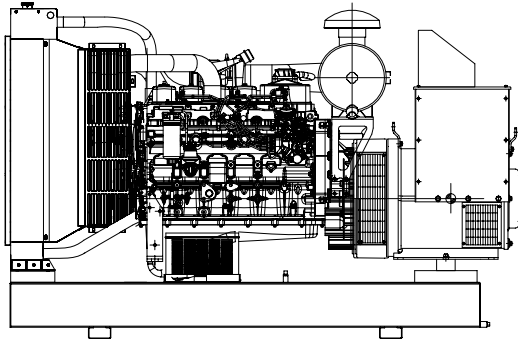




# MAQUINARIA IGSA POWER GENERATION SYSTEMS



**MODEL: GSIV20125S**  
**DIESEL ENGINE: IVECO**  
**MODEL: NEF67 TM2 TIER II**  
**CAPACITY: 125 KW 60 HZ**

RATINGS RANGE	
PRIME hp (kW)	STANDBY hp (kW)
170(127)	188 (140)

Ratings in accordance with ISO 8528-standard reference conditions:  
Air inlet temperature 25°C (77°F)  
Pressure 1000 mbar (14.5psi)  
Relative humidity 30%  
Power factor 0.8

## STANDARD FEATURES

Complete system designed and built at ISO9001 certified facility

- Factory tested to design specifications at full load conditions.
- Fully engineered with a range of options and accessories.

**1 IGSA** Genset's are composed of 6 cylinders in line and four strokes diesel engine for industrial stationary applications. Those equipments are fully factory tested using a resistive load. (1) Hour ramp 100% load test.

**2** The controls and accessories are selected to work together to achieve the maximum operational performance and security.

**3** Exhaust gases silencer, and a section of flexible tube for connection purposes.

**4** Engine IVECO, **NEF67 TM2 TIER II**

**5** Marathon or Stamford Alternator.

**6** Control MEC 310 (panel USC300)

**7** Radiator

**8** Base of structural steel.

## GENERAL FEATURES

- IGSA GENSET of **125 kW to 480V, 440V, 380V, 220V, 208V, 190VAC**, 3 Phase, 4 Wire, 60 Hertz, is composed by an internal engine four strokes coupling with the alternator, controls and accessories totally assembled and tested in factory.
- The controls and accessories of the Genset are selected to provide the maximum in efficiency and Security.
- The genset engine is certified by the Environmental Protection Agency (EPA) to conform to Tier 2 nonroad emissions regulations.
- The generator set its components are tested factory-built, and production-tested.
- Speed governor electronic (G3 class)



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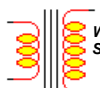
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## ENGINE SPECIFICATION DATA MODEL NEF67 TM2

### Weight 640 Kg (1411.5 Lb)

General Data	
Model	NEF67 TM2
Basic Engine type	F4GE0685B*F601-504101567XY
Number of Cylinders	6
Firing order	1-5-3-6-2-4
Cylinder arrangement	In line
Valves per cylinder	2
Cycle	Diesel 4 stroke
Injection system	Direct
Induction System	Turbocharged aftercooled air/air
Bore in.(mm)	4.1 / 104
Stroke in.(mm)	5.2 / 132
Total Displacement-- gal (L)	1.8 (6.7)
Mean piston speed--ft/s (m/s)	2.41 (7.9)
Compression Ratio	17.5:1
Flywheel rotation	Anti clockwise viewed on flywheel
Flywheel housing	SAE 3
Flywheel	11"½
Moment of inertia	
Without flyweel-- Nm²	3.04
Flyweel only-- Nm²	6.96
BMEP gross	
Prime power-- bar/kPa	13.4/1338.8
Stand-by power-- bar/kPa	14.7/1472.6
Dry weight (including cooling package)--kg (Lb)	640 (1411.5)
Energy to coolant-- kcal/kWh	463.1
Energy to charge cooler-- kcal/kWh	118.2
Energy to radiation-- kcal/kWh	51
Dimensions L x W x H-- in (mm)	66.8x31.1x51.9 (1697x789x1318)
Performances	
Continuous Power (gross)-- kWm	109.4 / 481.3
Prime power (gross)-- kWm	134.8 / 593.1
Stan-By power (gross)-- kWm	147.8 / 650.3
Fan consumption -- kWm	7.8 / 34.3
Continuous Power (net)-- kWm	101.6 / 447.0
Prime power (net)-- kWm	127 / 558.8
Stand-By Power (net)-- kWm	140 / 615.9
Performance condition	
temperature-- °C / °F	≤40 / 104
altitude a.s.l.—m / ft	≤1000 / 3281
Derating	
temperature > T40°C   %/5°C /	
altitude   > 1000m %/500m	
Intake System	
Air consumption at 100% of load-- m³/h (kg/h)	693 (833.9)
Air intake restriction, clean filter-- kPa (psi)	2(.29)
Air intake restriction, dirty filter-- kPa (psi)	5(0.725)
Air filter type	dry

