JCB ENERGY ELECTRIC POWER INDUSTRY

JUENERGY

MADRID / SPAIN





231 / 400 V – 50 Hz





GENERATOR GENERAL INFORMATION

GENERATOR	FREQUENCY	VOLTAGE	POWER FACTOR	SPEED	DIESEL EN	IGINE	ALTERN	IATOR		TYPE OF	GENER	ATOR O	ИТРИТ	
Model	Hz	V	Cos Q	Rpm	Brand	Model	Brand	Model	Series	Operation	kVA	kW	А	
				9C				Standby	2.250,0	1.800,0	3.251,4			
JCP 2250	50	231/400	0.8	1500	PERKINS	4016-61TRG2		JOB JCB	☐ JCB 450N	450M	Prime	2.045,5	1.636,4	2.955,9
							ŝ			Continuous	1.431,8	1.145,5	2.069,1	
 Alternate Low Exha Control F Patentee 	 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 				 Tropical 50 Fuel Filter V Low Fuel Co Global Tech Wide Rango High Qualit Half Centur 	with Wate onsumpti nnical Ser e of Affor y and Rel	er and Pa on, Low vice and dable Sp liable Tec	rticle Sep Oil Consu Maintena are Parts hnology	arator mption ance Support					

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.

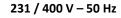
LIMITED TIME RUNNING PRIME POWER (LTP):

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.

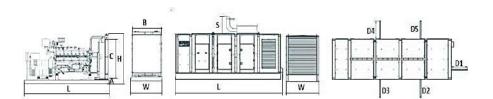
GENERATOR DIMENSIONS AND TECHNICAL DRAWINGS





VALUES		OPEN TYPE GENERATOR	CANOPY TYPE GENERATOR
WIDTH	mm	2190	2430
LENGTH	mm	6200	12000
HEIGHT	mm	3100	3200
WEIGHT (NET)	Kg	12720	19840
FUEL TANK CAPACITY	L	3000	3000

SYMBOL	OPEN	CANOPY
L	6200	12000
W	2190	2430
н	3100	3200
S		1000
А	225	
В	2080	
с	2750	
D1		1000
D2		1000
D3		1000
D4		1000
D5		1000



