



# MIF NC 315 L Natural gas genset 250 kW Continues Power

MIF PLUS INTERNATIONAL  
DANISMANLIK HIZMETLERI A.S.  
KAVAKLI MAH. YEŞİLYURT CAD. NO:15/2,  
IC KAPI NO: 11, BEYLİKDÜZÜ / ISTANBUL



Group		Continuous output
Power	kVA	315
Power	kW	250
Engine Speed	rpm	1500
Standard Voltage	V	231 / 400
Power Factor	Cos Q	0,8
Gas consumption at 100% power (Hu = 35.88MJ/m3)	Nm3/h	65,3

**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. 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.

## 1. GENERALLY

The main equipment of this project is a VMAN CET13 container gas generator set, the rated power of the single generator set is 250 kW, the continuous output power is 250 kW, and the output voltage is 231/400V. The power station can be operated in the grid-connected mode or the parallel island operation between the VMAN generator sets, and the cooling method is closed radiator.

## 2. STANDARD BENCHMARK CONDITIONS

When the environmental conditions do not meet the below items, the power should be corrected according to the manufactory standard.

Atmospheric pressure	100 kPa
Relative humidity	30% — 80%
Ambient air humidity	25°C





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### 4.1 Gas generator sets

VMAN CET13 gas engine with Leroy-Somer LSA46.3 L11 alternator to form a unit.

**GENERATOR BASIC PARAMETERS TABLE**

<b>Gas generator type</b>	<b>MIF NC 315 L</b>
Gas engine type	CET13
Primary rated power (kW)	250
Current (A)	451
Voltage(V)	231/400
Rated speed (r/min)	1500
Power factor Cos $\phi$	0.8
Rated frequency (Hz)	50
Voltage regulation method	Automatically adjust
Speed regulation method	Electronic governor
Excitation	Brush less excitation
Cooling system	Horizontal radiator
The ways of generator outgoing lines	Three-phase and four-wire system
The environment temperature	40°C
Operation mode	Isolated operation or parallel operation
Working hours for per year	7200 hours
Generator set technology type	Four-stroke, water-cooled, turbocharger inter-cooling, air-fuel ratio control, spark plug ignition, electronic control, air and CH4 are mixed externally
First major overhaul	36000 hours
Container generator L*W*H (mm)/=Weight (kg) (Silencers and radiators are not included)	Please refer to the drawing
Design life of generator set	≥20 years



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### ENGINE HEAT PARAMETER

		50%	75%	100%
Power output	kW	125	200	250
Gas flow (Hu = 35.88MJ/m3)	Nm3/h	36.8	53.9	65.3
Total energy	kW	367	538	651
Air flow	Nm3/h	562	824	998
Air flow	kg/h	725	1063	1288
Flue gas flow	Nm3/h	599	878	1063
Flue gas flow	kg/h	753	1104	1337
Exhaust energy at 120°C	kW	70	111	143
Jacket water energy	kW	79	110	129
Jacket water flow	m3/h	20	20	20

#### 4.2 Engine Control System

The gas control system of VMAN gas engine uses the products of "American Woodward", which is the best combustion management in the world today. The air-fuel ratio control system, speed control system, ignition system and knock control system all use the PG+ system imported from the United States.

➤ Air-fuel ratio control system (Lean Combustion):

Adopt lean combustion technology and accurate electronic control parameters such as ignition timing and air-fuel ratio to adapt more widely type range of gas. Ensure to get more power with lower gas consumption.

- ① Digital microprocessor control technology should be able to automatically and accurately control engine power, air-fuel ratio, ignition timing, and reduce NOx emissions while maintaining appropriate gas consumption.
- ② The air-fuel ratio control system can keep NOx emissions within a smaller fluctuation range under all environmental and operating conditions. The engine requires almost no need adjust when the ambient temperature and air humidity changed.
- ③ Through automatically adjusting the ignition timing, ensuring gas engine running with the best performance, and restraining NOx bring into existence.

#### 4.3 Alternator

The LSA46.3 L11 generator of Nidec Leroy-Somer was used. Nidec Leroy-Somer is a world leader in electromechanical and electronic drive systems and the world leader in industrial alternators. Founded in 1919, Leroy-Somer is a French company employing 6200 people in 28 production units and 470 points of sale and service worldwide.



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### ALTERNATOR PERFORMANCE

Item	Mes. Unit	Parameter
Rated Power	kVA	365
Power factor		0.8
Frequency	Hz	50
Voltage	kV	0.4
Rated Speed	rpm	1500
Permissible Overspeed	rpm	1800
Insulation grade		H
Level of insulation protection		IP23

#### 4.4 GENSET control system

The unit control system is equipped with 630A circuit breaker, and the ComAp unit controller is used to control the unit's start, stop, grid connection, power, etc. At the same time, it has the functions of controlling container ventilation, lighting, gas leakage protection and stop, and cooling system equipment operation.

#### 4.5 Cooling system (Vertical type fan cooling)

The unit adopts vertical radiator cooling mode, which integrates inter-cooler and cylinder liner water radiator. The engine is installed on the same base, and the belt drive is used to drive the fan to rotate for heat dissipation. The cooling system is equipped with preheating device to optimize the low temperature start performance.

#### 4.6 Exhaust system

The exhaust system includes exhaust muffler, exhaust explosion-proof valve, Install it on the top of the container.

#### 4.7 Gas transmission system

Gas system includes pressure reducing valves, solenoid shut-off valves, manual shut-off valves, filters and other equipment, which are installed inside into the container. The main valves of the gas transmission system adopt original German DUNGS products or at the same level product. DUNGS has Vibration tested combination controls Multi block and Gas Bloc according US Military Standard MIL-STD-810G/31. Worldwide support via DUNGS branches and subsidiaries in more than 50 countries.

#### 4.7 Heat recovery system

CET13 container gas generator set is equipped with a set of hot water type recovery boilers that utilize the heat of the flared gas to heat softened water provided by the customer. The waste heat boiler is equipped with safety valve, pressure gauge, temperature gauge, etc. For detailed parameters, see the system diagram.



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## 5. MAIN PARTS MANUAL

No	Item	Qty	Description	Marks
<b>A. MIF NC 315 L Container gas generator</b>				
1.	MIF NC 315 L gas generator	1 unit	250 kW	1500 r/min
1.1	CET13 gas engine	1 unit	VMAN	
1.2	Alternator	1 unit	Nidec Leroy-Somer	
1.3	Common base	1 unit		
1.4	Engine control system	1 set	Woodward	
2.	Genset control system	1 set	ComAp control	
3.	Vertical radiator	1 set		
4.	Exhaust System	1 set		
4.1	Muffler	1 unit		
4.2	Exhaust explosion-proof valve	1 unit		
5.	Unit gas branch pipeline equipment	1 set	German DUNGS	
5.1	Filter	1 unit	DN50-PN16	
5.2	Shut-off solenoid valve	1 unit	DN50-PN16	
5.3	Branch pipes device	1 unit	DN50-PN16	
5.4	Piping and brackets	1 set		
6.	Hot water type waste heat boiler	1 set		
7.	Container	1 set	20 ft base	
7.1	Ventilation system	1 set		
7.2	Lighting system	1 set		
7.3	Gas leak alarm system	1 set		
7.4	Noise reduction system	1 set		
8.	Oxygen senser and cable	1 set		
9.	Electric Water Preheater	1 set	Electric Heater	Option
10.	Battery charger	1 set	BP1024	Option
11.	Spring shock absorber	1 set		Option
12.	High temperature butterfly valve	3 unit		

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