

# GNT SERIES

## GNT 2500MV - V16



# GENPOWER

GENERATOR

6,3 kV - 50Hz & 6,6 kV - 60Hz



### Features and Benefits

- Half Century Experience in Generator Manufacturing
- Diesel Engines with Advanced Technology and Quality
- Alternators with Advanced Technology and Quality
- Control Panel Suitable for Flexible Application
- High Quality and Reliable Technology
- Patented Compact Designed and Soundproof Canopy
- Suitable for Heavy-Duty
- Durability
- Wide Range of Affordable Spare Parts
- Low Noise Level
- Low Exhaust Emission
- Low Operating Cost
- Low Fuel Consumption
- Low Oil Consumption
- Tropical 50°C Radiator
- Fuel Filter with Water and Particle Separator
- First Class Product Support
- Global Technical Service and Maintenance Support

### Generator General Information

Generator	Frequency	Voltage	Power Factor	Speed	Diesel Engine			Alternator			Type of	Generator Output		
Model	Hz	V	CosQ	rpm	Brand	Model	Series	Brand	Model	Series	Operation	kVA	KW	A
<b>GNT 2500MV</b>	<b>50</b>	6300	0,8	1500	I N T E R	E3100CRDIT	All	G E N P O W E R	G N P	450MX-M	Stand By	2.500,0	2.000,0	229,0
											Continuous	1.817,0	1.453,6	167,0
<b>GNT 2500MV</b>	<b>60</b>	6600	0,8	1800						450SX-M	Stand By	2.500,0	2.000,0	218,7
											Prime	2.272,7	1.818,2	198,9
											Continuous	1.817,0	1.453,6	158,9

### INTER Diesel Engine Technical Parameters and Matching Parameters

#### Diesel Engine Main Technical Parameters

##### General

Number of Cylinders		16
Configuration		V - Type
Aspiration		Turbocharged & Intercooled
Combustion System		Common Rail
Compression Ratio		15:1
Bore	mm	160
Stroke	mm	195
Displacement	L	62,7
Governing Type		ECU
Governing Class		G3
Rotation		Counterclockwise
Firing Order		1-15-9-6-4-14-12-7-11-8-2-16-10-5-3-13
Emission		Tier III

##### Moments of Rotation Inertia

Engine	kg • m <sup>2</sup>	44,42
Flywheel	kg • m <sup>2</sup>	29,36

##### Performance Rating

Speed Droop	%	≤1
Steady State Speed Band	%	≤0,5

##### Test Conditions

Ambient Temperature	%	25
Atmospheric Pressure	kPa	100
Relative Humidity	RH (%)	30
Max. Operating Intake Resistance	kPa	<5
Exhaust Backpressure Limit	kPa	<10
Fuel Temperature (Fuel Inlet Pump)	°C	38 ± 2

##### Filters

Air Filter		Dry Type, Replaceable
Fuel Filter		With Water Separator
Oil Filter		Element Type, Particulate Trap

##### Flywheel Housing and Flex Coupling

Flywheel Housing	SAE (J620)	00
Flex Coupling Disc	Inch (")	21

##### Overall Dimensions

Length *	mm	4285
Width	mm	2400
Height	mm	2510
Dry Weight	Kg	10000

\* From front end of radiator to rear end of air filter

##### Cooling System

Radiator Type	50°C	Tropical
Total Coolant Capacity	L	500
Max. Perm. Coolant Outlet Temperature	°C	105
Max. Perm. Flow Resis. (Cool. System And Piping)	bar	0,5
Max. Temperature of Coolant Warning	°C	95
Max. Temperature of Coolant Shutdown	°C	98
Thermostat Operation Temperature - Initial Open	°C	75
Thermostat Operation Temperature - Full Open	°C	85
Delivery of Coolant Pump	m <sup>3</sup> /h	20,83
Min. Pressure Before Coolant Pump	bar	0,5
Radiator Face Area	m <sup>2</sup>	6,44
Rows	Row	9
Matrix Density	Per / Inch	12
Material		Aluminum
Width of Matrix	mm	2260
Height of Matrix	mm	2850
Pressure Cap Setting	kPa	50
Estimated Cooling Air Flow Reserve	kPa	0,125
Engine Pre Heater Tube (with Circulation Pump)	W	2x7500

