

## ROCK POWER BIOGAS GENERATOR SET TECHNICAL DATA



Model: KDGH250-G

Standby power: 300kw/375kVA

Continuous power: 250kw/313kVA

Frequency: 60Hz

Speed: 1800RPM

Voltage: 380/220V

Fuel: Biogas



## Genset working condition:

- **Acceptable working conditions:**

Ambient temperature : -10°C~+40°C

(Antifreeze or hot water needed for below -20°C)

Relative humidity: <90% (20°C) , Altitude: ≤500m.

- **Applied gas:Biogas**

Acceptable fuel gas pressure: 2~10kPa.

**CH<sub>4</sub> content≥45%**

**Gas low heat value(LHV)≥19MJ/Nm<sup>3</sup>**. If LHV<19MJ/Nm<sup>3</sup>, biogas engine power output will decrease and electrical efficiency will decrease.Gas doesn't include free condensation water or free materials (the size of impurities should be less than 5μm.)

**H<sub>2</sub>S content≤ 150ppm.NH<sub>3</sub>content≤ 50ppm. Silicon content ≤ 5 mg/Nm<sup>3</sup>**

Impurities content≤30mg/Nm<sup>3</sup>, size≤5μm, Water content≤40g/Nm<sup>3</sup>, no free water.

**NOTE:**

1. H<sub>2</sub>S will cause corrosion to engine components. It's better to control it below 130ppm if possible. However 200ppm is also acceptable.

2. Silicon can appear in engine lubricant oil. High silicon concentrations in the engine oil can cause heavily wear and tear on engine components. Engine oil must be assessed during CHP operation and oil type must be decided according to such oil assessment.

## Genset Specification

Biogas generator data	
Genset model	<b>KDGH250-G</b>
Standby power	300kW/375kVA
Continuous power	250kW/313kVA
Output Type	3 Phases 4 wires
Voltage output	380/220V
Power factor	0.8 lagging
Frequency (Hz)	60
Rated speed (RPM)	1800
Electrical efficiency	34%
Biogas consumption	150m <sup>3</sup> /hour
Thermal power	346kWt
Thermal efficiency	47%
Total efficiency	81%
Voltage Stabilized regulation	≤±1.5%
Voltage Instantaneous regulation	≤±20%
Voltage Recovery time (s)	≤1
Voltage Fluctuation ratio	≤1%
Net weight(kg)	6530
Canopy type dimension(mm)	6058*2438*2591

Biogas Engine Data	
<b>Model</b>	<b>HGKT19</b>
<b>Brand</b>	<b>ROCK POWER-CUMMINS</b>
Type	4 stroke, water-cooling, wet cylinder liner, electronic-control ignition system, pre-mixed perfect mixed burning
Engine output(kWm)	336
Cylinders& Arrangement	6 in line
BoreXStroke(mm)	159*159
Displacement(L)	18.9
Compression ratio	11.5:1
Speed (RPM)	1800
Aspiration	Intercooled and Turbocharged
Cooling Method	Water cooling by fan radiator
Governor type (speed regulating type)	Electronic governing, HT SG-100, Hugelgli Tech, Switzerland
Gas mixer	Huegli Mixer RM-25 with <u>automatic air/fuel ratio control</u>
Gas valves	Intake 2 & exhaust 2 per cylinder
Gas inlet pressure	2 to 10kPa
Ignition timing	1-5-3-6-2-4
Ignition controller	Altronic CD1 unit
Starting method	Electric, 24 V motor
Idling speed(r/min)	700
Oil recommended	Gas engine special oil, SAE 15W-40 CF4 or above
Oil consumption	≤0.5 g/kW.h

Alternator Data	
<b>Brand</b>	<b>Leroy Somer</b>
<b>Model</b>	<b>LSA46.3L10</b>
Continuous power	252kW
Rated Voltage (V):	380/220V, AC three phases
Excitation system	brushless, self-excited
Frequency (Hz)	60
Efficiency	94.4%
Voltage regulation	± 0.5 %
Insulation class:	Class H
Protection class:	IP 23
cooling method:	wind-cooling, self-heat-rejection
Voltage regulating mode	Automatic voltage regulator
Compliant with international standards:	BS EN 60034 andBS5000, VDE0530, NEMA MG1-32, IEC34, CSA C22.2-100, AS1359.Other standards and certifications can be considered onrequest.