Cooling System	
Type	Liquid
Recommended coolant	Water + 50% paraflu 11
engine only	10.5
radiator and hoses	30
Coolant pump flow--gal/min (l/min)	44.7 (169)
Pressure cap setting-- kPa (bar)	70 (0.7)
Shutdown switch setting-- °C / °F	103 / 218
Maximum additional restriction--kPa / psi	196 / 28.42
Air To Boil Prime Power-- °C / °F	59.1 / 138.3
Lubrication System	
Oil sump capacity	
max--gal/L	3.2 (12)
min--Gal/L	2.1 (8.0)
Oil system capacity including filter-- L	4.6 (17.2)
Oil pressure at rated speed-- kPa	300-500/43.5-72.5
Oil temperature	
normal	
max	120
Engine angulatory	
longitudinal-- degrees	
transverse-- degrees	
Servicing interval-- hours	600
Oil specification	ACEA E3 / E5
Oil consumption-- %fuel	< 0.1
Exhaust System	
Gas flow at stand-by Power-- kg/h / lb/h	866 / 1909.2
Max temperature at PRP (25°C/ 77°F)-- °C / °F	489.2 / 900
Max allowable back pressure-- kPa (mbar)	5(50)
Exhaust gas temperature-- kcal/kWh	711.5
Fuel Consumption (l/h) (kg/hr)	
100 % Power	35.0 (9.3)
80 % Power	29.0 (7.7)
50 % Power	19.0 (5.0)
Electric System	
Voltage (negative to ground)-- V	12
Stater motor power-- kW	3
Number of teeth on stater motor	10
Number of teeth on flywheel	125
starting batteries	
recommended capacity-- Ah 1x	100
Discharge current-- Amp	650
Alternator	
Voltage-- V	14
Charge-- Amp	90
Cold Starting	
Without air preheating-- °C / °F	-10 / 14
with air preheating-- °C / °F	-25 /-13



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## MARATHON ELECTRIC ALTERNATOR MODEL 363PSL1607

### weight 427.5 kg (943Lb)

Kilowatt ratings at 1800 RPM		60 Hertz					12 Leads standard 3 phase		
kW (kVA)		3 Phase			0.8 Power Factor		Dripproof or Open Enclosure		
Voltage	Class B	Class F					Class H		
	80°C/176°F (1)	90°C/194°F(1)	95°C/203°F(1)	105° C 221°F	105°C / 221°F	130°C/266°F(1)	125° C 257°F	125°C / 257°F	150°C/302°F(1)
	Continuous	Lloyds	ABS	British Standard	Continuous	Standby	British Standard	Continuous	Standby
480/240	110 (138)	115 (144)	115 (144)	125 (156)	125 (156)	135 (169)	135 (169)	135 (169)	150 (188)
460/230	110 (138)	115 (144)	115 (144)	125 (156)	125 (156)	135 (169)	135 (169)	135 (169)	150 (188)
440/220	105 (131)	110 (138)	110 (138)	115 (144)	115 (144)	130 (163)	130 (163)	130 (163)	140 (175)
416/208	100 (125)	105 (131)	105 (131)	110 (138)	110 (138)	125 (156)	125 (156)	125 (156)	135 (169)
380/190	90 (113)	95 (119)	95 (119)	100 (125)	100 (125)	115 (144)	115 (144)	115 (144)	125 (156)

(1) Rise by resistance method, Mil-Std-705, Method 680.1b.