##### Lubrication System

Total System	L	250
Minimum Oil Level	L	200
Nominal Motor Operating Temperature	°C	40
Lubricating Oil Pressure (Rated Speed)	bar	7
Relief Valve Opens	kPa	200
Oil / Fuel Consumption Ratio	%	≤0,25
Normal Oil Temperature	°C	110

##### Electrical System

Voltage	V	24
Starter	kW	2X11
Alternator Output Amper	A	60
Alternator Output Voltage	V	28
Batteries Capacity	Ah	4X200

##### Fan

Diameter	mm	1900
Drive Ratio		1,26:1
Number of Blades		10
Material		PAG
Type		Blowing

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### Diesel Engine Matching Parameters

50 Hz @ 1500 r/min		Stand By	Prime
Gross Engine Power	kW	2220,0	2018,0
Net Engine Power	kW	2130,0	1928,0
Fan Power Consumption (Belt Pulley Driven)	kW	85,0	85,0
Other Power Loss	kW	5,0	5,0
Mean Effective Pressure	MPa	1,97	1,78
Intake Air Flow	m <sup>3</sup> / min	195,00	177,00
Exhaust Temperature Limit	°C	680	550
Exhaust Flow	m <sup>3</sup> / min	493,00	465,00
Boost Pressure Ratio		6,00	6,00
Mean Piston Speed	m / s	9,8	9,8
Cooling Fan Air Flow	m <sup>3</sup> / min	2086,0	2086,0
Typical Generator Output Power	kVA	2502	2274
<b>Heat Rejection</b>			
Energy in Fuel (Heat of Combustion)	kW	5830,0	5273,0
Gross Heat to Power	kW	2390,0	2180,0
Energy to Coolant and Lubricating Oil	kW	800,0	720,0
Heat Dissipation Capacity*	kW	950,0	860,0
Energy to Exhaust	kW	1500,0	1338,0
Heat to Radiation	kW	190,0	175,0

\*Intake Intercooled System

60 Hz @ 1800 r/min		Stand By	Prime
Gross Engine Power	kW	2220,0	2018,0
Net Engine Power	kW	2130,0	1928,0
Fan Power Consumption (Belt Pulley Driven)	kW	85,0	85,0
Other Power Loss	kW	5,0	5,0
Mean Effective Pressure	MPa	1,97	1,78
Intake Air Flow	m <sup>3</sup> / min	195,00	177,00
Exhaust Temperature Limit	°C	680	550
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\*Intake Intercooled System

### GENPOWER Alternator Technical Parameters and Specifications

#### Alternator Technical Parameters

Insulation Class		H	Field Control System		Self Excited
Winding Pitch		2/3 - (N° 6)	A.V.R. Model	Standard	MX321+PMG
Wires		6	Voltage Regulation	%	± 0.5
Protection		IP 23	Sustained Short-Circuit Current	10 sec	300% (3 IN)
Altitude	m	1000	Total Harmonic (*) TGH / THC	%	< 4
Overspeed	rpm	2250	Wave Form :NEMA = TIF - (*)		< 50
Air Flow	m <sup>3</sup> /sec	2,69	Wave Form :I.E.C. = THF - (*)	%	< 1.5
Bearing Drive	N/A	-	Bearing Non - Drive	Bearing	6319-2RZ
Rotor Winding	100%	Copper	Stator Winding	100%	Copper

(\*) Total harmonic content line to line, at no load or full rated linear and balanced load

Genpower synchron alternators are produced according to TSE 60034-1; IEC 60034-22; GB755; BS4999-5000; NEMA MG 1.22 standards

#### Alternator Specifications

##### 1. Rated parameters and structural form

1 Model	GNP 450MX-M for 50Hz, GNP 450SX-M for 60Hz
2 Stand By capacity (power)	2500 kVA (2000kW)
3 Rated capacity (power)	2275 kVA (1820 kW)
4 Rated voltage	6300 V- 50Hz, 6600V-60Hz
5 Stand By - Rated current	229-208 A
6 Rated frequency	50 Hz
7 Power factor	COS φ =0.8
8 Rated speed	1500 r/min
9 Efficiency	95.2 %
10 Number of phases	3
11 Wiring method	Three-phase three-wire (Y connection)
12 Excitation method	Brushless excitation + PMG
13 Voltage regulator	USA Basler DECS150 or MX321 digital voltage regulator
14 Insulation level	H grade
15 Protection method	IP23
16 Cooling method	Fan self-cooling (IC01)

