



XQ5200 Data Sheet

XQ5200 Data Sheet

Standard Combustion, Dual Fuel

50 Hz.

Table of Contents

	<u>Page</u>	<u>Table #</u>
XQ5200 Designation	2	Table 1
Dual Fuel Performance Data ISO	2	Table 2
Natural Gas Site Performance Data, Metric	3	Table 3
Natural Gas Site Performance Data, English	3	Table 4
Diesel #2 Site Performance Data, Metric	4	Table 5
Diesel #2 Site Performance Data, English	4	Table 6
Dimensional Data & Weights	5	Table 7
Installation Requirements	6	Table 8
Infrastructure Requirements	6	Table 9
Turbotronic Controller	6	Table 10
Switchgear	7	Table 11
Grounding	7	Table 12
Protective Relays	7	Table 13
Rental Power Benefits	8	Table 14
XQ5200 Photo Overview	8	Table 15

Please request site and application specific data for formal proposals.

Table 1. XQ5200 Designation

<i>Manufacturer</i>	Solar Turbines Inc.
<i>Turbine Model</i>	Taurus 60, T7300S
<i>Package Model Designation</i>	XQ5200
<i>Combustion System</i>	Standard
<i>Fuel</i>	Natural Gas & Diesel #2

Table 2. Dual Fuel Performance Data ISO*, XQ5200 Mobile Power Unit

	<i>Natural Gas</i>		<i>Diesel #2</i>	
	<i>English</i>	<i>Metric</i>	<i>English</i>	<i>Metric</i>
<i>Power Output</i>	5,200 kWe	5,200 kWe	5,089 kWe	5,089 kWe
<i>Heat Rate(LHV)</i>	11,263 Btu/kWe-hr	11,900 kJ/kWe-hr	11,376 Btu/kWe-hr	12,002 kJ/kWe-hr
<i>Fuel Flow (LHV)</i>	58.6 mmBTU/hr	61.8 mmkJ/hr	57.9 mmBTU/hr	61.0 mmkJ/hr
<i>Emissions NOX</i>	143 PPMvd	143 PPMvd	232 PPMvd	232 PPMvd
	33.3 LBM/HR	15.0 kg/hr	54.16 LBM/HR	24.6 kg/hr
	50 PPMvd	50 PPMvd	50 PPMvd	50 PPMvd
<i>CO</i>	7.1 LBM/HR	3.22 kg/hr	7.1 LBM/HR	3.22 kg/hr
	11 KV	11 KV	11 KV	11 KV
<i>Gen. Voltage @ 50 hz.</i>				
<i>Voltage Steady State</i>	0.5%	0.5%	0.5%	0.5%
<i>Short Circuit</i>	300% for 10 sec.	300% for 10 sec.	300% for 10 sec.	300% for 10 sec.

* ISO = Sea Level, 60% Relative Humidity, No inlet or exhaust losses.

Table 3. Natural Gas Site Performance data, METRIC

TAURUS 60-T7300S		<u>Heat Rate Data Given is Lower Heating Value</u>					
GSC STANDARD							
Std. Natural Gas Fuel							
Rel Humid, %	60						
SITE ELEVATION:	0	metre					
BAROMETRIC PRESSURE:	760.0	mmHg					
INLET DUCT LOSS:	76.2	mmH2O					
EXHAUST DUCT LOSS:	76.2	mmH2O					
<u>Nominal Data Single Unit</u>							
AMBIENT AIR TEMPERATURE (T1):	-7	4	15	27	38	48	°C
PART POWER (kWe), % LOAD, or 0 for MAX:	83%	89%	96%	100%	100%	100%	kWe
Nominal OUTPUT POWER: (@terminals)	4,900	4,900	4,900	4,650	4,205	3,819	kWe
FUEL FLOW (LHV):	58,413	58,996	59,353	57,593	54,187	51,430	MJ/hr
Nominal HEAT RATE: (@terminals)	11,921	12,040	12,113	12,386	12,887	13,466	kJ/kWe-hr
EXHAUST GAS TEMPERATURE (T7):	475	472	475	495	504	516	°C
EXHAUST GAS FLOW:	74,915	77,329	78,657	74,822	70,634	66,771	kg/hr
Nominal THERMAL EFFICIENCY: (@terminals)	30.21	29.91	29.73	29.07	27.94	26.74	%
Nominal HEAT RATE: (@terminals)	11,921	12,040	12,113	12,386	12,887	13,466	kJ/kWe-hr
PCD PRESSURE:	1,042	1,074	1,102	1,059	1,001	945	kPaG
EXHAUST HEAT (from T7 to T9):	27,694.17	28,380.96	29,127.91	29,353.99	28,385.37	27,698.07	MJ/hr

