

GENERATOR DATA SHEET

PD No. 251541

Serial No. 961092

Manufacture Data

Model SAB
Frame No. 21520-54
Serial No. 961092

Generator Rating

KW	10500	KVA	13125	P.F.	0.80
Voltage (Line)	10500	(Phase)	6062		
Amps (Line)	722	(Phase)	722		
Phase	3	Poles	4	Connection	Wye
Hertz	50	RPM	1500	Pitch (P.U.)	0.788

Insulation Class F

Temperature Rise 80 °C (Stator by RTD)
80 °C (Field by Resistance)

Exciter Rating

KW	35	Volts	250	Amps	140
Field Resistance	9.7 Ohms at 25°C				
Temperature Rise	60 °C (Armature)				
	60 °C (Field)				

Excitation Requirements

Exciter Field	Volts	Amps
Generator No Load	32	2.7
Generator Full Load	83	7.0
300% Fault Current Forcing	200	16.8

PMA Rating

KVA	2.4	Volts	240	Amps	10
Hertz	100	Phase	1		
Temperature Rise	60 °C				

Generator Operating Characteristics

Efficiency (%)	Load	0.80 P.F.	1.0 P.F.
	100%	97.6	97.9
	75%	97.4	97.6
	50%	96.7	96.9
	25%	94.4	94.5

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Solar Turbines

A Caterpillar Company

SIZE

ACODE
IDENT NUMBER
66195

DRAWING NUMBER

1010946-51541

SCALE

TOTAL WT.

SHEET

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Losses (KW)	Full Load	No Load
Core	75.5	75.5
Friction & Windage	63.5	63.5
Stray load	31.1	0.0
Stator I ² R loss	54.2	0.0
Rotor I ² R loss	27.8	6.0
Exciter	3.2	0.7
Total	255.3	145.8

Reactances (per unit at KVA rating)

		Saturated	Unsaturated
Direct Axis Synchronous	X _d	1.258	1.646
Direct Axis Transient	X' _d	0.167	0.180
Direct Axis Subtransient	X'' _d	0.120	0.129
Quadrature Axis Synchronous	X _q	0.823	0.823
Quadrature Axis Transient	X' _q	0.823	0.823
Quadrature Axis Subtransient	X'' _q	0.125	0.132
Negative Sequence	X ₂	0.127	0.130
Zero Sequence	X ₀	0.048	0.051

Time Constants

Direct Axis O.C. Transient	T' _{do}	9.080
Direct Axis S.C. Transient	T' _d	0.923
Direct Axis O.C. Subtransient	T'' _{do}	0.051
Direct Axis S.C. Subtransient	T'' _d	0.037
Armature Short Circuit	T _a	0.095

Resistance at 25 °C

DC Armature	R _a	0.025 ohms
DC Field	R _f	1.628 ohms
Positive Sequence	R ₁	0.004 p.u.
Negative Sequence	R ₂	0.010 p.u.
Zero Sequence	R ₀	0.005 p.u.

Short Circuit Ratio

SCR 0.795

Inertia Constant (Generator Only)

H 0.769 kW-sec/kVA

TIF (1960 weighting)

50 Balanced 40 Residual

Waveform Deviation Factor

6% at no load

Harmonic Content

3% Individual 3% Total

Allowable Negative Sequence Current

10% Continuous Short Time K=40

Guaranteed Noise Level (dBA at 1 meter)

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SCALE	TOTAL WT.	SHEET	15

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Heat Rejection at Rated Load (Btu / Hr)
Exterior Surfaces of Generator
Generator Exhaust

4072
867025

Transient Torques	Max. Torque	(Lb-Ft)	(per unit)
3-Phase Short Circuit		589720	11.97
L-L Short Circuit		608900	12.36
3-Phase Out of Phase With an Infinite Bus		1533272	31.12
1-Phase Out of Phase With an Infinite Bus		1604421	32.57

L-L Short Circuit Torque Equation (per unit of rated torque) $w = 314.2$ radians / sec

$$8.75e(-11.6)t \sin(wt - 0.15) - 4.71e(-2.2)t \sin(2wt - 0.07) + 0.99e(-14.8)t$$

Short Circuit Current	RMS Symmetrical	Peak Asymmetrical
3-Phase	5.87 kA	16.61 kA
L-L	5.00 kA	14.13 kA
L-N	Limited by Neutral Grounding Device	

Voltage Dip	Voltage	Inrush	Motor HP
Motor Starting (0.0 P.F.)	Dip	(SKVA)	(Code F)
	10%	8102	1447
	15%	12868	2298
	20%	18229	3255
	25%	24306	4340
	30%	31250	5580

Step Loads (0.80 P.F.)	Applied Load	Applied Load (KVA)	Voltage Dip
	25%	3281	2.7%
	50%	6563	5.3%
	100%	13125	10.5%

Voltage Regulator System Recommendations

Manufacturer: Basler Electric Co.

