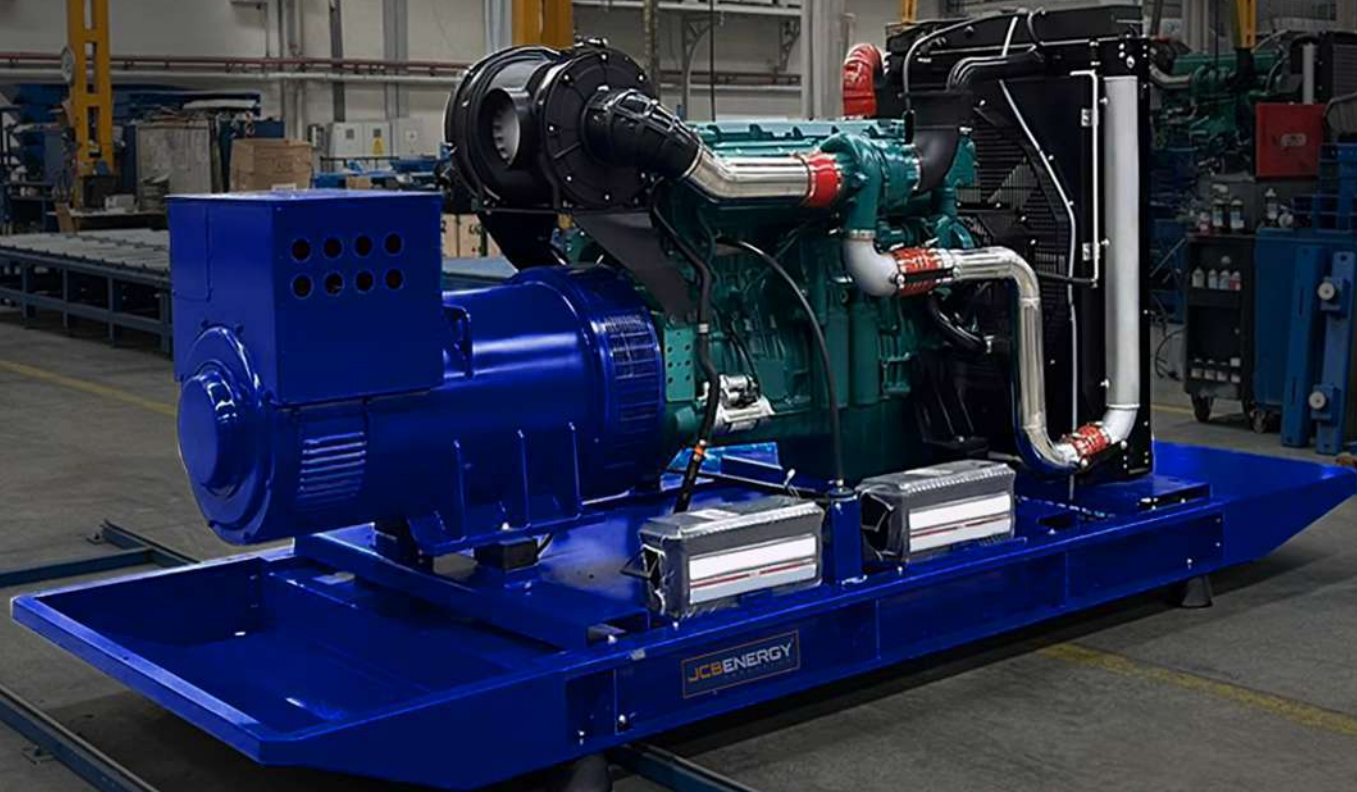




# JCB ENERGY ELECTRIC POWER INDUSTRY

📍 MADRID / SPAIN





## GENERATOR GENERAL INFORMATION

GENERATOR	FREQUENCY	VOLTAGE	POWER FACTOR	SPEED	DIESEL ENGINE			ALTERNATOR			TYPE OF	GENERATOR OUTPUT		
Model	Hz	V	Cos Q	Rpm	Brand	Model	Series	Brand	Model	Series	Operation	kVA	kW	A
JCD 130	50	231/400	0.8	1500		BF4M1013EC G2	BF		JCB	270S	Standby	130,0	104,0	187,9
JCD 137	60	277/480	0.8	1800							Prime	118,0	94,4	170,5
											Continuous	103,6	82,9	149,7
											Standby	137,0	109,6	198,0
											Prime	124,5	99,6	180,0
									225LX	Continuous	114,0	91,2	164,7	