17 Duty system	Continuous duty (S1)
18 Installation method	IM B20
19 Bearing structure	Single or Double bearings (imported NSK)
20 Machine weight	6400 kg
21 Ambient temperature/altitude	-15~+40°C/≤1000m
22 Direction of rotation	Clockwise (viewed from the generator drive end)
23 Direction of generator lead wire	Right (viewed from the generator drive end)
24 Winding temperature measurement	PT100, 2 per phase, one for backup and one for use
25 Bearing temperature measurement	PT100, 1 each for front and rear
26 Anti-condensation heater	AC220V/315W, 1

##### 2. Main performance indicators

1 Steady-state voltage regulation rate	Single machine operation: ±1%
2 Transient voltage regulation rate	Parallel operation: ±2.5% - -15% ~ +20% UN
3 Overload	Run at 110% rated load for 1 hour (6 hours as a cycle)
4 Overcurrent multiple	1.5IN, time 2 minutes
5 Maintain short-circuit current capability:	The excitation system can provide a continuous current of 2 times the rated current for 5 seconds, and the generator must be unloaded

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### Control Panel Specifications

Powder Painted Steel Panel with Lockable Door	Battery Charger	Control Relays	System Protection MCBs
ATS (Automatic Transfer Panel) - Optional	Emergency Stop Button	Terminal Blocks	Circuit Breaker - Optional
Control Module	Backlit, 128x64 Pixels	Load Output Terminal	LCD Screen

### Control Module Technical Parameters

Brand	GENPOWER/Fortrust JV	Model	6120 D Version
Dimensions	221mm x 152mmx56,8mm	Protection Class	IP65 From the Front
Weight	800 gr.	Environmental Conditions	2000 Meters Above Sea Level
Ambient Humidity	90% max.	Ambient Temperature	-20 ° C to + 70 ° C
DC Battery Supply Voltage	8 - 32 V	Battery Voltage Measurement	8 - 32 V
Network Frequency	5 - 99,9 Hz	Mains Voltage Measurement	3 - 300 V Phase-Neutral, 5 - 99.9 Hz
Generator Voltage Measurement	3 - 300 V	Generator Frequency	5 - 99.9 Hz
Current Transformer Secondary	5A	Working Period	Continuous
Charge Alternator Voltage Measurement	8 - 32 V	Charge Alternator Excitation	210mA & 12V, 105mA & 24V Nominal 2.5W
Communication Interface	RS-232	Analog Sender Measurement	0 - 1300ohm
Generator Contactor Relay Output	5A & 250V	Mains Contactor Relay Output	5A & 250V
Solenoid Transistor Outputs	1A with DC Supply	Start Transistor Outputs	1A with DC Supply
Configurable-3 Transistor Outputs	1A with DC Supply	Configurable-4 Transistor Outputs	1A with DC Supply

### Control Module Functions

Mains Voltage Level Control	Generator Voltage Level Control	3 phase Generator Protections	3 phase AMF Function	Alarm Horn
Network Frequency Level Control	Generator Frequency Level Control	- High / Low Voltage	- High / Low Frequency	Heater Tube Thermostat Control
Engine Operating Option Control	Generator Current Level Control	- High / Low Frequency	- High / Low Voltage	Modbus and SNMP
Engine Stop Option Control	Generator Power Level Control	- Current / Voltage Asymmetry	- High / Low Water Temperature	Working Hour
Engine Speed (RPM) Level Control	Generator Work Schedule and Timing Control	- Overcurrent / Overload	- High / Low Load	Ground Leakage
Battery Voltage Options Control	Oil Pressure Controllers Control	Overheat Control	Mains, Generator ATS control	Analog Modem
Check Engine Maintenance Times	Configurable Analog Inputs and Outputs	1 Phase or 3 Phase, Phase Selection	Network, Voltage, Frequency Display	Ethernet, USB, RS232, RS485
Communication Interfaces GPRS, GSM	Keeping Error Records of Past Events	Parameter Setting via Control Module	Parameter Setting via Computer	Selectable Protection Alarm / Shutdown
Engine Speed	Configurable Programmable Digital Inputs and Outputs	Water Temperature	Hours of Operation	Battery Voltage
Voltage	Current and Frequency	Phase Sequence	Earting	Oil Pressure

