# رادوكو نمايندگى ديزل ژنراتور

**GENPOWER** 

: 021-58437 تلفن

www.Radocorp.com







#### **Features and Benefits**

### 231/400V - 50Hz & 277/480V - 60Hz

GNT 280 & 295

- 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
- Durabilit
- 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			Alternat	or	Type of	Ger	erator Ou	tput
Model	Hz	V	CosQ	rpm	Brand	Model	Series	Brand	Model	Series	Operation	kVA	kW	Α
<b>GNT</b> 280	50	231/400	0,8	1500	I N T	E346TDI	ווכ	G E N P	G	270L1	Stand By Prime Continuous	280,0 254,5 178,2	224,0 203,6 142,5	404,6 367,8 257,5
<b>GNT 295</b>	60	277/480	0,8	1800	E R	20-0101	ווכ	0 W E R	N P	270M1	Stand By Prime Continuous	295,0 268,2 187,7	236,0 214,5 150,2	426,3 387,5 271,3

#### **INTER Diesel Engine Technical Parameters and Matching Parameters**

#### **Diesel Engine Main Technical Parameters**

General		
Number of Cylinders		6
Configuration		Vertical, In Line
Aspiration		Turbocharged & Intercooled
Combustion System		Direct Injection
Compression Ratio		17:1
Bore	mm	113
Stroke	mm	130
Displacement	L	7,82
Governing Type		Electronic
Governing Class		G3
Rotation		Counterclockwise
Firing Order		1-5-3-6-2-4
Emission		Tier II
Moments of Rotation Inertia		
Engine	kg • m²	1,9
Flywheel	kg • m²	1,5
Performance Rating		
Speed Droop	%	≤0,5
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	$38 \pm 2$
Filters		
Air Filter		Dry Type, Replaceable
Fuel Filter		With Water Seperator
Oil Filter		Element Type, Particulate Trap
Flywhell Housing and Flex Coupling		
Flywheel Housing	SAE (J620)	2
Flex Coupling Disc	Inch (")	11,5
Overall Dimensions		
Length *	mm	1301
Width	mm	815
Height	mm	959
Dry Weight	Kg	695
* From front end of radiator to rear end of air filter		

Cooling System		
Radiator Type	50°C	Tropical
Total Coolant Capacity	L	45
Max. Perm. Coolant Outlet Temperature	°C	103
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	72
Thermostat Operation Temperature - Full Open	°C	80
Delivery of Coolant Pump	m ³/ h	2,80
Min. Pressure Before Coolant Pump	bar	0,15
Radiator Face Area	m²	0,62
Rows	Row	3
Matrix Density	Per / Inch	15,5
Material		Aluminum
Width of Matrix	mm	800
Height of Matrix	mm	783
Pressure Cap Setting	kPa	90
Estimated Cooling Air Flow Reserve	kPa	0,125
Engine Pre Heater Tube (with Circulation Pump)	W	2000
Lubrication System		
Total System	L	19
Minimum Oil Level	L	18
Nominal Motor Operating Temperature	°C	40
Lubricating Oil Pressure (Rated Speed)	bar	5
Relief Valve Opens	kPa	300-400
Oil / Fuel Consumption Ratio	%	≤1,63
Normal Oil Temperature	°C	120
Electrical System		
Voltage	V	24
Starter	kW	7,8
Alternator Output Ampers	Α	42
Alternator Output Voltage	V	28
Batteries Capacity	Ah	2X105
Fan		
Diameter	mm	600
Drive Ratio		1,6:1
Number of Blades		8
Material		Metal
Туре		Blowing

# رادوكو نمايندگى ديزل ژنراتور

### GNT 280 & 295

# **GENPOWER**

231/400V - 50Hz & 277/480V - 60Hz

#### **Diesel Engine Matching Parameters**

50 Hz @ 1500 r/min		Stand By	Prime
Gross Engine Power	kW	250,0	227,0
Net Engine Power	kW	242,0	219,0
Fan Power Consumption (Belt Pulley Driven)	kW	6,0	6,0
Other Power Loss	kW	2,5	2,0
Mean Effective Pressure	MPa	2,56	2,32
Intake Air Flow	m 3 / min	13,80	13,20
Exhaust Temperature Limit	°C	600	580
Exhaust Flow	m ³ / min	39,60	36,00
Boost Pressure Ratio		3,10	3,00
Mean Piston Speed	m/s	6,5	6,5
Cooling Fan Air Flow	m <sup>3</sup> / min	230,0	230,0
Typical Generator Output Power	kVA	281	255
Heat Rejection			
Energy in Fuel (Heat of Combustion)	kW	604,0	560,0
Gross Heat to Power	kW	250,0	227,0
Energy to Coolant and Lubricating Oil	kW	110,0	102,0
Heat Dissipation Capacity*	kW	51,0	46,0
Energy to Exhaust	kW	175,0	168,0
Heat to Radiation	kW	18,0	17,0
*Intake Intercooled System			