- Diesel Engines with Advanced Technology and Quality
- Alternators with Advanced Technology and Quality
- Low Exhaust Emission
- Control Panel Suitable for Flexible Application
- Patented Compact Designed and Sound proof Canopy
- Low Operating Cost, Suitable for Heavy-Duty
- Durability, Low Noise Level

- Tropical 50 °C Radiator, First Class Product Support
- Fuel Filter with Water and Particle Separator
- Low Fuel Consumption, Low Oil Consumption
- Global Technical Service and Maintenance Support
- Wide Range of Affordable Spare Parts
- High Quality and Reliable Technology
- Half Century Experience in Generator Manufacturing

### 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 no variable 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

#### 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

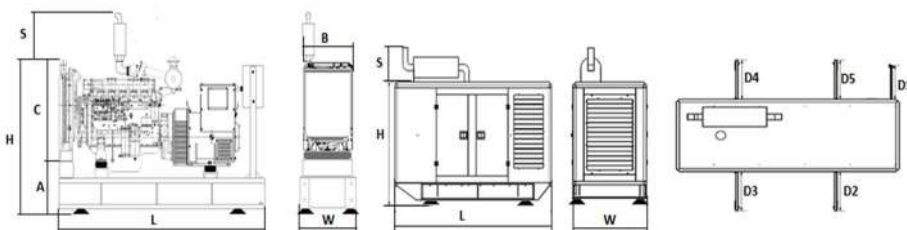
- \* Generators can work on Continuous Power at 70% of Prime power value if only all maintenances are done on time with original spare parts and high-quality oils that manufacturer advice.
- \* Generators should not operate below 50% of Prime Power value. In such a case, the engine will burn excessive 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.

## GENERATOR DIMENSIONS AND TECHNICAL DRAWINGS



VALUES		OPEN TYPE GENERATOR	CANOPY TYPE GENERATOR
WIDTH	mm	800	1153
LENGTH	mm	2150	2971
HEIGHT	mm	1549	2027
WEIGHT (NET)	Kg	1205	1610
FUEL TANK CAPACITY	L	190	376

SYMBOL	OPEN	CANOPY
L	2150	2971
W	800	1153
H	1002	1807
S	547	220
A	696	
B	650	
C	680	
D1		520
D2		604
D3		604
D4		604
D5		604



## FUEL CONSUMPTION

PERCENT OF PRIME POWER	1500 rpm	1800 rpm
	l/hr	l/hr
110 %	28,46	30,67
100 %	25,76	27,88
75 %	19,05	20,61
50 %	12,76	13,81

