

# **CORRECTED PERFORMANCE AND SOLONOX EMISSIONS TEST SUMMARY GAS FUEL**

**Solar Turbines - Žebrák, Czech Republic**  
**One Shaft Gas Turbine Certified Test Report**  
**Corrected to Sea Level, No Duct Losses, 60% Rel. Humidity and Standard Temp.**

**Equipment Summary**

|           |             |          |            |          |          |
|-----------|-------------|----------|------------|----------|----------|
| GP S/N    | OHH21-T5133 | Date     | 2021-09-15 | Rating   | 7801S    |
| RGB S/N   | NOV09-12405 | Time     | 4:03 PM    | CS Curve | PT30137A |
| Fuel Type | Gas         | Data Pt. | 7          | Std Temp | 80       |

**Corrected Performance Summary**

| <u>Parameter Name</u> | <u>Units</u> | <u>Results</u> | <u>Min</u> | <u>Max</u> |
|-----------------------|--------------|----------------|------------|------------|
| Corrected NGP         | %            | 100.0          | 99.9       | 100.1      |
| Corrected Power       | kW           | 5089           | 4940       |            |
| Corrected Heat Rate   | Btu/kW-hr    | 11225          |            | 11560      |
| Corrected TRIT        | °F           | 1951           | 1947       | 1953       |
| Final IGV Angle       | °            | 5.0            | 2.0        | 8.0        |
| Thermal Efficiency    | %            | 30.399         | 29.517     |            |

**Engine Parameters**

| <u>Parameter Name</u> | <u>Units</u> | <u>Results</u> | <u>Min</u> | <u>Max</u> |
|-----------------------|--------------|----------------|------------|------------|
| Air Inlet Temperature | °F           | 73.2           |            |            |
| T2 Spread             | °F           | 0.4            |            | 10.0       |
| Corrected T5          | °F           | 1303.3         |            |            |
| T5 Base               | °F           | 1302.4         |            |            |
| T5/T3                 | ratio        | 0.7312         | 0.7000     | 0.7800     |
| T5 Delta              | °F           | 28.9           |            | 150.0      |
| Corrected T7          | °F           | 977            | 948        |            |
| T7 Delta              | °F           | 8.5            |            | 20.0       |
| Corrected Mass Flow   | lb/s         | 44.6           |            | 47.1       |
| P2/P1                 | ratio        | 11.8           | 11.3       |            |
| PCD                   | psig         | 149.1          |            |            |

**Full Load Lube Oil System Parameters**

| <u>Location</u>            | <u>Pressure</u> | <u>Flow</u> | <u>Data Pt.</u> | <u>10</u> |
|----------------------------|-----------------|-------------|-----------------|-----------|
| Brg. 1 & RGB               | 57.2 psi        | 56.1 gpm    | 41.5            | 59.4      |
| Brg. 2, 3 & Thrust         | 50.2 psi        | 41.1 gpm    | 29.4            | 41.3      |
| Lube Oil Temperature       |                 | 136.0 ° F   | 110.0           | 155.0     |
| Lube Oil Pressure Limits   |                 |             | 45.0            | 65.0      |
| Tank Vent Delta Pressure   |                 | 1.4 in. H2O |                 | 6.8       |
| GP Thrust Brg. Temperature |                 | 197.8 ° F   |                 | 230.0     |

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| RGB S/N   | NOV09-12405 | CS Curve | PT30137A |
| Fuel Type | Gas         |          |          |

**Gas Emission Summary**

| Parameter Name      | Units     | Full Load  | 50% Load   |
|---------------------|-----------|------------|------------|
| Datapoint #         |           | 10         | 11         |
| Date                |           | 2021-09-15 | 2021-09-15 |
| Time                |           | 6:18 PM    | 6:51 PM    |
| Corrected NGP       | %         | 100.0      | 100.0      |
| Corrected Power     | kW        | 5194       | 2565       |
| Corrected Heat Rate | Btu/kW-hr | 11239      | 14496      |
| Corrected TRIT      | °F        | 1936       | 1874       |
| Corrected Mass Flow | lb/s      | 45.7       | 28.1       |
| T5/T3               | Ratio     | 0.7342     | 0.7430     |
| PCD                 | psig      | 152.4      | 88.3       |
| T1 Average          | °F        | 71.4       | 71.2       |
| Corrected T5        | °F        | 1299.0     | 1274.3     |
| T5 Delta            | °F        | 38.3       | 21.8       |
| T7 Average          | °F        | 966        | 1077.5     |
| T7 Delta            | °F        | 7.2        | 13.7       |
| Gas Pilot           | %         | 2.0        | 2.0        |

**Emission Summary**

|                 |      |      |      | Limit |
|-----------------|------|------|------|-------|
| Corrected NOx   | ppmv | 5.4  | 5.9  | 22.0  |
| Corrected CO    | ppmv | <2.0 | <2.0 | 50.0  |
| Corrected HC    | ppmv | <2.0 | <2.0 | 25.0  |
| O <sub>2</sub>  | %    | 15.4 | 15.2 |       |
| CO <sub>2</sub> | %    | 3.2  | 3.3  |       |

\*Corrected Emission Parameters are corrected to 15% O<sub>2</sub>

**SoLoNOx Parameters**

|                      |             |    |  |
|----------------------|-------------|----|--|
| T5_VGVSP             | 1272.0      | °F |  |
| Rated KW             | 5118.0      | kW |  |
| Injector Compensator | 210009-1600 |    |  |

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**Full Load Bearing Gap Voltages**

| Parameter Name | Units | X            | Y            |
|----------------|-------|--------------|--------------|
| Bearing 1      | VDC   | -9.2         | -8.9         |
| Bearing 2      | VDC   | -9.0         | -8.9         |
| Bearing 3      | VDC   | -9.5         | -9.1         |
|                |       | <b>AXI 1</b> | <b>AXI 2</b> |
| GP Axial       | VDC   | -10.6        | -10.6        |

**TAURUS 60**  
**Data Tag Information**

|                          |                           |
|--------------------------|---------------------------|
| Model No.                | TAURUS 60                 |
| Version                  | 7801S GSC STAND           |
| Engine ID                | ET781S-S0G00H00           |
| Serial No.               | OHH21-T5133               |
| Power (G/L)              | 5500 / NA kWe             |
| NGP (rpm)                | 14951 60 Hz / 14944 50 Hz |
| NPT (rpm)                | NA                        |
| IGV Setting              | +5.0 DEG                  |
| T5 Base (G/L) UnComp     | 1302F / NA                |
| T5 Setpoint (G/L)        | 1250F / NA                |
| T5 Comp#                 | 120902-3                  |
| T5 Uncomp Emiss SP (G/L) | 1272F / NA                |
| %Pilot Full Load (G/L)   | 2 / NA                    |
| %Pilot Half Load (G/L)   | 2 / NA                    |

**Engineer's Note:** - Engine tested per EI24408 (SER 15-260F).