60 Hz @ 1800 r/min		Stand By	Prime
Gross Engine Power	kW	265,0	241,0
Net Engine Power	kW	255,2	231,7
Fan Power Consumption (Belt Pulley Driven)	kW	7,2	7,2
Other Power Loss	kW	2,7	2,1
Mean Effective Pressure	MPa	2,26	2,05
Intake Air Flow	m 3 / min	14,63	14,01
Exhaust Temperature Limit	°C	636	594
Exhaust Flow	m 3 / min	41,98	38,20
Boost Pressure Ratio		3,30	3,20
Mean Piston Speed	m/s	7,8	7,8
Cooling Fan Air Flow	m <sup>3</sup> / min	244,0	244,0
Typical Generator Output Power	kVA	298	271
Heat Rejection			
Energy in Fuel (Heat of Combustion)	kW	640,0	585,0
Gross Heat to Power	kW	265,0	232,0
Energy to Coolant and Lubricating Oil	kW	117,0	108,0
Heat Dissipation Capacity*	kW	54,0	49,0
Energy to Exhaust	kW	186,0	178,0
Heat to Radiation	kW	19,0	19,0
*Intake Intercooled System			

#### **GENPOWER** Alternator Technical Parameters and Specifications

#### **Alternator Technical Parameters**

Insulation Class		Н
Winding Pitch		2/3 - (N° 6)
Wires		12
Protection		IP 23
Altitude	m	1000
Overspeed	rpm	2250
Air Flow	m³/sec	0.514
Bearing Drive	N/A	-
Rotor Winding	100%	Copper

Field Control System		Self Excited
A.V.R. Model	Standard	SX460
Voltage Regulation	%	± 1
Sustained Short-Circuit Current	10 sec	300% (3 IN)
Total Harmonic (*) TGH / THC	%	< 4
Wave Form :NEMA = TIF - (*)		< 50
Wave Form :I.E.C. = THF - (*)	%	< 2
Bearing Non - Drive	Bearing	6310-2RZ
Stator Winding	100%	Copper

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

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

#### **Alternator Specifications**

	50 Hz - 231/400V - Cos Q 0,8 - 1500 rpm											
Standard Using Alternator Optional Using Alternator												
Brand/Model	Genpower	270L1		Leroy Somer	TAL046D		Stamford	S4L1DC				
Duty			Conti	nuous		Stand By						
Ambient	C°		40°C				27°C					
Class/Temp. Rise	C°		H / 1:	25° K			H / 163° K					
Series Star (V)	V	380/220	400/231	415/240	1 Phase	380/220	400/231	415/240	1 Phase			
Parallel Star (V)	V	190/110	200/115	208/120	220	190/110	200/115	208/120	220			
Series Delta (V)	V	220	230	240	230	220	230	240	230			
Output Power	kVA	255,0	255,0	265,0	-	280,0	280,0	291,0	-			
Output Power	kW	204,0	204,0	212,0		224,0	224,0	232,8	-			

	60 Hz - 277/480V - Cos Q 0,8 - 1800 rpm											
Standard Using Alternator Optional Using Alternator												
Brand/Model	Genpower	270M1		Leroy Somer	TAL046C		Stamford	UC 274J				
Duty			Contir	nuous		Stand By						
Ambient	C°		40°C				27°C					
Class/Temp. Rise	C°		H / 12	25° K			H / 163° K					
Series Star (V)	V	416/240	440/254	480/277	1 Phase	416/240	440/254	480/277	1 Phase			
Parallel Star (V)	V	208/120	220/127	240/138	-	208/120	220/127	240/138	-			
Series Delta (V)	V	240	254	277	240	240	254	277	240			
Output Power	kVA	249,0	262,0	275,0	-	274,0	288,0	303,0	-			
Output Power	kW	199,2	209,6	220,0	-	219,2	230,4	242,4				



## GNT 280 & 295



#### 231/400V - 50Hz & 277/480V - 60Hz

#### **Control Panel Specifications**

Powder Painted Steel Pannel with Lockable Door ATS (Automatic Transfer Panel) - Optional Control Module

Battery Charge Emergency Stop Button Backlit, 128x64 Pixels

Control Relays Terminal Blocks Load Output Terminal

System Protection MCBs Circuit Breaker - Optional LCD Screen

#### **Control Module Technical Parameters**

Dimensions Weight Ambient Humidity DC Battery Supply Voltage Network Frequency Generator Voltage Measurement Current Transformer Secondary Charge Alternator Voltage Measurement Communication Interface Generator Contactor Relay Output

