performed according to good maintenance and engineering practices, and shall guarantee the quality of spare parts used (including consumables).

The Contractor must also provide the following guarantees:

- Number of days from generator at 0 speed (stop of steam turbine turning gear) to generator ready for operation.

- A final technical report complete with graphs on the values obtained with any suggestions. The final report, written in Italian, will be transmitted in electronic form within 10 working days from the date of execution.

4 Attachments

Annex A – Generator data sheet