Table 4. Natural Gas Site Performance data, ENGLISH

TAURUS 60-T7300S		<u>Heat Rate Data Given is Lower Heating Value</u>					
GSC STANDARD							
Std. Natural Gas Fuel							
Rel Humid, %	60						
SITE ELEVATION:	0	feet					
BAROMETRIC PRESSURE:	29.9	"Hg					
INLET DUCT LOSS:	3	"H2O					
EXHAUST DUCT LOSS:	3	"H2O					
<u>Nominal Data Single Unit</u>							
AMBIENT AIR TEMPERATURE (T1):	19	39	59	81	100	118	°F
PART POWER (kWe), % LOAD, or 0 for MAX:	83%	89%	96%	100%	100%	100%	kWe
Nominal OUTPUT POWER: (@terminals)	4,900	4,900	4,900	4,650	4,205	3,819	kWe
FUEL FLOW (LHV):	55	56	56	55	51	49	mmBTU/hr
Nominal HEAT RATE: (@terminals)	11,299	11,411	11,481	11,740	12,214	12,763	BTU/kWe-hr
EXHAUST GAS TEMPERATURE (T7):	886	882	887	924	940	961	°F
EXHAUST GAS FLOW:	165,158	170,482	173,409	164,954	155,721	147,204	lb/hr
Nominal THERMAL EFFICIENCY: (@terminals)	30.21	29.91	29.73	29.07	27.94	26.74	%
Nominal HEAT RATE: (@terminals)	11,299	11,411	11,481	11,740	12,214	12,763	BTU/kWe-hr
PCD PRESSURE:	151	156	160	154	145	137	PsiG
EXHAUST HEAT (from T7 to T9):	26.25	26.90	27.61	27.82	26.90	26.25	mmBTU/hr

Please request site and application specific data for formal proposals.



XQ5200 Data Sheet

Table 5. Diesel #2 Site Performance data, METRIC

TAURUS 60-T7300
GSC STANDARD
Diesel 2-D Fuel

RELATIVE HUMIDITY 60 %
SITE ELEVATION: 0 metre
BAROMETRIC PRESSURE: 760.0 mmHg
INLET DUCT LOSS: 76.20 mmH2O
EXHAUST DUCT LOSS: 76.20 mmH2O

Distillate Fuel Formulas, (Diesel #2)
Heat Value KJ/kg 41,925.00
kg/litre 0.8543
Fuel Temp. 29 C

AMBIENT AIR TEMPERATURE (T1):	-7.0	4.0	15.0	27.0	38.0	48.0	°C
PART POWER (kWe), % LOAD, or 0 for MAX:	85%	91%	98%	100%	100%	100%	kWe
Nominal OUTPUT POWER: (@terminals)	4,900	4,900	4,900	4,553	4,109	3,729	kWe
Nominal HEAT RATE: (@terminals)	12,023	12,091	12,187	12,519	13,041	13,648	kJ/kWe-hr
EXHAUST GAS TEMPERATURE (T7):	426	452	482	497	505	518	°C
EXHAUST GAS FLOW:	84,074	81,916	78,982	74,942	70,761	66,900	kg/hr
Nominal THERMAL EFFICIENCY: (@terminals)	29.95	29.78	29.55	28.76	27.61	26.38	%
PCD PRESSURE:	1,151	1,131	1,106	1,056	998	944	kPaG
EXHAUST HEAT (from T7 to T9):	24,126	25,797	27,454	27,254	26,389	25,857	MJ/hr
Liters per Hour	1,645	1,654	1,667	1,592	1,496	1,421	Nominal