GENPOWER 120mm x 94mm 260 gr. 90% max 8 - 32 V 5 - 99,9 Hz 3 - 300 V5A 8 - 32 V RS-232 5A & 250V 1A with DC Supply 1A with DC Supply

Protection Class Environmental Conditions Ambient Temperature Battery Voltage Measurement Mains Voltage Measurement Generator Frequency Working Period Charge Alternator Excitation

Analog Sender Measurement Mains Contactor Relay Output Start Transistor Outputs Configurable-4 Transistor Outputs

Trans-MIDIAMF.232.GF IP65 From the Front 2000 Meters Above Sea Level -20 ° C to + 70 ° C 8 - 32 V

3 - 300 V Phase-Neutral, 5 - 99.9 Hz 5 - 99 9 Hz Continuous

210mA & 12V, 105mA & 24V Nominal 2.5W 0 - 1300ohm

5A & 250V 1A with DC Supply 1A with DC Supply

#### **Control Module Functions**

Solenoid Transistor Outputs

Configurable-3 Transistor Outputs

Mains Voltage Level Control Network Frequency Level Control **Engine Operating Option Control** Engine Stop Option Control Engine Speed (RPM) Level Control Battery Voltage Options Control Check Engine Maintenance Times Communication Interfaces GPRS, GSM

Voltage

Generator Voltage Level Control Generator Frequency Level Control Generator Current Level Control Generator Power Level Contro Generator Work Schedule and Timing Control

Oil Pressure Controllers Control Configurable Analog Inputs and Outputs Keeping Error Records of Past Events

Configurable Programmable Digital Inputs and Outputs

Current and Frequency

3 phase Generator Protections - High / Low Voltage

- High / Low Frequency - Current / Voltage Asymmetry - Overcurrent / Overload

1 Phase or 3 Phase, Phase Selection Parameter Setting via Control Module

Phase Sequence

Overheat Control

3 phase AMF Function

- High / Low Frequency - High / Low Voltage

- High / Low Water Temperature

- High / Low Load Mains, Generator ATS control

Network, Voltage, Frequency Display Parameter Setting via Computer Hours of Operation

Earting

Alarm Horn

Heater Tube Thermostat Control Modbus and SNMP Working Hour Ground Leakage Analog Modem

Ethernet, USB, RS232, RS485 Selectable Protection Alarm / Shutdown

Battery Voltage Oil Pressure

#### **Control Module Alerts**

Emergency Stop Malfunction High Generator Voltage Low Generator Frequency Low Load Over Current

Unbalanced Current

Low Generator Voltage High Generator Frequency Phase Sequence Error Overload

Low Water Level (Optional) Low Oil Pressure

Low Water Temperature Heat Sensor Broken Reverse Power Start Error Stop Error Magnetic Pickup Error

Charge Alternator Error Unbalanced Load Maintenance Time Alarm Low Speed High Speed Broken Oil Sensor Cable

High Oil Temperature (Optional) Low Fuel Level (Optional) High Battery Voltage Low Battery Voltage High Water Temperature Electronic Canbus Errors (ECU)

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

Special, Registered GENPOWER Design and Color A1 Quality DKP / HRU /Galvanized Steel Sensitive Twist on Automatic Press Brake Delicate Cut on Automatic Punch and Laser Bench Sensitive Welding on Robotic Welding Bench Chemical Cleaning Nano Technology Before Painting

Drying and Stabilizing on 200°C Ovens 1500 Hour Salt Test Glasswool Isolation, A1 Class Material -50/+500°C Special Covering Over Glass Wool Best Sound Level (in dBA)

Robotic Painting with Electrostatic Powder Paint

Temperature Tests Cable Exit Connectors and Glands Emergency Stop Button Fuel Level Gauge Fuel Drain Cap

Fuel Inlet and Return Records Impermeability Test for Fuel Tank Vacummed Rubber Mounted High Quality Weatherstrips High Quality Shock Absorbers Fuel Filling Cap (with ventilation)

Lifting and Carrying Equipments Internal Exhaust Mufflers (Silencers) External Exhaust Mufflers (Silencers) Radiator Water Filling Cap Daily Fuel Tank External Fuel Tank

#### Special Products / Non - Standardized

Synchronised Systems Scada Systems Mobile Systems Light Towers Ground Power Unit Generators

Medium Voltage - MV IP44-IP54 Class Generators Welding Machines Natural Gas Generator

Generators - with Trailer

DC Generators High Voltage - HV Power Plants Trigeneration Systems Biogas Generator

High Frequency Generators Variable Speed Generators Super Silent Canopy Cogeneration Systems LPG Generator

TS EN ISO 2409 Certificate

Marine Generators **Dual Generators** Automatic Voltage Stabilizers Electrical and Diesel Forklift HFO Generato