PERCENT OF PRIME POWER	FUEL CONSUMPTION				
	l/hr				
110 %	477,78				
100 %	422,87				
75 %	318,70				
50 %	216,59				





231 / 400 V – 50 Hz



DIESEL ENGINE MAIN TECHNICAL PARAMETERS

GENERAL		
Number of Cylinders		16
Configuration		Vee 60°
Aspiration		Turbo Charged & WAC-Intercooled
Combustion System		Direct injection
Compression Ratio		13:1
Bore	mm	160
Stroke	mm	190
Displacement	L	61,123
Governing Type		Electronic
Governing Class		G3
Rotation		Counterclockwise
Firing Order		1A, 1B, 3A, 3B, 7A, 7B, 5A, 5B, 8A, 8B, 6A, 6B, 2A, 2B,
C C		4A, 4B
Emission		Fuel Optimised
FILTERS		• • • • • • • • • • • • • • • • • • • •
Air Filter		Dry Type, Replaceable
Fuel Filter		Element Type, Replaceable
Oil Filter		Element Type, Particulate Trap
ELECTRICAL SYSTEM		
Voltage	V	24
Starter	kW	2X8,2
Alternator Output Ampers	А	40
Alternator Output Voltage	V	28
Batteries Capacity	Ah	4X200
FAN		
FAN Diameter	mm	1905
	mm	1905 0.93:1
Diameter	mm	
Diameter Drive Ratio	mm	0.93:1
Diameter Drive Ratio Number of Blades	mm	0.93:1 12
Diameter Drive Ratio Number of Blades Material		0.93:1 12 Aluminum
Diameter Drive Ratio Number of Blades Material Type	mm 50ºC	0.93:1 12 Aluminum Blowing Tropical
Diameter Drive Ratio Number of Blades Material Type COOLING SYSTEM	50ºC L	0.93:1 12 Aluminum Blowing
Diameter Drive Ratio Number of Blades Material Type COOLING SYSTEM Radiator Type	50ºC	0.93:1 12 Aluminum Blowing Tropical 315 105
Diameter Drive Ratio Number of Blades Material Type COOLING SYSTEM Radiator Type Total Coolant Capacity Max. Perm. Coolant Outlet Temperature Max. Perm. Flow Resist. (Cool. System And Piping)	50ºC L ºC bar	0.93:1 12 Aluminum Blowing Tropical 315 105 0,5
Diameter Drive Ratio Number of Blades Material Type COOLING SYSTEM Radiator Type Total Coolant Capacity Max. Perm. Coolant Outlet Temperature Max. Perm. Flow Resist. (Cool. System And Piping) Max. Temperature of Coolant Warning	50ºC L ºC bar ºC	0.93:1 12 Aluminum Blowing Tropical 315 105 0,5 95
Diameter Drive Ratio Number of Blades Material Type COOLING SYSTEM Radiator Type Total Coolant Capacity Max. Perm. Coolant Outlet Temperature Max. Perm. Flow Resist. (Cool. System And Piping) Max. Temperature of Coolant Warning Max. Temperature of Coolant Shutdown	50ºC L ºC bar ºC ₽C	0.93:1 12 Aluminum Blowing Tropical 315 105 0,5 95 98
Diameter Drive Ratio Number of Blades Material Type COOLING SYSTEM Radiator Type Total Coolant Capacity Max. Perm. Coolant Outlet Temperature Max. Perm. Flow Resist. (Cool. System And Piping) Max. Temperature of Coolant Warning Max. Temperature of Coolant Shutdown Thermostat Operation Temperature - Initial Open	50ºC L ºC bar ºC ₽C ºC ºC	0.93:1 12 Aluminum Blowing 7ropical 315 105 0,5 95 98 71
Diameter Drive Ratio Number of Blades Material Type COOLING SYSTEM Radiator Type Total Coolant Capacity Max. Perm. Coolant Outlet Temperature Max. Perm. Flow Resist. (Cool. System And Piping) Max. Temperature of Coolant Warning Max. Temperature of Coolant Shutdown	50ºC L ºC bar ºC ºC ºC ºC ºC ºC	0.93:1 12 Aluminum Blowing 7ropical 315 105 0,5 95 95 98 71 85
Diameter Drive Ratio Number of Blades Material Type COOLING SYSTEM Radiator Type Total Coolant Capacity Max. Perm. Coolant Outlet Temperature Max. Perm. Coolant Outlet Temperature Max. Perm. Flow Resist. (Cool. System And Piping) Max. Temperature of Coolant Warning Max. Temperature of Coolant Warning Max. Temperature of Coolant Shutdown Thermostat Operation Temperature - Initial Open Thermostat Operation Temperature - Full Open Delivery of Coolant Pump	50ºC L ºC bar ºC ₽C ºC ºC	0.93:1 12 Aluminum Blowing Tropical 315 105 0,5 95 95 98 71 85 21,00