Table 6. Diesel #2 Site Performance data, ENGLISH

TAURUS 60-T7300
GSC STANDARD
Diesel 2-D Fuel

RELATIVE HUMIDITY 60 %
SITE ELEVATION: 0 feet
BAROMETRIC PRESSURE: 29.9 "Hg
INLET DUCT LOSS: 3.00 "H2O
EXHAUST DUCT LOSS: 3.00 "H2O

Distillate Fuel Formulas, (Diesel #2)
Heat Value, BTU/LB in LHV 18,390
Lbs./Gal. 7.001
Fuel Temp. 85 deg. F

Nominal Data

AMBIENT AIR TEMPERATURE (T1):	19	39	59	81	100	118	°F
PART POWER (kWe), % LOAD, or 0 for MAX:	85%	91%	98%	100%	100%	100%	kWe
Nominal OUTPUT POWER: (@terminals)	4,900	4,900	4,900	4,553	4,109	3,729	kWe
Nominal HEAT RATE: (@terminals)	11,395	11,460	11,551	11,866	12,360	12,936	BTU/kWe-hr
EXHAUST GAS TEMPERATURE (T7):	800	846	900	926	942	964	°F
EXHAUST GAS FLOW:	185,352	180,594	174,125	165,220	156,001	147,489	lb/hr
Nominal THERMAL EFFICIENCY: (@terminals)	29.95	29.78	29.55	28.76	27.61	26.38	%
PCD PRESSURE:	167	164	160	153	145	137	PsiG
EXHAUST HEAT (from T7 to T9):	23	24	26	26	25	25	mmBTU/hr
Gallons per Hour	433.7	436	440	420	395	375	Nominal
Gallons per kW-HR	0.089	0.089	0.090	0.092	0.096	0.100	Nominal
Gallons per MW-HR	88.5	89.0	89.7	92.2	96.0	100.5	Nominal

Please request site and application specific data for formal proposals.

Table 7. Dimensional Data & Weights, Installed XQ5200 Mobile Power Unit

	<i>English</i>	<i>Metric</i>
Length	48 ft.	14.6 meters
Width	21 ft.	6.4 meters
Height	26.6 ft.	8.1 meters
Installed Weights		
Turbine Section	118,000 lbs	54 M tons
PCR Trailer	55,000 lbs.	25 M tons

Table 7A. Dimensional Data and Weights, Ocean Shipping.

<i>Item #.</i>	<i>Lbs.</i> <i>(Metric tons)</i>	<i>Dimensions L X W X H</i> <i>English (Meters)</i>	<i>Description</i>
1	118,000 (53.6)	48'3" X 9' X 14'2" (14.7 x 2.75 x 4.32)	Turbine Enclosure w/ Integral Trailer. Air ride, 3 Axle, Mfg. by Solar Turbines Inc..
1A	6,900 (3.2)	14'1" X 8'6" X 3'6" (4.3 x 2.6 x 1.1)	Two Axle Air Ride Booster. Connects to Item 1 for highway transport but is removed for ocean transit and when assembled for operation.
2	55,000 (25)	46' X 8' 6" X 13'9.5" (14 X 2.6 X 4.2)	Power Control Room w/ Integral Trailer. Air ride, 2 Axle. Manufactured by Solar Turbines Inc.
3	35,000 (15.9)	40' X 8' X 8' 6" (12.2 x 2.5 x 2.6)	40 ft. shipping container packed with turbine auxiliary components.
3A	8,500 (3.9)	41' x 8' x 4' (12.5 x 2.5 x 1.2)	Chassis for Item 3. Optional 40 ft. fixed chassis for container.
4	35,000 (15.9)	40' X 8' X 8' 6" (12.2 x 2.5 x 2.6)	40 ft. shipping container packed with special tooling and spare parts
4A	8,500 (3.9)	41' x 8' x 4' (12.5 x 2.5 x 1.2)	Chassis for Item 4. Optional 40 ft. fixed chassis for container.

