Abstract

This document provides a detailed description of the technical characteristics and condition of a Siemens SGT-500 gas turbine, serial number B000232. The turbine, located at the Fuerteventura power plant , is coupled with an ASEA GTP 1050 EG generator (serial number 7253060). At the time of the Level 5 inspection carried out in January–February 2023, the unit had accumulated 49,218 operating hours, and 7,000 starts

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1. Introduction

This document provides an overview of the main technical and operational characteristics of a gas turbine currently available for transfer, as well as its present condition.

The opportunity specifically concerns:

- a complete power plant, liquid-fuel fired, including all auxiliary systems required for operation and grid connection.

The report therefore includes:

- key technical data of the unit,
- a summary of maintenance activities and current condition,
- supporting documentation (certificates, test reports, and manuals), aimed at assessing the full availability of the plant for transfer and commissioning at a new site.

2. Main data

GT	
Manufacturer	Siemens
Model	SGT-500
Nominal power	*15.1 MW*
Year of construction	1986
Alternator	
Manufacturer	ASEA
Model	GTP 1050 EG
SN	7253060
Main transformer	
Manufacturer	OASA
Type	Three-phase
Frequency	50 Hz
Service	Contunous – outdor installation
Year of manufacture	1980
SN	36938
Primary Voltage	66.0 kV
Secondary Voltage	11.250 kV

Table 1 Main data

3. Operating hours

Detailed operating hours since 1999, the year in which the turbine was relocated to the Formentera plant.

	TG	
	Starts	**Cumulative hours**
Tot.	7000	49218

Table 2 Operation hours

4. Inspection

Between January and February 2023, a Level 5 (L5) inspection was carried out at the Fuerteventura power plant on the Siemens SGT-500 gas turbine, serial number B000232**,** coupled with an ASEA GTP 1050 EG generator (S/N 7253060)**.** The inspection was performed by Siemens Energy technical staff, with the support of ENDESA as owner. At the time of the inspection, the unit had accumulated 49,218 operating hours**,** 98,248 equivalent operating hours**,** and 7,000 starts**.**

4.1 Scope and Findings

The inspection included visual checks**,** dimensional controls, and non-destructive testing **(**NDT) on all main subsystems: compressors, combustion chamber, high and low-pressure turbines, power turbine, bearings, and auxiliary systems.

- Air intake system: extensive corrosion on stairs, platforms, and access hatches.
- Low Pressure Compressor (LPC)**:** widespread corrosion, cracks and deformations on guide vanes and blades, wear on several internal components.
- High Pressure Compressor (HPC)**:** cracks and missing soldering on stator segments, impact marks and deformations on several blades.
- Combustion system: carbonized deposits and blockages on burners #1 and #7, corrosion in gas supply connections, defects on flame tube fastenings.
- Combustion chamber: impact marks and internal oxidation.
- High Pressure Turbine (HPT)**:** severe wear of sealing strips, cracks on stator rings, suspected high-temperature corrosion on blades, deformations and damage on disc bolts and supports.
- Low Pressure Turbine (LPT)**:** oxidation and cracks on guide vane rings, damaged sealing strips, dents and deformations on blades.
- Power Turbine (PT)**:** general oxidation, minor tip deformations on blades, sealing rings out of specification.
- Bearings**:** most bearings showed heavy wear, scratches, or missing bearing metal; only LP bearing no.6 was found in acceptable condition after cleaning.
- Casings and structures: external corrosion, cracks in covers, degraded insulation.
- Exhaust casing and duct: missing panels and insulation, broken or loose deflectors.

4.2 Conclusion

The 2023 inspection revealed widespread deterioration across several sections of the turbine, including corrosion, wear, cracks, and deformations beyond acceptable tolerance limits.
The unit, although still in place, is currently in a condition that requires a complete overhaul to ensure its reliability, safety, and continued operation in future service cycles.

5. General conditions

Between 2 and 6 September 2024**,** a visual inspection and partial dismantling of the Siemens SGT-500 gas turbine (Stal-Laval GT35, S/N B000232), formerly installed at C.D. Las Salinas – Fuerteventura, were carried out.
The activity was performed by specialized technical personnel as part of the evaluation of the unit's residual condition.

5.1 Findings

Numerous turbine components were stored in wooden crates, originating from the disassembly performed during the 2023 overhaul.
The inspection confirmed that the majority of components show advanced deterioration, including corrosion, wear, cracks, and surface damage beyond acceptable limits.
No component is properly coded or traceable within the Siemens standard spare parts catalog, making reuse or reclassification difficult.
Several items were classified as scrap, while others would require extensive refurbishment at Siemens facilities.

5.2 Assessment

The overall technical condition of the disassembled turbine is poor, with most components not suitable for immediate reuse.
Although some parts could theoretically be refurbished, the cost of refurbishment is disproportionate to the market value of the unit.
The lack of standard coding also makes reconstruction or certification of the components costly and complex.

5.3 Conclusion

Following the visual inspection and partial disassembly, it is concluded that:
Most turbine components are no longer usable in their current state.
No components are coded, preventing direct integration into the Siemens spare parts system.
The cost of rebuilding or refurbishing the components is so high that it is not economically feasible, even for a potential future buyer.
Consequently, the turbine cannot be considered a viable source of spare parts nor a candidate for refurbishment, and its residual value should be regarded as very limited.


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