† Rating per BS 5000.

Submittal Data: 480 Volts, 124.8 kw, 156 kVA, 0.8 P.F., 1800 RPM, 60 Hz, 3 Phase					
Mil-Std-705C			Mil-Std-705C		
Method	Description	Value	Method	Description	Value
301.1b	Insulation Resistance	> 1.5 Meg	505.3b	Overspeed	2250 RPM
302.1a	High Potential Test		507.1c	Phase Sequence CCW-ODE	ABC
	Main Stator	2000 Volts	508.1c	Voltage Balance L-L OR L-N	0.20%
	Main Rotor	1500 Volts	601.4a	L-L Harmonic Maximum - Total (Distortion Factor)	3.5%
	Exciter Stator	1500 Volts	601.4a	L-L Harmonic Maximum - Single	2.5%
	Exciter Rotor	1500 Volts	601.1c	Deviation Factor	7.0%
401.1a	Stator Resistance, Line to Line		--	TIF (1960 Weightings)	<50
	High Wye Connection	0.0692 Ohms	--	THF (IEC, BS & NEMA Weightings)	<2%
	Rotor Resistance	1.365 Ohms	652.1a	Shaft Current	<0.1 ma
	Exciter Stator	23.5 Ohms	--	Main Stator Capacitance to ground	@NA mdf
	Exciter Rotor	0.12 Ohms			
410.1a	No Load Exciter Field Amps at 240/480 Volts Line to Line	0.52 A DC		<b>Additional Prototype Mil-Std Methods are Available on Request.</b>	
420.1a	Short Circuit Ratio	0.525	--	Generator Frame	363
421.1a	Xd Synchronous Reactance	2.225 pu	--	Type	Magnaplus
422.1a	X2 Negative Sequence	0.1 pu	--	Insulation	Class H
423.1a	X0 Zero Sequence Reactance	0.031 pu	--	Coupling - Single Bearing	Flexible
425.1a	X'd Transient Reactance	0.14 pu	--	Amortisseur Windings	Full
426.1a	X''d Subtransient Reactance	0.1 pu	--	Excitation Ext. Voltage Regulated, Brushless	
427.1a	T'd Transient Short Circuit		--	Voltage Regulator	SE350
	Time Constant	0.06 sec.	--	Voltage Regulation	1%
428.1a	T''d Subtransient Short Circuit		--	Cooling Air Volume	700 CFM
	Time Constant	0.008 sec.	--	Heat rejection rate	513 Btu s/min
430.1a	T'do Transient Open Circuit		--	Full load current	188 amps
	Time Constant	0.8 sec.	--	Minimum Input hp required	179.4
432.1a	Ta Short Circuit Time		--	Efficiency at rated load:	93.3 %
	Constant of Armature Winding	0.02 sec.	--	Full load torque	523 Lb-ft

\* (3) Excitation support system or PMG required to sustain short circuit currents.  
 \* Voltage refers to wye (star) connection, unless otherwise specified.  
 \*\* Not supplied as standard equipment.