## DIESEL ENGINE MAIN TECHNICAL PARAMETERS

50 Hz – 1500 min <sup>-1</sup>			60 Hz – 1800 min <sup>-1</sup>		
Type		BF4M1013EC	Type		BF4M1013EC
Speed	min <sup>-1</sup>	1500	Speed	min <sup>-1</sup>	1800
Net Frequency	Hz	50	Net Frequency	Hz	60
Power Standard		LTP	Power Standard		LTP
Power Level		G2	Power Level		G2
Exhaust Emission Standard		Fuel Optimized	Exhaust Emission Standard		Fuel Optimized
<b>GENERAL</b>			<b>GENERAL</b>		
Aspiration		Turbo,CAC	Aspiration		Turbo,CAC
Governing System		Electronic	Governing System		Electronic
Governor Brand		Heinzmann/DDE	Governor Brand		Heinzmann/DDE
No of Cylinders		4	No of Cylinders		4
Configuration		in-line	Configuration		in-line
Injection System		single injection pumps	Injection System		single injection pumps
Displacement	L	4,76	Displacement	L	4,76
Bore	mm	108	Bore	mm	108
Stroke	mm	130	Stroke	mm	130
Compression Ratio		19:1	Compression Ratio		19:1
Mean Effective Pressure	Bar	19,50	Mean Effective Pressure	Bar	17,50
Piston Speed	m/s	6,50	Piston Speed	m/s	7,80
Rotation (looking at flywheel)		ccw	Rotation (looking at flywheel)		ccw
No of Teeth on Flywheel Ring Gear		129	No of Teeth on Flywheel Ring Gear		129
<b>GOVERNOR PERFORMANCE</b>			<b>GOVERNOR PERFORMANCE</b>		
Speed droop (static) mech. gov.	%	4-5	Speed droop (static) mech. gov.	%	4-5
Speed droop (static) electr. gov.	%	0-3	Speed droop (static) electr. gov.	%	0-3
Governing standards		G3	Governing standards		G3
<b>MOMENT OF INERTIA</b>			<b>MOMENT OF INERTIA</b>		
Engine without flywheel	kg m <sup>2</sup>	0,23	Engine without flywheel	kg m <sup>2</sup>	0,23
Flywheel (standard genset spec.)	kg m <sup>2</sup>	2,60	Flywheel (standard genset spec.)	kg m <sup>2</sup>	2,60
Max. step load acceptance, 1st step	%	-	Max. step load acceptance, 1st step	%	-
Sound power at full load, incl. cooling system	dB(A)	110,7	Sound power at full load, incl. cooling system	dB(A)	117,2
Sound press. (1m average, full load), incl. cool. syst.	dB(A)	99	Sound press. (1m average, full load), incl. cool. syst.	dB(A)	103,5
<b>ENGINE WEIGHT</b>			<b>ENGINE WEIGHT</b>		
Engine Dry, w/o Cooling System	kg	526	Engine Dry, w/o Cooling System	Kg	526
Engine with cooling system	kg	560	Engine with cooling system	kg	560
<b>LUBRICATION SYSTEM</b>			<b>LUBRICATION SYSTEM</b>		
Oil specification		15W40/CI-4/SL	Oil specification		15W40/CI-4/SL
Oil consumption (as % of fuel consumption)	%	0,3	Oil consumption (as % of fuel consumption)	%	0,3
Oil capacity (sump)	l	11	Oil capacity (sump)	l	11
Min. oil pressure (warning)	Bar	2,70	Min. oil pressure (warning)	Bar	2,70
Min. oil pressure (shut down)	Bar	2	Min. oil pressure (shut down)	Bar	2
Max. permissible oil temperature (oil pan)	°C	130	Max. permissible oil temperature (oil pan)	°C	130
<b>OUTPUT</b>			<b>OUTPUT</b>		
Gross Output(LTP or StandBy Power)	Kw	116	Gross Output(LTP or StandBy Power)	Kw	125
Fan Reduction	Kw	5,90	Fan Reduction	Kw	10,20
Net flywheel	Kw	110,1	Net flywheel		114,8
Electrical Output (Stand By)	Kva	130	Electrical Output (Stand By)	Kva	137
Gross Output(PRP or Prime Power)	Kw	105	Gross Output(PRP or Prime Power)	Kw	115
Gross Output(Continuous Power)	kw	96	Gross Output(Continuous Power)	kw	105

