



Spirit 6MW On-Site Rating Calculations

MGT6000 Performance Data

Fuel : Natural Gas
 LHV : 48000 kJ/kg
 Dry Low NOx Combustion Chamber (ACC)
 Generator Speed : 1500 rpm

**OFFICIAL SUBMISSION**
 Submittal Number : **1694-001**

 Submittal Date : **8/8/2019**

The data are corrected for the following site conditions :

Altitude : 0 m
 Ambient Pressure : 101.3 kPa
 Inlet Pressure Loss : 1.20 kPa
 Exhaust Pressure Loss : 2.50 kPa
 Gearbox Efficiency : 98.8 %
 Generator Efficiency : 97.2 %

Expected Performance for Full Load

Ambient Temperature [°C]	17	28	33	40	17	28	33	40
Relative Humidity [%]	50	90	55	35	50	90	55	35
Chiller Status	off	off	off	off	off	on	on	on
Inlet Temperature [°C]	17	28	33	40	17	18	18	20
Electrical Power Output [MW]	6.74	6.13	5.86	5.49	6.74	6.69	6.69	6.58
Electrical Efficiency [%]	31.5	30.4	29.6	29.1	31.5	31.5	31.5	31.2
Heat Rate [kJ/kWh]	11420	11860	12170	12390	11420	11440	11440	11540
Exhaust Gas Flow [kg/s]	27.5	25.9	25.7	24.0	27.5	27.1	27.1	27.0
Exhaust Gas Temperature [°C]	506	518	525	543	506	508	508	510
Fuel Flow [kg/h]	1600	1510	1490	1420	1600	1590	1590	1580

Exhaust Gas Composition [Vol.%]								
Nitrogen	75.2	73.4	73.9	74.0	75.2	74.6	74.6	74.4
Oxygen	14.5	14.1	14.2	14.2	14.5	14.3	14.3	14.3
Carbon Dioxide	2.9	2.9	2.8	2.9	2.9	2.9	2.9	2.9
Argon	0.9	0.9	0.9	0.9	0.9	0.9	0.9	0.9
Water	6.6	8.8	8.2	8.1	6.6	7.3	7.3	7.5

Gas Turbine Emissions (ref. to 15% O2, dry) at ISO conditions

NOx [mg/Nm³] 30
 CO [mg/Nm³] 30

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Gas Turbine Data Sheet

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The data are corrected for the following site conditions :

Altitude : 0 m
 Ambient Pressure : 101.3 kPa
 Inlet Pressure Loss : 1.20 kPa
 Exhaust Pressure Loss : 2.50 kPa
 Gearbox Efficiency : 98.5 %
 Generator Efficiency : 97.1 %

Expected Performance for 75% Load

Ambient Temperature [°C]	17	28	33	40
Relative Humidity [%]	50	90	55	35
Chiller Status	off	off	off	off
Inlet Temperature [°C]	17	28	33	40
Electrical Power Output [MW]	5.06	4.60	4.40	4.11
Electrical Efficiency [%]	29.2	27.9	27.5	26.8
Heat Rate [kJ/kWh]	12350	12880	13100	13440
Exhaust Gas Flow [kg/s]	23.0	21.9	21.4	20.7
Exhaust Gas Temperature [°C]	507	518	524	530
Fuel Flow [kg/h]	1300	1230	1200	1150

Exhaust Gas Composition [Vol.%]				
Nitrogen	75.2	73.4	73.9	74.1
Oxygen	14.7	14.3	14.4	14.5
Carbon Dioxide	2.8	2.8	2.7	2.7
Argon	0.9	0.9	0.9	0.9
Water	6.4	8.7	8.0	7.8

Gas Turbine Emissions (ref. to 15% O₂, dry) at ISO conditions

NOx [mg/Nm³] 30
 CO [mg/Nm³] 30

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The data are corrected for the following site conditions :

Altitude : 0 m
 Ambient Pressure : 101.3 kPa
 Inlet Pressure Loss : 1.20 kPa
 Exhaust Pressure Loss : 2.50 kPa
 Gearbox Efficiency : 98.0 %
 Generator Efficiency : 96.7 %

Expected Performance for 50% Load

Ambient Temperature [°C]	17	28	33	40
Relative Humidity [%]	50	90	55	35
Chiller Status	off	off	off	off
Inlet Temperature [°C]	17	28	33	40
Electrical Power Output [MW]	3.37	3.07	2.93	2.74
Electrical Efficiency [%]	25.0	23.9	23.5	22.8
Heat Rate [kJ/kWh]	14420	15090	15340	15810
Exhaust Gas Flow [kg/s]	19.0	18.0	17.7	17.1
Exhaust Gas Temperature [°C]	507	519	523	531
Fuel Flow [kg/h]	1010	960	940	900

Exhaust Gas Composition [Vol.%]				
Nitrogen	75.4	73.5	74.0	74.2
Oxygen	15.0	14.6	14.8	14.8
Carbon Dioxide	2.6	2.6	2.6	2.6
Argon	0.9	0.9	0.9	0.9
Water	6.1	8.4	7.7	7.5

Gas Turbine Emissions (ref. to 15% O₂, dry) at ISO conditions

NOx [mg/Nm³] 30
 CO [mg/Nm³] 30

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