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## STAMFORD ELECTRIC ALTERNATOR MODEL UC1274E weight 492 kg (1085Lb)

<b>CONTROL SYSTEM</b>	<b>SEPARATELY EXCITED BY P.M.G.</b>		
<b>A.V.R.</b>	<b>MX321</b>	<b>MX341</b>	
<b>VOLTAGE REGULATION</b>	<b>(+/- 0.5%)</b>	<b>(+/- 1.0%)</b>	<b>WITH ENGINE GOVERNING</b>
<b>SUSTAINED SHORT CIRCUIT</b>	<b>REFERENT TO SHOT CIRCUIT DECREMENT CURRENT</b>		

INSULATION SYSTEM	CLASS H							
PROTECTION	IP23							
RATED POWER FACTOR	0.8							
STATOR WINDING	DOUBLE LAYER CONCENTRIC							
WINDING PITCH	TWO THIRDS							
WINDING LEADS	12							
STATOR WDG. RESISTANCE	0.0317 Ohms PER PHASE AT 23°C SERIES STAR CONNECTED							
ROTOR WDG. RESISTANCE	1.34 Ohms at 22°C / 77°F							
R.F.I. SUPPRESSION	BS EN 61000-6-2 & BS EN 61000-6-4, VDE 0875G, VDE 0875N. refer to factory for others							
WAVEFORM DISTORTION	NO LOAD < 1.5% NON-DISTORTING BALANCED LINEAR LOAD < 5.0%							
MAXIMUM OVERSPEED	2250 Rev/Min							
BEARING DRIVE END	BALL. 6315 - 2RS. (ISO)							
BEARING NON-DRIVE END	BALL. 6310 - 2RS. (ISO)							
WEIGHT COMP. GENERATOR	1 BEARING				2 BEARING			
WEIGHT WOUND STATOR	492 kg /1085 lb				511 kg /1127 lb			
WEIGHT WOUND ROTOR	180 kg / 397 lb				180 kg /397 lb			
WR <sup>2</sup> INERTIA	167.51 Kg / 370 lb				156.55 kg / 345.1			
SHIPPING WEIGHTS in a crate	1.3271 kg m <sup>2</sup> / .27 lb ft <sup>2</sup>				1.2765 kg m <sup>2</sup> /0.26 lb ft <sup>2</sup>			
PACKING CRATE SIZE	525 kg / 1158 lb				539 kg / 1188.3			
TELEPHONE INTERFERENCE	50 Hz				60 Hz			
COOLING AIR	THF<2%				TIF<50			
	0.514 m <sup>3</sup> /sec 1090 cfm				0.617 m <sup>3</sup> /sec 1308 cfm			
VOLTAGE SERIES STAR	380/220	400/231	415/240	440/254	416/240	440/254	460/266	480/277
VOLTAGE PARALLEL STAR	190/110	200/115	208/120	220/127	208/120	220/127	230/133	240/138
VOLTAGE SERIES DELTA	220/110	230/115	240/120	254/127	240/120	254/127	266/133	277/138
KVA BASE RATING FOR	140	140	140	N/A	160	167.5	167.5	178.8
REACTANCE VALUES								
X <sub>d</sub> DIR. AXIS SYNCHRONOUS	2.34	2.11	196	N/A	2.68	2.51	2.29	2.25
X' <sub>d</sub> DIR. AXIS TRANSIENT	0.21	0.19	0.18	-	0.25	0.23	0.21	0.21
X'' <sub>d</sub> DIR. AXIS SUBTRANSIENT	0.14	0.13	0.12	-	0.17	0.16	0.15	0.14
X <sub>q</sub> QUAD. AXIS REACTANCE	1.53	1.38	1.28	-	1.74	1.63	1.49	1.46
X'' <sub>q</sub> QUAD. AXIS SUBTRANSIENT	0.18	0.16	0.15	-	0.22	0.21	0.19	0.18
X <sub>L</sub> LEAKAGE REACTANCE	0.08	0.08	0.07	-	0.09	0.08	0.08	0.08
X <sub>2</sub> NEGATIVE SEQUENCE	0.16	0.14	0.13	-	0.19	0.18	0.16	0.16
X <sub>0</sub> ZERO SEQUENCE	0.10	0.09	0.08	-	0.11	0.10	0.09	0.09
REACTANCES ARE SATURATED				VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED				
T' <sub>d</sub> TRANSIENT TIME CONST.	0.032 s							
T'' <sub>d</sub> SUB-TRANSTIME CONST.	0.01 s							
T' <sub>do</sub> O.C. FIELD TIME CONST.	0.85 s							
T <sub>a</sub> ARMATURE TIME CONST.	0.007 s							
SHORT CIRCUIT RATIO	1/X <sub>d</sub>							