## DIESEL ENGINE MAIN TECHNICAL PARAMETERS

50 Hz – 1500 min <sup>-1</sup>			60 Hz – 1800 min <sup>-1</sup>		
COOLING SYSTEM, GENERAL ENGINE COOLING DATA			COOLING SYSTEM, GENERAL ENGINE COOLING DATA		
Max. perm. Coolant Outlet Temperature	°C	105	Max. perm. Coolant Outlet Temperature	°C	105
Max. perm. Flow Resistance (cool. syst. and piping)	Bar	0,25	Max. perm. Flow Resistance (cool. syst. and piping)	Bar	0,35
Max. Temperature of Coolant (warning)	°C	108	Max. Temperature of Coolant (warning)	°C	108
Max. Temperature of Coolant (shutdown)	°C	110	Max. Temperature of Coolant (shutdown)	°C	110
Temperature at Which Thermostat Starts to open	°C	83	Temperature at Which Thermostat Starts to open	°C	83
Temperature at Which Thermostat is Fully Open	°C	98	Temperature at Which Thermostat is Fully Open	°C	98
Delivery of Coolant Pump	m <sup>3</sup> /h	10,20	Delivery of Coolant Pump	m <sup>3</sup> /h	12,30
Min. Pressure Before Coolant Pump	Bar	0,3	Min. Pressure Before Coolant Pump	Bar	0,3
Temperature at CAC outlet at standard conditions	°C	40	Temperature at CAC outlet at standard conditions	°C	40
ENGINE COOLING SYSTEM			ENGINE COOLING SYSTEM		
Coolant Capacity (engine)	l	7,40	Coolant Capacity (engine)	l	7,40
Coolant Capacity (incl. cooling unit)	l	19,70	Coolant Capacity (incl. cooling unit)	l	19,70
Air to Boil (max. permissible cool. air temp. at fan)	°C	54	Air to Boil (max. permissible cool. air temp. at fan)	°C	57
Fan Power Consumption	kW	5,90	Fan Power Consumption	kW	10,20
Cooling air Flow	m <sup>3</sup> /h	6100	Cooling air Flow	m <sup>3</sup> /h	7600
Air Pressure Loss, external	mbar	1,50	Air Pressure Loss, external	mbar	2,00
HEAT BALANCE			HEAT BALANCE		
Heat Dissipation (engine radiator)	kW	56,50	Heat Dissipation (engine radiator)	kW	61,20
Heat Dissipation (CAC)	kW	18,40	Heat Dissipation (CAC)	kW	22,90
Heat Dissipation (convection)	kW	11,30	Heat Dissipation (convection)	kW	12,30
INLET / EXHAUST DATA			INLET / EXHAUST DATA		
Max. intake Depression (Switch setting)	mbar	25	Max. intake Depression (Switch setting)	mbar	25
Combustion Air Volume	m <sup>3</sup> /h	433	Combustion Air Volume	m <sup>3</sup> /h	514
Max. Exhaust Back Pressure	mbar	30	Max. Exhaust Back Pressure	mbar	30
Max. Exhaust Gas Temperature	°C	560	Max. Exhaust Gas Temperature	°C	520
Exhaust Gas Flow (at above temp)	m <sup>3</sup> /h	1225	Exhaust Gas Flow (at above temp)	m <sup>3</sup> /h	1465
Exhaust Flange / pipe diameter	mm	-	Exhaust Flange / pipe diameter	mm	-
ELECTRICAL SYSTEM			ELECTRICAL SYSTEM		
Voltage	V	12	Voltage	V	12
Starter	KW	6	Starter	KW	6
Alternator Output	A	35	Alternator Output	A	35
Batteries (minimum capacity, cold start limit -5°C)	Ah	1*85	Batteries (minimum capacity, cold start limit -5°C)	Ah	1*85

## ALTERNATOR TECHNICAL PARAMETERS






### ALTERNATOR TECHNICAL PARAMETERS

Insulation Class	H	Field Control System	Self-Excited
Winding Pitch	2/3 - (N° 6)	A.V.R. Model	Standard
Wires	12	Voltage Regulation	%
Protection	IP 23	Sustained Short-Circuit Current	10 sec
Altitude	m	Total Harmonic (*) TGH / THC	%
Overspeed	rpm	Wave Form: NEMA = TIF - (*)	< 50
Air Flow	m³/sec.	Wave Form: I.E.C. = THF - (*)	%
Bearing Drive	N/A	Bearing Non-Drive	Bearing
Rotor Winding	100%	Stator Winding	100%

### 50 HZ / 231-400V COSQ 0,8 / 1500 RPM

#### STANDARD USING ALTERNATOR




#### OPTIONAL USING ALTERNATOR

BRAND/MODEL		JCB 270S				TAL044E			UC274D
DUTY		Continuous					Stand By		
AMBIENT	C°	40°C					27°C		
CLASS / TEMP. RISE	C°	H/ 125° K					H/ 163° K		
SERIES STAR	V	380/220	400/231	415/240	1 Phase	380/220	400/231	415/240	1 Phase
PARALLEL STAR	V	190/110	200/115	208/120	220	190/110	200/115	208/120	220
SERIES DELTA	V	220	230	240	230	220	230	240	230
OUTPUT POWER	kVA	123,0	123,0	128,0	-	135,0	135,0	140,0	-
OUTPUT POWER	kW	98,4	98,4	102,4	-	108,0	108,0	112,0	-

### 60 HZ / 277-480V COSQ 0,8 / 1800 RPM

#### STANDARD USING ALTERNATOR

#### OPTIONAL USING ALTERNATOR

BRAND/MODEL		JCB 225LX			TAL044D			UC274C	
DUTY		Continuous				Stand By			
AMBIENT	C°	40°C				27°C			
CLASS / TEMP. RISE	C°	H / 125° K				H / 163° K			
SERIES STAR	V	416/240	440/254	480/277	1 Phase	416/240	440/254	480/277	1 Phase
PARALLEL STAR	V	208/120	220/127	240/138	-	208/120	220/127	240/138	-
SERIES DELTA	V	240	254	277	240	240	254	277	240
OUTPUT POWER	kVA	117,0	123,0	129,0	-	129,0	135,0	142,0	-
OUTPUT POWER	kW	93,6	98,4	103,2	-	103,2	108,0	113,6	-

