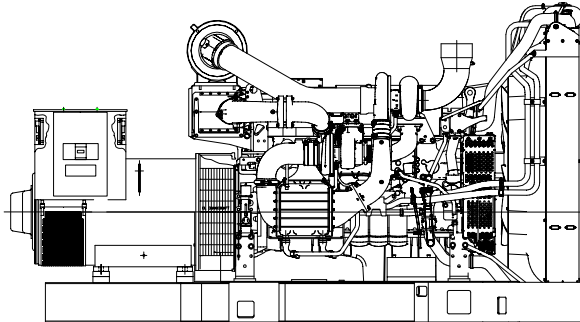




# MAQUINARIA IGSA POWER GENERATION SYSTEMS



**MODEL: GSVO20600S  
DIESEL ENGINE VOLVO  
MODEL: TWD1643GE, TIER II  
CAPACITY: 600 KW 60 HZ**

RATINGS RANGE	
PRIME HP(KW)	STANDBY HP(KW)
796 (585)	876(644)

The Genset performance corresponds to ISO 3046, BS 5514 and DIN 6271.

## 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 VOLVO, **TWD1643GE**

**5** Stamford Alternator.

**6** Control MEC310 (panel USC300)

**7** Radiator

**8** Base of structural steel.

## GENERAL FEATURES

- IGSA GENSET of **600 kW to 480V, 440V, 416V, 380, 220V, 208 VAC**. 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 generator set its components are tested factory-built, and production-tested.
- The genset engine is certified by the Environmental Protection Agency (EPA) to conform to Tier 2 nonroad emissions regulations.
- Electronic engine controls manage the engine (isochronous)
- Integrated complete system control and monitoring (EMS 2)



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# ENGINE SPECIFICATION DATA MODEL TWD 1643GE

## Weight 2200 Kg (4850 Lb)

General Data		
Model	TWD 1643GE	
Number of Cylinders	In line 6	
Method of operation	4 stroke	
Bore and Stroke--mm (in)	144x165 (5.67x6.50)	
Displacement--l (in.3)	16.12 (983.7)	
Compression Ratio	16.5:1	
Physical Data		
Length-- mm(in)		
Width--mm(in)	1350 (53.1)	
Height-- mm(in)	1930 (76)	
Weight, dry--kg (lb)	2200 (4850)	
Performance Data		
With fan, kW (hp) at:	1800 rpm	
Prime Power	585 (796)	
Max Standby Power	644 (876)	
Lubrication System		
Oil consumption, liter/h (US gal/h) at:	1800 rpm	
Prime Power	0.10 (0.029)	
Maz Standby Power	0.11 (0.032)	
Oil System Capacity incl filters, liter	48	
Fuel Consumption -- kg/hr (lb/hr)		
	Prime	Sandby
25 % Power	224 (0.363)	220 (0.357)
50 % Power	201 (0.326)	200 (0.324)
75 % Power	197 (0.319)	198 (0.321)
101 % Power	202(0.327)	204 (0.331)
Intake and exhaust system		
Air consumption, m <sup>3</sup> /min (cfm) at:	1800 rpm	
Prime Power	53 (1874)	
Max Standby Power	55 (1937)	
Max Allowable air intake restriction, kPa (In wc)	5 (20.1)	
Heat rejection to eshaust, kW (BTU/min) at:	--	
Prime Power	472 (26842)	
Max Standby Power	540 (30709)	
Exhaust gas temperature after turbine °C (°F) at:	1800 rpm	
Prime Power	422 (792)	
Max Standby Power	461 (862)	
Max Allowable back-pressure in exhaust line, kPa (In wc)	10 (40.2)	
Exhaust gas flow, m <sup>3</sup> /min (cfm) at:	1800 rpm	
Prime Power	119 (4201)	
Max Standby Power	130.1 (4593)	