**RATINGS:** All three-phase units are rated at 0.8 power factor. All single-phase units are rated at 1.0 power factor. Standby Ratings: Standby ratings apply to installations served by a reliable utility source. The standby rating is applicable to varying loads for the duration of a power outage. There is no overload capability for this rating. Ratings are in accordance with ISO-3046/1, BS5514, AS2789, and DIN 6271. Prime Power Ratings: Prime power ratings apply to installations where utility power is unavailable or unreliable. At varying load, the number of generator set operating hours is unlimited. A 10% overload capacity is available for a 12 hours period. Ratings are in accordance with ISO-8528/1, overload power in accordance with ISO-3046/1, BS 5514, AS 2789, and DIN 6271. For limited running time and base load ratings, consult the factory. The generator set manufacturer reserves the right to change the design or specifications without notice and without any obligation or liability whatsoever. **GENERAL GUIDELINES FOR DERATION:** Altitude: Derate 0.5% per 100 m (328 ft.) elevation above 1600 m (5250 ft.). Temperature: Derate 1.0% per 10°C (18°F) temperature above 25°C (77°F).



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## CONTROLLER FOR GENSET: MEC310

The Generator Controller MEC 310 is a microprocessor-based control unit containing all necessary functions for protection and control of a power generator. Besides the control and protection of the diesel engine it contains a full 3-phase AC voltage and current measuring circuit. The unit is equipped with an LCD display presenting all values and alarms.



- USC 300C Unit Mount Control Panel, Black Nema 1 enclosure c/w rubber mounts
  - MEC 310 Microprocessor Based Engine Generator Controller
  - Graphic Display 128 X 64 pixels (STN) Super Twisted Nematic
  - Digital AC Metering:
    - 3-Phase Volts (Phase to Phase and Phase to Neutral),
    - 3-Phase Amps
    - Frequency
    - kW, kVAR, KVA, pF, kWhr
- AC Protective Relaying:
    - 27/59 Under/Over Voltage
    - 32 Reverse Power
    - 51 Time Overcurrent
    - 81 O/U Under/Over Frequency
  - Digital gauge display:
  - Oil Pressure (sender required by others)
  - Coolant Temperature (sender required by others)
  - Fuel Level (sender required by others)
  - Hourmeter
  - Tachometer
- 5 digital inputs for alarms / shutdowns
  - Dedicated Output Contacts - Engine Crank; Run (30 VDC / 6 Amps)
  - Three Programmable Output Contacts (30 VDC / 1 Amps)
  - Event Logging (30 events)
  - Pushbuttons:
    - Emergency Stop
    - Manual Start and Stop
    - Manual/Auto/Test
    - Lamp Test
    - Horn Silence
  - Indicating Lights:
    - Common Alarm
    - Generator Ready (Voltage and Frequency Normal)

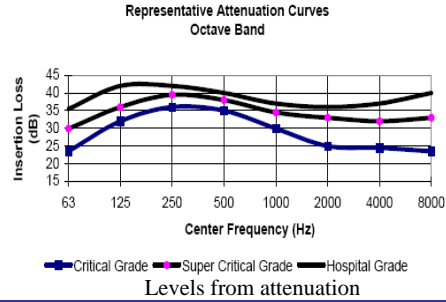
## FEATURES

- Electrical Rating:**
- Single or three phase, 600VAC maximum, 50/60HZ, 4 wire
  - 12 or 24Vdc (nominal) supply, negative ground.
  - Dedicated Output Contacts - Engine Crank; Run (30 VDC / 6 Amps)
  - Three Programmable Output Contacts (30 VDC / 1 Amps)
- Enclosure:**
- Black Nema 1 enclosure c/w rubber mounts
- Engine Senders:**
- Oil pressure (1/8" NPT), Temperature (1/4"NPT) (Supplied loose for engine mounting).
- Requirements:**
- Exceeds requirements of CSA 282 and NFPA 110 Level