## CONTROL MODULE ALERTS

Emergency Stop Malfunction  
High Generator Frequency  
Low Generator frequency, Low Load  
Over Current, Unbalanced Current  
Low Generator Voltage  
High generator Frequency  
Phase sequence error  
Overload, Heat Sensor Broken  
Low Water Level (Optional)  
Low Oil Pressure, Reverse Power  
Low Water Temperature


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 Can bus Errors (ECU)

## CONTROL PANEL SPECIFICATIONS



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

## CONTROL MODULE TECHNICAL PARAMETERS

Brand		Brand	Trans-MIDIAMF.232.GP
Dimensions	120mmx94mm.	Protection Class	IP65 From the Front
Weight	260 gr.	Environmental Conditions	2000 meters above sea level
Ambient Humidity	Max. %90.	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 FUNCTION

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 Powder 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 Times	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, Voltage, Earning	Configurable Programmable Digital Inputs and Outputs	Water Temperature Current and Frequency	Hours of Operation Phase sequence	Battery Voltage Oil Pressure

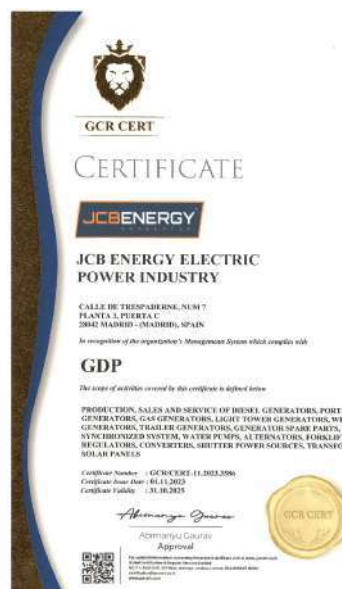
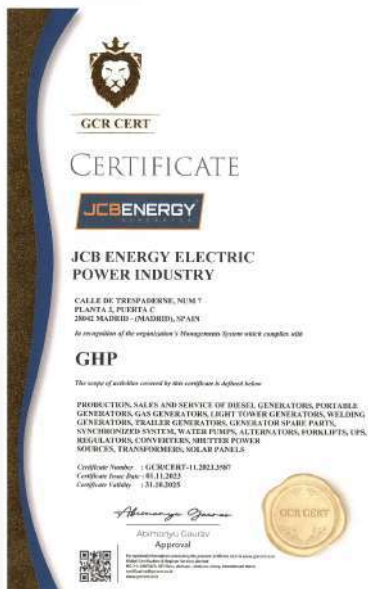
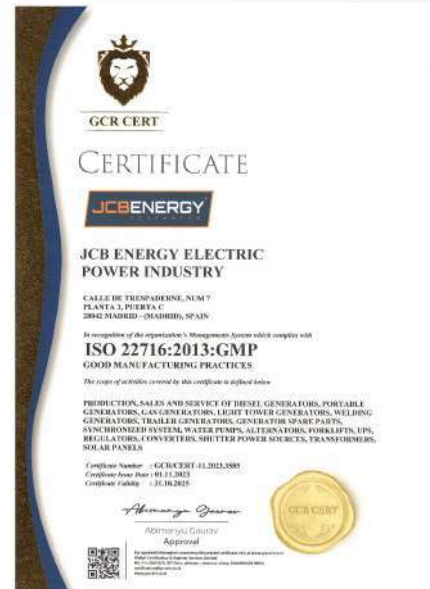
## SOUND PROOF CANOPY AND BASE FRAME (CHASIS) SPECIFICATIONS



- Special, Registered JCB Energy Design and Colour
- 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
- Robotic Painting with Electrostatic Powder Paint
- Drying and stabilizing on 200 °C Ovens
- 1500 Hour Salt Test
- Glass wool Isolation, A1 Class Material -50/+500 °C
- Special Covering Over Glass Wool
- Best Sound Level (in DbA)
- Temperature Tests
- Rustproof Accessories
- Cable Exit Connectors and Glands
- Emergency Stop Button
- Fuel Level Gauge
- Fuel Drain Cap
- Fuel Inlet and Return Records
- Impermeability Test for Fuel Tank
- Vacuumed Rubber Mounted
- High Quality weatherstrips
- High Quality Shock Absorbers
- Fuel Filling Cap (with ventilation)
- Lifting and Carrying Equipment
- Internal Exhaust Mufflers (Silencers)
- External Exhaust Mufflers (Silencers)
- Radiator water Filling Cap
- Daily Fuel Tank, External Fuel Tank