### Control Module Alerts

Emergency Stop Malfunction	Low Generator Voltage	Low Water Temperature	Charge Alternator Error	High Oil Temperature (Optional)
High Generator Voltage	High Generator Frequency	Heat Sensor Broken	Unbalanced Load	Low Fuel Level (Optional)
Low Generator Frequency	Phase Sequence Error	Reverse Power	Maintenance Time Alarm	High Battery Voltage
Low Load	Overload	Start Error	Low Speed	Low Battery Voltage
Over Current	Low Water Level (Optional)	Stop Error	High Speed	High Water Temperature
Unbalanced Current	Low Oil Pressure	Magnetic Pickup Error	Broken Oil Sensor Cable	Electronic Canbus Errors (ECU)

### Sound Proof Canopy and Base Frame (Chassis) Specifications

Special, Registered GENPOWER Design and Color	Robotic Painting with Electrostatic Powder Paint	Temperature Tests	Fuel Inlet and Return Records	Lifting and Carrying Equipments
A1 Quality DKP / HRU /Galvanized Steel	Drying and Stabilizing on 200°C Ovens	Rustproof Accessories	Impermeability Test for Fuel Tank	Internal Exhaust Mufflers (Silencers)
Sensitive Twist on Automatic Press Brake	1500 Hour Salt Test	Cable Exit Connectors and Glands	Vacuumed Rubber Mounted	External Exhaust Mufflers (Silencers)
Delicate Cut on Automatic Punch and Laser Bench	Glasswool Isolation, A1 Class Material -50/+500°C	Emergency Stop Button	High Quality Weatherstrips	Radiator Water Filling Cap
Sensitive Welding on Robotic Welding Bench	Special Covering Over Glass Wool	Fuel Level Gauge	High Quality Shock Absorbers	Daily Fuel Tank
Chemical Cleaning Nano Technology Before Painting	Best Sound Level (in dBA)	Fuel Drain Cap	Fuel Filling Cap (with ventilation)	External Fuel Tank

### Special Products / Non - Standardized

Synchronised Systems	Generators - with Trailer	DC Generators	High Frequency Generators	Marine Generators
Scada Systems	Medium Voltage - MV	High Voltage - HV	Variable Speed Generators	Dual Generators
Mobile Systems	IP44-IP54 Class Generators	Power Plants	Super Silent Canopy	Automatic Voltage Stabilizers
Light Towers	Welding Machines	Trigeneration Systems	Cogeneration Systems	Electrical and Diesel Forklift
Ground Power Unit Generators	Natural Gas Generator	Biogas Generator	LPG Generator	HFO Generator

### Quality Documents & Certificates

Trademark Registration Certificate	Industrial Registry Certificate	TSE 8528 - 4 Certificate	TS EN ISO 2409 Certificate	EN ISO 8528-13,2016 Certificate
Capacity Report (32400 Units / Year)	Certificate of Manufacturing Competence	TSE 8528 - 5 Certificate	TS EN ISO 4628-3 Certificate	EN ISO 12100:2010 Certificate
Made in Turkey Certificate- For Generator/1-5000 kVA	TSE- Service Adequacy Certificate	TSE 8528 - 8 Certificate	TS EN ISO 4628-4 Certificate	EN ISO 13857:2008 Certificate
Made in Turkey Certificate-For Alternator/1-5000kVA	ISO 9001 - 2015 Certificate	AB-0547-T Certificate	TS EN ISO 4628-5 Certificate	EN ISO 14120:2015 Certificate
Made in Turkey Certificate- For Engine/1-5000 kW	ISO 14001 - 2015 Certificate	EAC - GOST Certificate/ Diesel Generator	TS EN ISO 4628-8 Certificate	EN 349:1993+A1:2008 Certificate
Certificate of Competency for After Sales Services	OHSAS 18001 - 2007 Certificate	EAC - GOST Certificate/ Gasoline Generator	TS EN ISO 9227 Certificate	EN 60204-1,2018 Certificate
2014/30/EU Electromagnetic Compatibility Directive	2006/42/EC Machinery Directive	CE Certificate - EN ISO 17050-1,2004	TS 9620 EN ISO 4628-2 Certificate	EN 61000-6-2,2019 Certificate
CE Certificate - 2000/14/AT - 2000/14 EC (CE 2195)	Coatchem- Türkak 1500 Hours Corrosion Durability Test Certificate		TS EN 60034 - 1 Certificate	EN 61000-6-4,2007/A1:2011 Certificate