## OPTIONAL SILENCER ACCORDING TO THE APPLICATION

Silencer with different levels from attenuation

- Critical Grade
- Super Critical Grade
- Hospital Grade



## DOCUMENTATION AND OTHERS

- Manual of operation and maintenance
- Spare parts
- Maintenance
- Consulting

## MISCELLANEOUS EQUIPMENT

- Batteries of 12 VDC with cables for battery connection with the Engine.

### GENSET OPTIONS

#### Control Panel

USC 300C Control Panel is standard on all units see page 4 of spec sheet for standard features.

Another Type \_\_\_\_\_

#### Fuel system

- Fuel Water Separator
- Day tank
- Auxiliary fuel pump
- Sub Base mounted Fuel Tank
  - Single Wall
  - Double Wall
  - UL listed
  - 150 L (39.6 gal)
  - 250 L (66 gal)

#### Diesel Fuel Tank

- 500 L (132 gal)
- 1000 L (264.1 gal)
- 5000 L (1320.8 gal)

#### Exhaust System

- Critical Grade
- Super Critical Grade
- Hospital Grade

#### Engine Electrical system

- Battery
  - Lead-Acid
  - NiCad
- Battery Rack
- Battery Charger Automatic

#### Generator

- Breaker in the alternator

### OPTIONAL ACCESSORIES AVAILABLE FOR THE EQUIPMENT

#### Vibration isolation

- Rigid Spring Mounting
- Resilient Mounting

#### Filters

- Air Filter for Medium Dust Environments
- Air Filter of Heavy Dust Environments

#### Drain

- Oil drain Extension

#### Enclosures

- Sound Attenuated
- Weather Proof
- Stainless steel cover
- Trailer Mounting
- Interior lights Ac or DC

#### Heaters

- Jacket Water Heater
- Crankcase Oil Heater

#### Insulation Blankets

- Features:  
( Temperature to 1260°C (2300°F), Non-Combustible, Highly Resistant to Vibration, Oil, Fuel, Grease, and Moisture Resistant Exterior, Personal Protection

#### Notes

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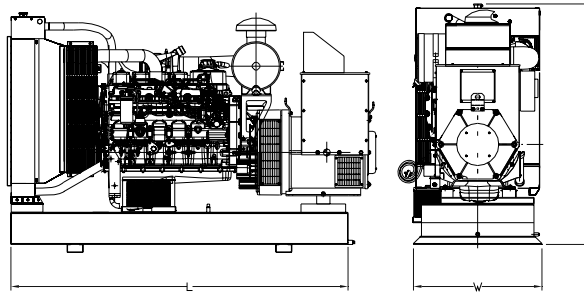
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## DIMENSIONS



LENGTH	WIDTH	HEIGHT
MM(IN)	MM(IN)	MM(IN)
2260 (89)	800 (31)	1530 (60)

NOTE: General configuration not to be used for installation. See general dimension drawing for detail.

## SERVICES

- Development of the project.
- Development of engineering.
- Equipment's Installation
- Engineering for special applications.
- Synchronies with utility network or more Gensets.
- Attention and technical support

## INSTALLATION OPTIONS OF THE GENSET

- On-Site
- Acoustic Enclosure
- ISO Container
- Trailer



FECHA	No. de REV.	ELABORO	REVISO	APROBO
30 Julio 2007	01	Ing. Hugo Reyes E. Ing. de Aplicacion.	Ing. Hugo Orozco. Gerente Ing.	Ing. Cesar Romero R. Dir. Proyectos Esp.



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