# OUR CERTIFICATES



## JCB Energy Electric Power Industry S.L.

HAS OUR TOTAL SUPPORT

We are pleased to certify that this company, with its registered office (address as below), is fully authorized as an Original Equipment Manufacturer partner to incorporate Mecc Alte AC Generators when selling and distributing generating sets.

Mecc Alte also certifies that its products sold to this company are fully covered by the Mecc Alte Warranty.

Mecc Alte provides this company access to its extensive product knowledge in order to incorporate Mecc Alte AC Generators when selling and distributing generating sets.

World-class alternators 1 - 5.000kVA.

**APPROVED MANUFACTURER**

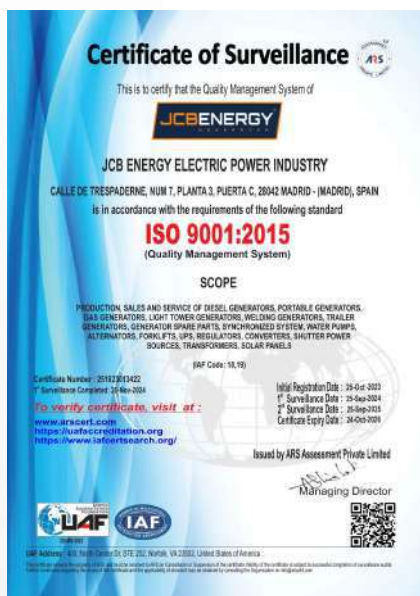
**CERTIFICATE NO.**  
MAD0163

**VALID UNTIL**  
31 December 2025

**COMPANY ADDRESS**  
Calle de Trespaderne, 7, P.O. 28042, Madrid, Spain

**GENUINE PARTS**

**POWER FROM WITHIN**



# MANAGEMENT SYSTEM CERTIFICATE

Certificate no.: 2372384

Initial certification date: 14 August 2021

Valid: 14 October 2021 – 13 October 2026

This is to certify that the management system of **HD Hyundai Infracore Co., Ltd. Head Office & Incheon Plant** 489, Injung-ro, Dong-gu, Incheon, 22502, Republic of Korea and the sites as mentioned in the appendix accompanying this certificate

has been found to conform to the Environmental Management System standard: **ISO 14001:2015**

This certificate is valid for the following scope: **Design, Development, Manufacture, Servicing of Internal Combustion Engine for use in Marine Industry, General Industry and Automotive Industry, and Earth Moving Equipment (Excavator, Wheel Loader, Dozer), Testing of Earth Moving Equipment (Excavator and Wheel Loader).**

Place and date: Barcelona, 09 October 2021

For the issuing office: DNV Business Assurance, Barcelona, Spain

DNV KMS Management Representative

Let's all do our bit to make the world a better place. [www.dnv.com](https://www.dnv.com)

# MANAGEMENT SYSTEM CERTIFICATE

Certificate no.: 2372385

Initial certification date: 13 January 2021

Valid: 14 October 2021 – 13 October 2026

This is to certify that the management system of **HD Hyundai Infracore Co., Ltd. Head Office & Incheon Plant** 489, Injung-ro, Dong-gu, Incheon, 22502, Republic of Korea and the sites as mentioned in the appendix accompanying this certificate

has been found to conform to the Occupational Health and Safety Management System standard: **ISO 45001:2018**

This certificate is valid for the following scope: **Design, Development, Manufacture, Servicing of Internal Combustion Engine for use in Marine Industry, General Industry and Automotive Industry, and Earth Moving Equipment (Excavator, Wheel Loader, Dozer), Testing of Earth Moving Equipment (Excavator and Wheel Loader).**

Place and date: Barcelona, 09 October 2021

For the issuing office: DNV Business Assurance, Barcelona, Spain

DNV KMS Management Representative

Let's all do our bit to make the world a better place. [www.dnv.com](https://www.dnv.com)