## ComAp Control Panel IG-NT (Controller IG-NTC-BB connected with InteliVision Display screen)



ComAp InteliGen NTC BaseBox is a comprehensive controller for both single and multiple gen-sets operating in standby or parallel modes. The detachable modular construction allows easy installation with the potential for many different extension modules designed to suit individual customer requirements.

InteliGen NT BaseBox can be connected with InteliVision 5 display screen which is 5.7" Color TFT display screen.

### Features

1. Support of engines with ECU (J1939, Modbus and other proprietary interfaces); alarm codes displayed in text form
2. AMF function
3. Automatic synchronizing and power control(via speed governor or ECU)
4. Base load, Import / Export
5. Peak shaving
6. Voltage and PF control (AVR)
7. Generator measurement: U, I, Hz, kW, kVAr, kVA, PF, kWh, kVAhr
8. Mains measurement: U, I, Hz, kW, kVAr, PF
9. Selectable measurement ranges for AC voltages and currents – 120 / 277 V, 0–1 / 0–5 A 1)
10. Inputs and outputs configurable for various customer needs
11. Bipolar binary outputs – possibility to use
12. BO as High or Low side switch
13. RS232 / RS485 interface with Modbus support;
14. Analog / GSM / ISDN / CDMA modem support;
15. SMS messages; ECU Modbus interface
16. Secondary isolated RS485 interface 1)
17. Ethernet connection (RJ45) 1)
18. USB 2.0 slave interface 1)
19. Controller redundancy
20. Event-based history (up to 1000 records) with
21. Customer selectable list of stored values; RTC;

statistic values

22. Integrated PLC programmable functions
23. Interface to remote display unit (InteliVision 5 RD)
24. DIN-Rail mount

Integrated fixed and configurable protections

1. 3 phase integrated generator protections (U + f)
2. IDMT overcurrent + Short current protection
3. Overload protection
4. Reverse power protection
5. Instantaneous and IDMT earth fault current
6. 3 phase integrated mains protections (U + f)
7. Vector shift and ROCOF protection
8. All binary / analog inputs free configurable for various protection types: HistRecOnly / Alarm Only
9. / Alarm + History indication / Warning / Off load /
10. Slow stop / Breaker Open&Cool down / Shutdown
11. Shutdown override / Mains protect / Sensor fail
12. Phase rotation and phase sequence protection
13. Additional 160 programmable protections configurable for any measured value to create customer-specific protections
14. Application security



## Section B –Accessories Configurations



### 20ft container type soundproof canopy

Features:

1. Well-formed and compact design, the big built-in muffler makes the noise lower.
2. Weather-proof, dust-proof, sound-proof, suitable for rigorous environment, according to IP23.
3. All canopy parts are designed with modular principles and canopy materials use strong steel board.
4. All metal canopy parts are painted by electrostatic polyester powder paint.
5. Efficient air intake and exhaust system to ensure stable output.
6. Scientific design and advanced techniques to reduce noise level to 75db(A), materials and its covers further ensure sound-absorbing efficiency and protection function.
7. Locks of canopy design are more convenient for the operation and maintenance also ensure the safety of gen-set more.
8. Lifting-eye and forklift design are easy for transportation.
9. Emergency stop push button outside of canopy.



### 2. Heat recovery for CHP

Material	<b>Stainless steel</b>
Heat exchangers	Engine cylinder water heat exchanger and exhaust gas heat exchanger
Inlet water temperature	60°C
Outlet water temperature	80°C

Features:

1. Increase the total efficiency
2. Hot water can be used for the life and industrial use



### 3. Grid synchronization panel

Model	<b>KD250-SP</b>
Air circuit breaker brand	ABB
Controller brand	ComAp IG-NTC-BB

Features:

1. Automatically synchronize gen-set with mains grid
2. Automatically unload the gen-set
3. Programmed start and stop gen-set
4. Gen-set controlling, monitoring and protecting



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