#### **Quality Documents & Certificates**

Trademark Registration Certificate Capacity Report (32400 Units / Year) Made in Turkey Certificate- For Generator/1-5000 kVA Made in Turkey Certificate-For Alternator/1-5000kVA Made in Turkey Certificate- For Engine/1-5000 kW Certificate of Competency for After Sales Services 2014/30/EU Electromagnetic Compatibility Directive CE Certificate - 2000/14/AT - 2000/14 EC (CE 2195)

Industrial Registry Certificate Certificate of Manufacturing Competence TSE- Service Adequacy Certificate ISO 9001 - 2015 Certificate ISO 14001 - 2015 Certificate OHSAS 18001 - 2007 Certificate 2006/42/EC Machinery Directive Coatchem-Türkak 1500 Hours Corrosion Durability Test Certificate

TSE 8528 - 4 Certificate TSE 8528 - 5 Certificate TSE 8528 - 8 Certificate AB-0547-T Certificate EAC - GOST Certificate/ Diesel Generator EAC - GOST Certificate/ Gasoline Generator CE Certificate - EN ISO 17050-1,2004

TS EN ISO 4628-3 Certificate TS EN ISO 4628-4 Certificate TS EN ISO 4628-5 Certificate TS EN ISO 4628-8 Certificate TS EN ISO 9227 Certificate TS 9620 EN ISO 4628-2 Certificate TS EN 60034 - 1 Certificate

EN ISO 8528-13.2016 Certificate EN ISO 12100:2010 Certificate EN ISO 13857:2008 Certificate EN ISO 14120:2015 Certificate EN 349:1993+A1:2008 Certificate EN 60204-1,2018 Certificate EN 61000-6-2,2019 Certificate EN 61000-6-4.2007/A1:2011 Certificate



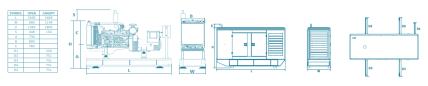


231/400V - 50Hz & 277/480V - 60Hz

#### **Generator Dimensions**

Values		Open Type Generator	Canopy Type Generator
Width	mm	900	1140
Length	mm	2400	3409
Height	mm	1840	1955
Weight (Net)	Kg	1589	2010
Fuel Tank Capacity	L	256	445

#### **Generator Technical Drawings**



#### **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.

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 is a size of the stand By Power is a size of the size 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% and 100% are recognized by the Prime Power rating during any operating period of 250 hours. The total operating time at 100% are recognized by the Prime Power rating during any operating period of 250 hours. The total operating time at 100% are recognized by the Prime Power rating during any operating period of 250 hours. The total operating time at 100% are recognized by the Prime Power rating during any operating period of 250 hours. The total operating time at 100% are recognized by the Prime Power rating during any operating period of 250 hours. The total operating time at 100% are recognized by the Prime Power rating during any operating period of 250 hours. The total operating time at 100% are recognized by the Prime Power rating during any operating period of 250 hours. The total operating time at 100% are recognized by the Prime Power rating during any operating period of 250 hours. The total operating time at 100% are recognized by the Prime Power rating during any operating period of 250 hours. The total operating time at 100% are recognized by the Prime Power rating during time at 100% are recognized by the Prime Power rating during time at 100% are recognized by the Prime Power rating during time at 100% are recognized by the Prime Power rating during time at 100% are recognized by the Prime Power rating during time at 100% are recognized by the Prime Power rating during time at 100% are recognized by the Prime Power rating during time at 100% are recognized by the Prime Power rating during time at 100% are recognized by the Prime Power rating during time at 100% are recognized by the Prime Power rating during time at 100% are recognized by the Prime Power rating during time at 100% are recognized by the 100% are recognized by the 100% are recognized b 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):

(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 Synchronic 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	E346TDI		Engine Family	ID72	Engine Series	ווכ				
		Typical Generator Output (Net)			Engine Power					
Speed	Type of Operation		rator Output (Net)	Gross		Net				
T pill	5800 - 5800 - 1110	kVA	kWe	kWm	Нр	kWm	Нр			
4500	Stand By (Maximum)	281,0	225,0	250,0	335,6	242,0	324,8			
1500	Prime	255,0	204,0	227,0	304,7	219,0	294,0			
	Stand By (Maximum)	298,2	238,6	265,0	355,7	255,0	342,3			
	Prime	270,7	216,5	241,0	323,5	232,0	311,4			

Fuel Consumption										
Devent of Drime names	1500	) rpm	1800 rpm							
Percent of Prime power	g/kWh	l/hr	g/kWh	l/hr						
110%	225	64,3	225,0	67,9						
100%	224	58,1	224,0	61,4						
75%	228	44,3	228,0	46,9						
50%	230	29,8	230,0	31,5						

#### 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)

# SAE GRADES d in Relation with the Outside Temperature SAF 30 SAE 10W-40

#### 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 mottos "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...





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