Table 7B. Dimensional Data and Weights, Highway Shipping.

<i>Item #.</i>	<i>Lbs.</i> <i>(Metric tons)</i>	<i>Dimensions L X W X H</i> <i>English (Meters)</i>	<i>Description</i>
1 & 1A	124,900 (56.7)	62'1" x 9' X 14'2" (19 x 2.75 x 4.32)	Turbine Enclosure w/ Integral Trailer & Booster. Item 1 & 1A configured for highway transport by Truck. 5 axles.
2	55,000 (25)	46' X 8' 6" X 13'9.5" (14 X 2.6 X 4.2)	Power Control Room w/ Integral Trailer. Air ride, 2 Axle. Manufactured by Solar Turbines Inc.
3 & 3A	43,500 (15.9)	41' X 8' X 12' 6" (12.5 x 2.5 x 3.8)	40 ft. container w/ Chassis packed with turbine auxiliary components.
4 & 4A	43,500 (15.9)	41' X 8' X 12' 6" (12.5 x 2.5 x 3.8)	40 ft. container w/ Chassis packed with special tooling & spares.

Please request site and application specific data for formal proposals.

Table 8. Installation Requirements XQ5200 Mobile Power Unit

	<i>English</i>	<i>Metric</i>
<u>Natural Gas</u>		
<i>Gas Pres.</i>	250 PSIG	1,723 KPAG
<i>Max. Gas Demand</i>	1,400 SCFM	39.6 M ³ /MIN.
<u>Diesel #2</u>		
<i>Fuel Pres.</i>	25 – 50 PSIG	172 – 345 KPAG
<i>Fuel Flow</i>	8 GPM	30.3 L/Min
<u>Foundation</u>		
<i>Gravel Compacted to</i>	2,500 lbs./ft.2	120 kPA
<u>Fuel Quality</u>		
Clean dry fuel Per Solar Spec. ES 9-98.		

Table 9. Infrastructure Requirements, XQ5200 Mobile Power Unit

<u>Connections</u>
11 kV Load Connection, 50 hz.
Black Start, if needed (400V 50 hz., 200kW)
Telephone Line, ether net, broadband connection for Remote Communication & Control
<u>Set Up & Commissioning</u>
Three – Five days
Small crane to lift components on roof, & fork Lift.

Table 10. Solar Turbotronic Controller, XQ5200 Mobile Power Unit

<u>Allen Bradley, PLC-5</u>
Provides sequencing to the package's operating systems during starting, running & shutdown, and provides package monitoring and protection during all phases of operation. Key features include...
*Local operator interface and monitoring.
*Interface and monitoring in power control trailer
*Remote interface and monitoring.
*Operational summary displays of alarms, shutdowns, temperatures, pressures, vibration, engine performance, generator kW, voltage, p.f., hz., amps, current.
*Relay backup in event of PLC failure
*Flexibility to change logic or add features

Please request site and application specific data for formal proposals.



Table 11. Switchgear, XQ5200 Mobile Power Unit

Operating Features, (One Line Available upon request)

Parallel operation with the utility.
 Island operation single or multiple units.
 Protective Relays, (See Table 8)
 Vacuum Circuit Breakers, 1,200A, 500MVA @ 15 KV
 Breaker #1 customer load connection
 Breaker #2 feeds Aux. Transformer & MCC to power turbine Accessories.
 C.T.'s, Draw Out P.T.'s.
 Lightning Arrestors, & Surge Capacitor

Table 12. Grounding, XQ5200 Mobile Power Unit

Option 1	Low Resistance grounding
Option 2	Ungrounded generator

Table 13. Protective Relays, XQ5200 Mobile Power Unit

<i>Beckwith M-3425</i>	<i>Designation</i>
Impedance	21
Undervoltage	27
RPR	32
Loss of Field Protection	40
Negative Phase Sequence	46
PT Blown Fuse	60FL
Phase overcurrent	51V
Inadvertent energization	50/27
Ground Overcurrent	50N, 51N
Overvoltage	59
Bus Ground Fault Detection	59N
Over/Under Frequency	81
Phase Differential overcurrent	87
Ground differential Settings Programmable for resistance grounding or ungrounded operation.	87GD
Basler BE-1, Overcurrent	50/51B

Please request site and application specific data for formal proposals.