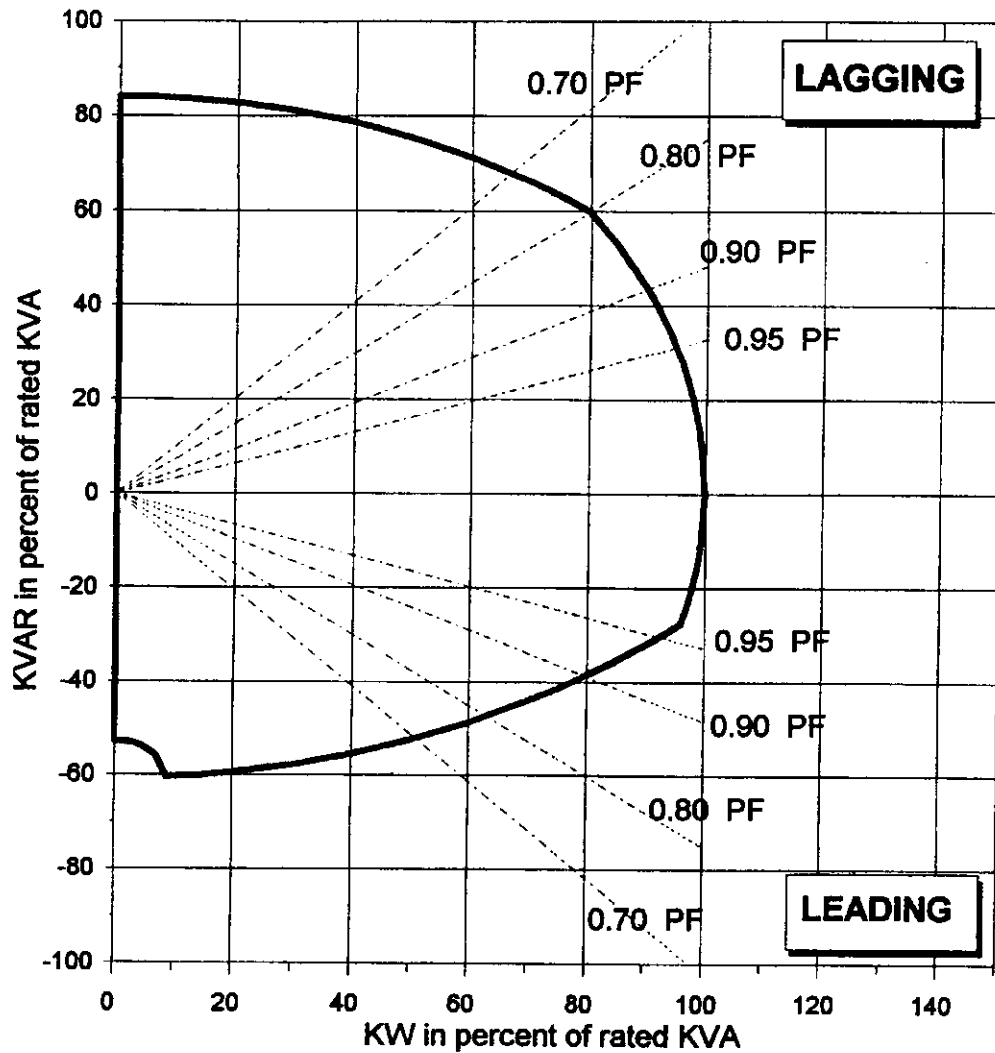
Model: SSR 125-12

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SCALE	TOTAL WT.	SHEET	16

REACTIVE CAPABILITY CURVE



Rating:

13125 KVA
10500 Volts
722 Amps
0.80 P.F.
1500 RPM

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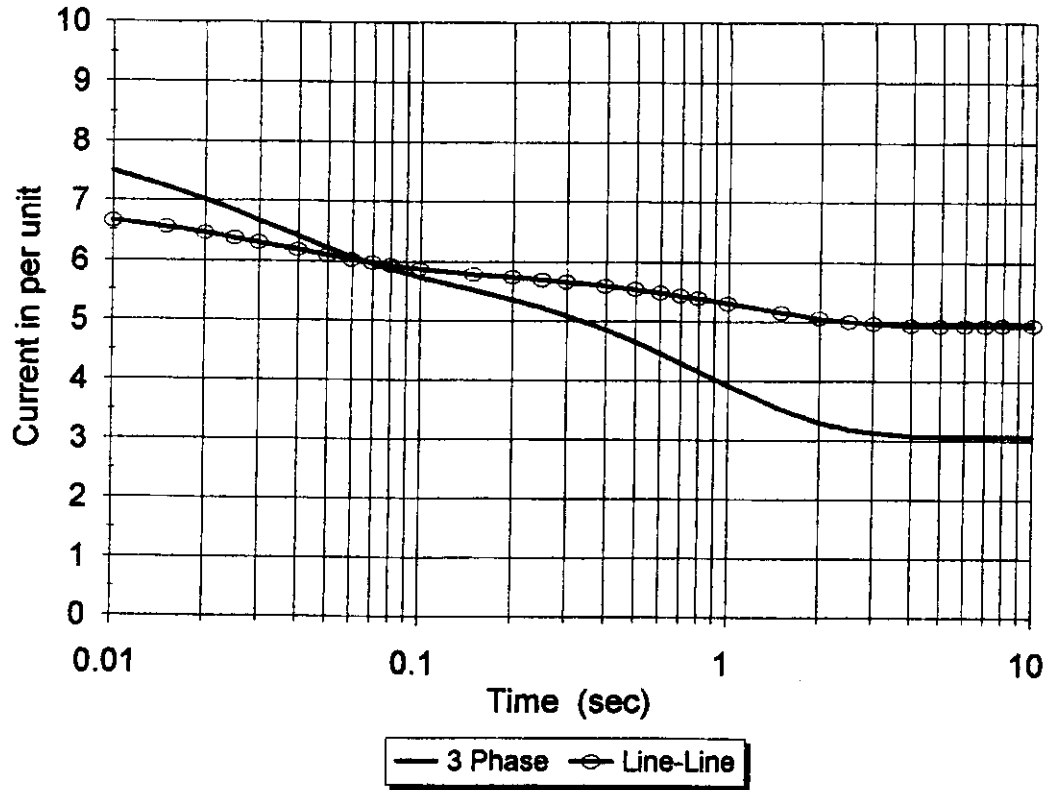
PD 251541

S/N 961092

EE- 2646A

Solar Turbines A Caterpillar Company		
SIZE A	CODE IDENT NUMBER 66195	DRAWING NUMBER 1010946-51541
SCALE	TOTAL WT.	SHEET 17

SHORT CIRCUIT DECREMENT CURVES



Rating:

13125 KVA
10500 Volts
722 Amps
0.80 P.F.
1500 RPM

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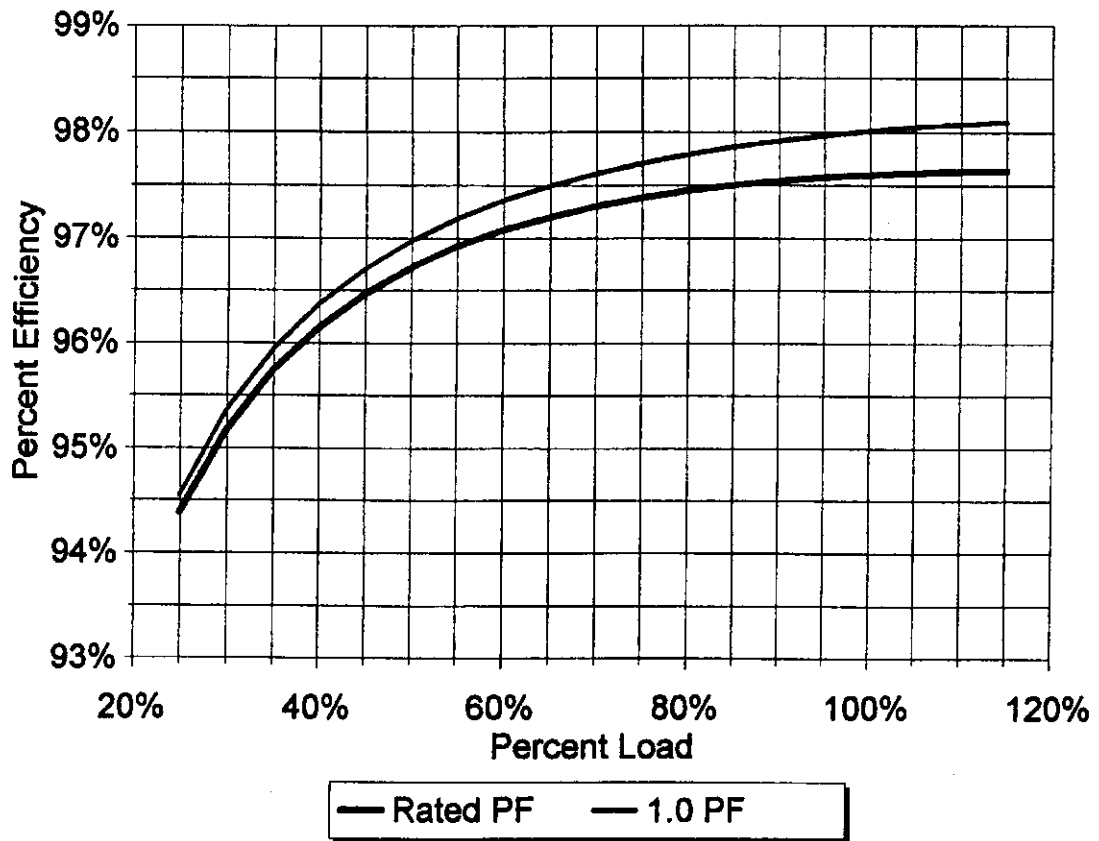
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S/N 961092