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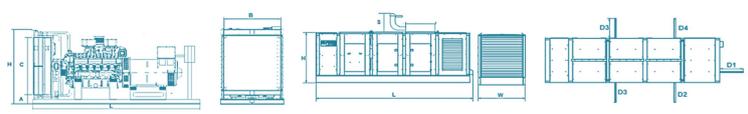
6,3 kV - 50Hz & 6,6 kV - 60Hz

### Generator Dimensions

Values		Open Type Generator	Canopy Type Generator
Width	mm	2600	2800
Length	mm	5700	9000
Height	mm	2643	2900
Weight (Net)	Kg	13870	18890
Fuel Tank Capacity	L	4000	4000

### Generator Technical Drawings

SYMBOL	OPEN	CANOPY
L	5700	9000
B	2600	2800
H	2643	2900
A	300	300
B	2559	
C	2089	
D1	1044	
D2	1044	
D3	1044	
D4	1044	
D5	1044	



### Diesel Engine and Genset Rating Classifications

The below ratings represent the engine performance capabilities to conditions specified in TS ISO 8528/1, 8528-4, 8528-5, 8528-8, BS5000, ISO 3046/1:1986, NEMA MG-1.22.1, BS 5514/1.

#### STAND BY POWER RATING (ESP):

ESP is applicable for supplying emergency power for the duration of the utility power outage. No overload capability is available for this rating. Under no condition is an engine allowed to operate in parallel with the public utility at the Stand By Power rating. This rating should be applied where reliable utility power is available. A Stand By rated engine should be sized for a maximum of an 70% average load factor and 200 hours of operation per year. This includes less than 25 hours per year at the Stand By Power rating. Stand By ratings should never be applied except in true emergency power outages. Negotiated power outages contracted with a utility company are not considered an emergency.

#### PRIME POWER RATING (PRP):

Applicable for supplying electric power in lieu of commercially purchased power. Prime Power applications must be in the form of one of the following two categories:

##### UNLIMITED TIME RUNNING PRIME POWER (ULTP):

PRP (Prime Power) is available for an unlimited number of hours per year in a variable load application. Variable load should not exceed a 70% average of the Prime Power rating during any operating period of 250 hours. The total operating time at 100% Prime Power shall not exceed 500 hours per year. A 10% overload capability is available for a period of 1 hour within a 12-hour period of operation. Total operating time at the 10% overload power shall not exceed 25 hours per year.

##### LIMITED TIME RUNNING PRIME POWER (LTP):

LTP (Limited Time Prime Power) is available for a limited number of hours in a nonvariable load application. It is intended for use in situations where power outages are contracted, such as in utility power curtailment. Engines may be operated in parallel to the public utility up to 750 hours per year at power levels never to exceed the Prime Power rating. The customer should be aware, however, that the life of any engine will be reduced by this constant high load operation. Any operation exceeding 750 hours per year at the Prime Power rating should use the Continuous Power rating.

#### CONTINUOUS POWER RATING (COP):

COP is the power that the engine can continue to use under the prescribed speed and the specified environment condition in the normal maintenance period stipulated in the manufacturing plant. And Continuous Power is applicable for supplying utility power at a constant 100% load for an unlimited number of hours per year. No overload capability is available for this rating.

### PAY ATTENTION TO THE POINTS BELOW IN PICKING AND USING THE GENERATOR

\* Generators can work on Continuous Power at 70% of Prime power value if only all maintenances are done on time with original spare parts and high quality oils that manufacturer advice.