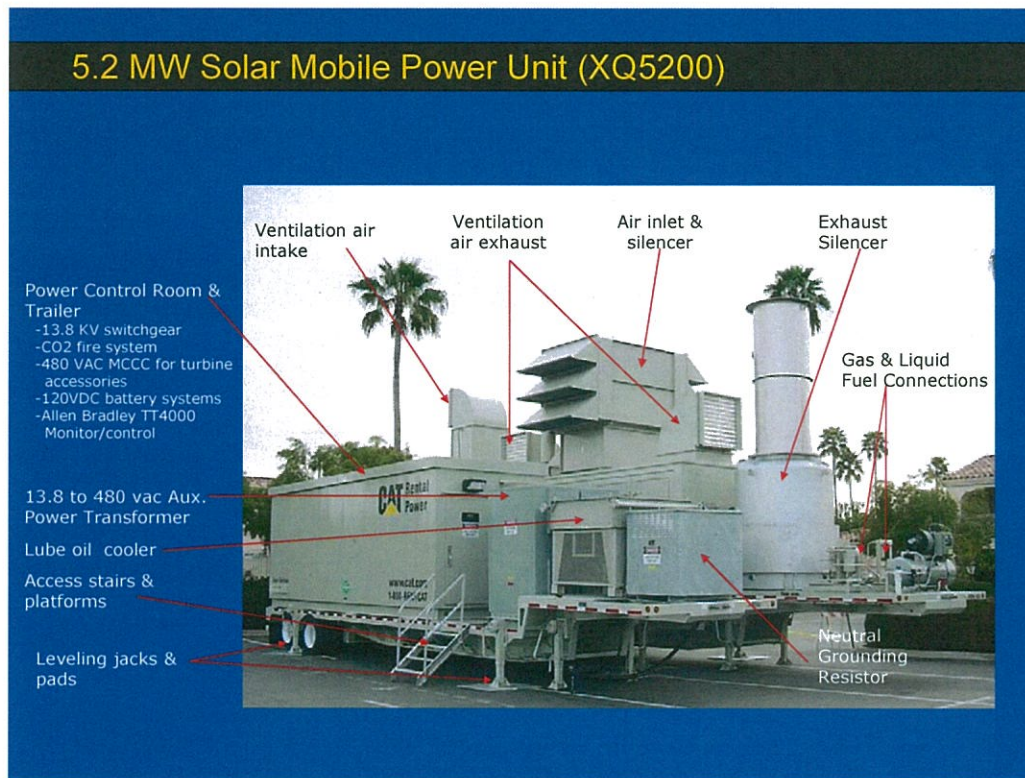


XQ5200 Data Sheet

Table 14. XQ5200 Rental Power Benefits

<i>Flexible Rental Solution</i>	<i>Easy to Install & Relocate</i>
Short & Long Term Rental Options	Highway transportable
Rental/Purchase Options	3 to 5 day setup
50 or 60 hz. Units available	No concrete foundation required
<i>Environmentally Friendly</i>	<i>Complete Systems Solution</i>
Low Emissions, 25 ppmv Nox	Set-up & Commissioning
Quiet Operation, 87 dba @ 3 ft. (1M)	Maintenance Included
No Visible Emissions	Operators available
Low Profile Design	Site Preparation (if needed)
Easy to Permit	Transformers (if needed)
<i>Worldwide Support</i>	<i>Operational Features</i>
Caterpillar's Worldwide Rental Network	On line in six minutes
Solar Turbines Worldwide Service Network	Range of Control System Options
	KVAR Control & KW Control

Table 15. XQ5200 Photo Overview



Please request site and application specific data for formal proposals.