EE- 2646B

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SCALE	TOTAL WT.	SHEET	18

EFFICIENCY CURVES



100% Load = 10500 kW

Rating:

13125 KVA
10500 Volts
722 Amps
0.80 P.F.
1500 RPM

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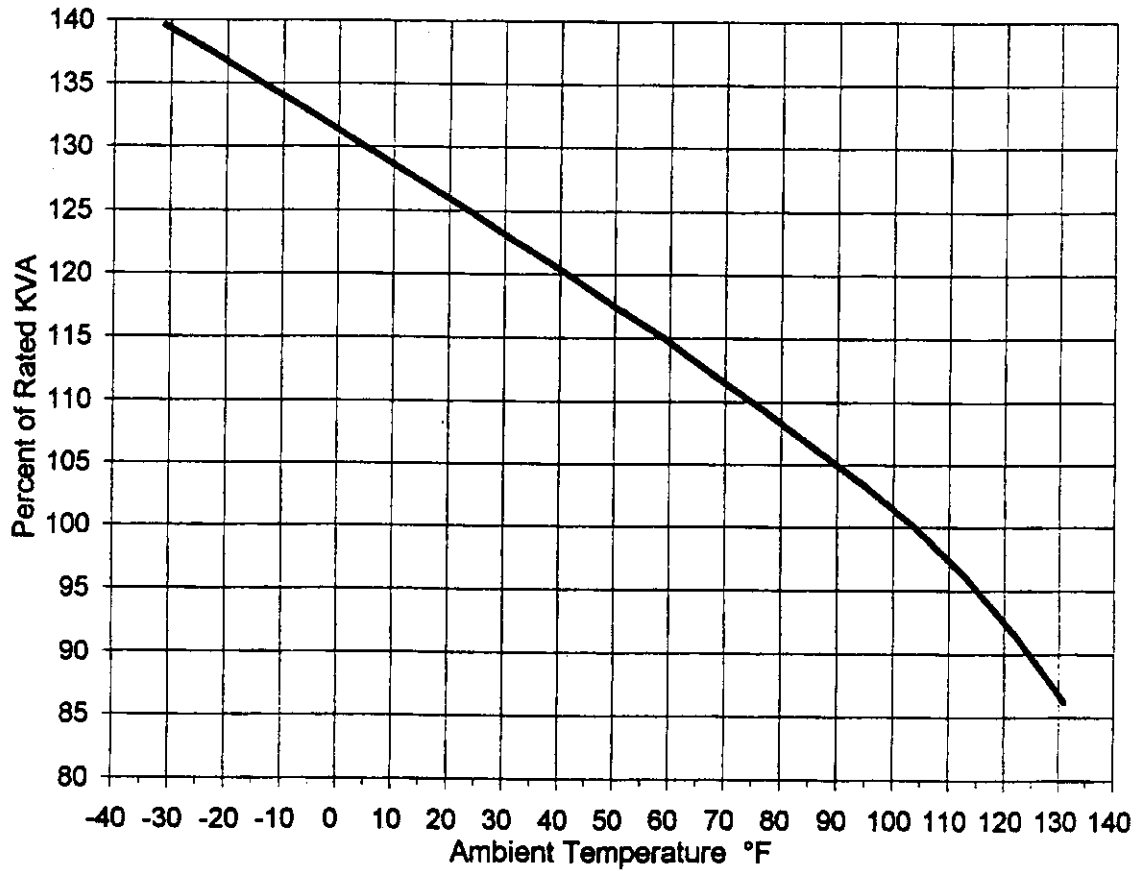
PD 251541

S/N 961092

EE- 2646C

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SCALE	TOTAL WT.	SHEET	19

GENERATOR CAPABILITY vs AMBIENT TEMPERATURE



Rated Output at 40 °C (104 °F)

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EE-1262F

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SIZE A	CODE IDENT NUMBER 66195	DRAWING NUMBER 1010946-51541	
SCALE	TOTAL WT.	SHEET	20