# MANAGEMENT SYSTEM CERTIFICATE

Certificate no.: 2372386

Initial certification date: 13 January 2021

Valid: 14 October 2021 – 13 October 2026

This is to certify that the management system of **HD Hyundai Infracore Co., Ltd. Head Office & Incheon Plant** 489, Injung-ro, Dong-gu, Incheon, 22502, Republic of Korea and the sites as mentioned in the appendix accompanying this certificate

has been found to conform to the Occupational Health and Safety Management System standard: **ISO 45001:2018**

This certificate is valid for the following scope: **Design, Development, Manufacture, Servicing of Internal Combustion Engine for use in Marine Industry, General Industry and Automotive Industry, and Earth Moving Equipment (Excavator, Wheel Loader, Dozer), Testing of Earth Moving Equipment (Excavator and Wheel Loader).**

Place and date: Barcelona, 09 October 2021

For the issuing office: DNV Business Assurance, Barcelona, Spain

DNV KMS Management Representative

Let's all do our bit to make the world a better place. [www.dnv.com](https://www.dnv.com)

# MANAGEMENT SYSTEM CERTIFICATE

Certificate no.: 2372387

Initial certification date: 13 January 2021

Valid: 14 October 2021 – 13 October 2026

This is to certify that the management system of **HD Hyundai Infracore Co., Ltd. Head Office & Incheon Plant** 489, Injung-ro, Dong-gu, Incheon, 22502, Republic of Korea and the sites as mentioned in the appendix accompanying this certificate

has been found to conform to the Occupational Health and Safety Management System standard: **ISO 45001:2018**

This certificate is valid for the following scope: **Design, Development, Manufacture, Servicing of Internal Combustion Engine for use in Marine Industry, General Industry and Automotive Industry, and Earth Moving Equipment (Excavator, Wheel Loader, Dozer), Testing of Earth Moving Equipment (Excavator and Wheel Loader).**

Place and date: Barcelona, 09 October 2021

For the issuing office: DNV Business Assurance, Barcelona, Spain

DNV KMS Management Representative

Let's all do our bit to make the world a better place. [www.dnv.com](https://www.dnv.com)

# CE DECLARATION OF CONFORMITY

Certificate no.: 2372388

Initial certification date: 13 January 2021

Valid: 14 October 2021 – 13 October 2026

This is to certify that the management system of **HD Hyundai Infracore Co., Ltd. Head Office & Incheon Plant** 489, Injung-ro, Dong-gu, Incheon, 22502, Republic of Korea and the sites as mentioned in the appendix accompanying this certificate

has been found to conform to the Occupational Health and Safety Management System standard: **ISO 45001:2018**

This certificate is valid for the following scope: **Design, Development, Manufacture, Servicing of Internal Combustion Engine for use in Marine Industry, General Industry and Automotive Industry, and Earth Moving Equipment (Excavator, Wheel Loader, Dozer), Testing of Earth Moving Equipment (Excavator and Wheel Loader).**

Place and date: Barcelona, 09 October 2021

For the issuing office: DNV Business Assurance, Barcelona, Spain

DNV KMS Management Representative

Let's all do our bit to make the world a better place. [www.dnv.com](https://www.dnv.com)

# CE DECLARATION OF CONFORMITY

Certificate no.: 2372389

Initial certification date: 13 January 2021

Valid: 14 October 2021 – 13 October 2026

This is to certify that the management system of **HD Hyundai Infracore Co., Ltd. Head Office & Incheon Plant** 489, Injung-ro, Dong-gu, Incheon, 22502, Republic of Korea and the sites as mentioned in the appendix accompanying this certificate

has been found to conform to the Occupational Health and Safety Management System standard: **ISO 45001:2018**

This certificate is valid for the following scope: **Design, Development, Manufacture, Servicing of Internal Combustion Engine for use in Marine Industry, General Industry and Automotive Industry, and Earth Moving Equipment (Excavator, Wheel Loader, Dozer), Testing of Earth Moving Equipment (Excavator and Wheel Loader).**

Place and date: Barcelona, 09 October 2021

For the issuing office: DNV Business Assurance, Barcelona, Spain

DNV KMS Management Representative

Let's all do our bit to make the world a better place. [www.dnv.com](https://www.dnv.com)

VERTA-106188  
VERTA-106189





[www.jcbenergy.com](http://www.jcbenergy.com)