\* Generators should not operate below 50% of Prime Power value. In such a case, the engine will burn excessive oil and eventually have irreparable damage.

\* If your need is 1000 kVA or above, you should prefer Synchronous Systems with 2-3 generators with failure back up and simultaneous aging.

\* These points will provide advantage for you with purchasing and operating the generator.

### INTER Diesel Engine Power Ratings – Fuel Consumption – Oil Recommendation and Oil Grades

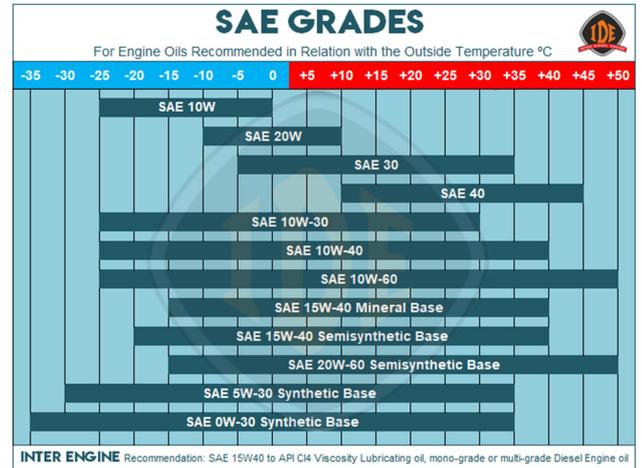
INTER Diesel Engine Power Ratings							
Engine Model	E3100CRDIT	Engine Family	ID96	Engine Series	All		
Speed rpm	Type of Operation	Typical Generator Output (Net)		Engine Power			
		kVA	kWe	Gross		Net	
				kWm	Hp	kWm	Hp
1500	Stand By (Maximum)	2.502,0	2.002,0	2.220,0	2.979,9	2.130,0	2.859,1
	Prime	2.274,0	1.819,0	2.018,0	2.708,7	1.928,0	2.587,9
1800	Stand By (Maximum)	2.502,0	2.002,0	2.220,0	2.979,9	2.130,0	2.859,1
	Prime	2.274,0	1.819,0	2.018,0	2.708,7	1.928,0	2.587,9

Generator powers are typical and are based on an average alternator efficiency and a power factor (Cos.  $\phi$ ) of 0.8

Fuel Consumption				
Percent of Prime power	50Hz-1500 rpm		60Hz-1800 rpm	
	g/kWh	l/hr	g/kWh	l/hr
110%	199	513,7	199,0	513,7
100%	197	462,3	197,0	462,3
75%	208	366,1	208,0	366,1
50%	218	255,8	218,0	255,8

Note: The density of diesel is 0.835 kg/L

Fuel specification: BS 2869 Part 2 1998 Class A2 or (DIN EN 590) ASTM D975 D2 Diesel. The fuel must be clean and without water



### Why You Should Buy GENPOWER?

#### Only because it is the biggest generator factory in the World? NO!

- \* It is one of the most trustworthy and distinguished generator manufacturers in the world with its almost half century experience in the field.
- \* It has interiorized the strategy of **unconditional customer satisfaction** and has been working with this work ethic together with its whole crew.
- \* Customers and end users get their moneys' worth and more with every penny.
- \* It has become a big family with customers and users who receive durable, long-lasting and high quality products.
- \* It has been appreciated many times by customers and suppliers about the investments that have been made for quality enhancement.
- \* Both its suppliers and customers always know GENPOWER is and will always be there for them. GENPOWER on their side in bad and good days.
- \* In order not to harm brand reputation and recognition, each day, they work harder than the day before.
- \* It continues its business only with the suppliers, customers, dealers and technical services that also embrace the same mind set and work ethics.
- \* It proves its loyalty for quality and customer satisfaction with its mottoes "Your power is the core of our business" and "nothing will be left unfinished"
- \* The specifications and/or modifications you can receive with extra costs by other manufacturers are included in standard production in GENPOWER
- \* When you purchase GENPOWER products, you are not a customer or a buyer but GENPOWER perceives and accepts you as a valuable member of its continuously growing family.

### These are why you should buy from GENPOWER...



#### Factory Address

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