# STAMFORD ELECTRIC ALTERNATOR MODEL HCI534E/544E weight 1543 kg (3402Lb)

<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 PROTECTION	CLASS H							
RATED POWER FACTOR	IP23							
STATOR WINDING	0.8							
WINDING PITCH	DOUBLE LAYER CONCENTRIC							
WINDING LEADS	TWO THIRDS							
STATOR WDG. RESISTANCE	12							
ROTOR WDG. RESISTANCE	0.0043 Ohms PER PHASE AT 22°C SERIES STAR CONNECTED							
R.F.I. SUPPRESSION	1.96 Ohms at 22°C / 72°F							
WAVEFORM DISTORTION	BS EN 61000-6-2 & BS EN 61000-6-4, VDE 0875G, VDE 0875N. refer to factory for others							
MAXIMUM OVERSPEED	NO LOAD < 1.5% NON-DISTORTING BALANCED LINEAR LOAD < 5.0%							
BEARING DRIVE END	2250 Rev/Min							
BEARING NON-DRIVE END	BALL. 6220 (ISO)							
	BALL. 6314 (ISO)							
WEIGHT COMP. GENERATOR	1 BEARING				2 BEARING			
WEIGHT WOUND STATOR	1543 kg / 3402 lb				1535 kg / 3385 lb			
WEIGHT WOUND ROTOR	722 kg / 1592 lb				722 kg / 1592 lb			
WR <sup>2</sup> INERTIA	617 kg / 1361 lb				588 kg 71297 lb			
SHIPPING WEIGHTS in a crate	8.9828 kg/m <sup>2</sup> / 1.84 lb/ft <sup>2</sup>				8.7049 kg/m <sup>2</sup> / 1.78 lb/ft <sup>2</sup>			
PACKING CRATE SIZE	1635 kg / 3605 lb				1625 kg / 3605 lb			
	166 x 87 x 124 (cm) / 65.3x35x49 (in)				166 x 87 x 124 (cm) / 65.3x35x49 (in)			
TELEPHONE INTERFERENCE	50 Hz				60 Hz			
COOLING AIR	THF<2%				TIF<50			
	1.035 m <sup>3</sup> /sec 2202 cfm				1.312 m <sup>3</sup> /sec 2780 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	600	600	600	600	681	713	731	750
RECTANCE VALUES								
X <sub>d</sub> DIR. AXIS SYNCHRONOUS	3.14	2.83	2.63	2.34	3.53	3.30	3.10	2.92
X' <sub>d</sub> DIR. AXIS TRANSIENT	0.17	0.15	0.14	0.12	0.17	0.16	0.15	0.14
X'' <sub>d</sub> DIR. AXIS SUBTRANSIENT	0.12	0.11	0.10	0.09	0.12	0.11	0.11	0.10
X <sub>q</sub> QUAD. AXIS REACTANCE	2.45	2.21	2.05	1.82	2.82	2.64	2.48	2.33
X'' <sub>q</sub> QUAD. AXIS SUBTRANSIENT	0.26	0.24	0.22	0.20	0.34	0.32	0.30	0.28
XL LEAKAGE REACTANCE	0.06	0.05	0.05	0.04	0.06	0.06	0.05	0.05
X <sub>2</sub> NEGATIVE SEQUENCE	0.18	0.16	0.15	0.13	0.23	0.22	0.20	0.19
X <sub>0</sub> ZERO SEQUENCE	0.08	0.08	0.07	0.08	0.10	0.09	0.09	0.08
REACTANCES ARE SATURATED      VALUES ARE PER UNIT AT RATING AND VOLTAGE INDICATED								
T' <sub>d</sub> TRANSIENT TIME CONST.	0.08 s							
T'' <sub>d</sub> SUB-TRANSTIME CONST.	0.012 s							
T' <sub>do</sub> O.C. FIELD TIME CONST.	2.5 s							
T <sub>a</sub> ARMATURE TIME CONST.	0.019 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 one hour in twelve. 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 0.4% per 100 m (328 ft.) elevation above 1400 m (4593 ft.). Temperature: Derate 5.0% per 10°C (18°F) temperature above 40°C (104°F). For radiator cooling system capacity, derate 0.5°C (0.9°F) per 100 m (328 ft.) elevation above 150 m (492 ft.).



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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)

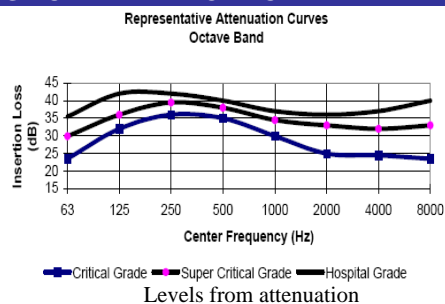
## FEATURES

- 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

- Diesel Fuel Tank
  - 1000 L (264.1 gal)
  - 5000 L (1320.8 gal)
  - 15000 L (3962.5 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
- PMG excitation & DVR 2000E Regulator
- A.V.R (MX321)
- A.V.R (MX341)

### 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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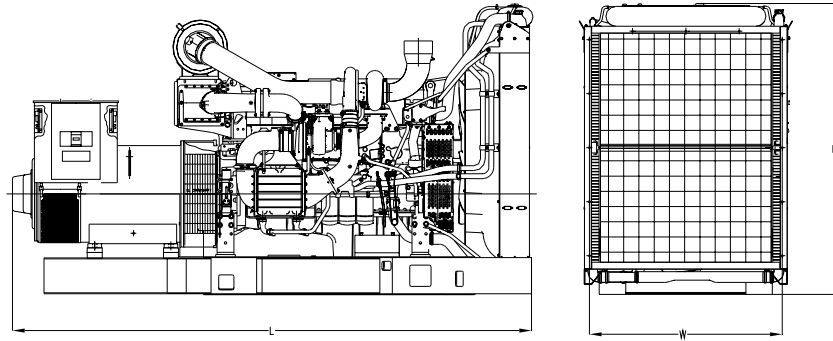
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## DIMENSIONS



LENGTH	WIDTH	HEIGHT
MM(IN)	MM(IN)	MM(IN)
3310 (130.3)	1350 (53.1)	1930 (76)

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