Diameter Drive Ratio Number of Blades Material Type COOLING SYSTEM Radiator Type Total Coolant Capacity Max. Perm. Coolant Outlet Temperature Max. Perm. Coolant Outlet Temperature Max. Perm. Flow Resist. (Cool. System And Piping) Max. Temperature of Coolant Warning Max. Temperature of Coolant Warning Max. Temperature of Coolant Shutdown Thermostat Operation Temperature - Initial Open Thermostat Operation Temperature - Full Open Delivery of Coolant Pump Min. Pressure Before Coolant Pump	50ºC L ºC bar ºC ºC ºC ºC ºC ºC m ³/ h bar	0.93:1 12 Aluminum Blowing Tropical 315 105 0,5 95 95 98 71 85 21,00 0,5
Diameter Drive Ratio Number of Blades Material Type COOLING SYSTEM Radiator Type Total Coolant Capacity Max. Perm. Coolant Outlet Temperature Max. Perm. Coolant Outlet Temperature Max. Perm. Flow Resist. (Cool. System And Piping) Max. Temperature of Coolant Warning Max. Temperature of Coolant Warning Max. Temperature of Coolant Shutdown Thermostat Operation Temperature - Initial Open Thermostat Operation Temperature - Full Open Delivery of Coolant Pump	50ºC L ºC bar ºC ºC ºC ºC ºC m ³ /h bar m ²	0.93:1 12 Aluminum Blowing Tropical 315 105 0,5 95 95 98 71 85 21,00 0,5 21,00 0,5 5,72
DiameterDrive RatioNumber of BladesMaterialTypeCOOLING SYSTEMRadiator TypeTotal Coolant CapacityMax. Perm. Coolant Outlet TemperatureMax. Perm. Flow Resist. (Cool. System And Piping)Max. Temperature of Coolant WarningMax. Temperature of Coolant ShutdownThermostat Operation Temperature - Initial OpenThermostat Operation Temperature - Full OpenDelivery of Coolant PumpMin. Pressure Before Coolant PumpRadiator Face AreaRows	50ºC L ºC bar ºC ºC ºC ºC ºC m ³ /h bar m ² Row	0.93:1 12 Aluminum Blowing Tropical 315 105 0,5 95 95 95 95 98 71 85 21,00 0,5 21,00 0,5 3,72
Diameter Drive Ratio Number of Blades Material Type COOLING SYSTEM Radiator Type Total Coolant Capacity Max. Perm. Coolant Outlet Temperature Max. Perm. Coolant Outlet Temperature Max. Perm. Flow Resist. (Cool. System And Piping) Max. Temperature of Coolant Warning Max. Temperature of Coolant Warning Max. Temperature of Coolant Warning Max. Temperature of Coolant Shutdown Thermostat Operation Temperature - Initial Open Thermostat Operation Temperature - Initial Open Thermostat Operation Temperature - Full Open Delivery of Coolant Pump Min. Pressure Before Coolant Pump Radiator Face Area Rows Matrix Density	50ºC L ºC bar ºC ºC ºC ºC ºC m ³ /h bar m ²	0.93:1 12 Aluminum Blowing Tropical 315 105 0,5 95 95 95 95 98 71 85 21,00 0,5 21,00 0,5 5,72 4
Diameter Drive Ratio Number of Blades Material Type COOLING SYSTEM Radiator Type Total Coolant Capacity Max. Perm. Coolant Outlet Temperature Max. Perm. Coolant Outlet Temperature Max. Perm. Flow Resist. (Cool. System And Piping) Max. Temperature of Coolant Warning Max. Temperature of Coolant Warning Max. Temperature of Coolant Warning Max. Temperature of Coolant Shutdown Thermostat Operation Temperature - Initial Open Thermostat Operation Temperature - Initial Open Delivery of Coolant Pump Min. Pressure Before Coolant Pump Radiator Face Area Rows Matrix Density Material	50°C L °C bar °C °C °C °C °C °C °C m ³ / h bar m ² Row Per / Inch	0.93:1 12 Aluminum Blowing Tropical 315 105 0,5 95 95 95 98 71 85 21,00 0,5 21,00 0,5 5,72 4 10 Aluminum
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DiameterDrive RatioNumber of BladesMaterialTypeCOOLING SYSTEMRadiator TypeTotal Coolant CapacityMax. Perm. Coolant Outlet TemperatureMax. Perm. Flow Resist. (Cool. System And Piping)Max. Temperature of Coolant WarningMax. Temperature of Coolant ShutdownThermostat Operation Temperature - Initial OpenThermostat Operation Temperature - Full OpenDelivery of Coolant PumpMin. Pressure Before Coolant PumpRadiator Face AreaRowsMatrix DensityMaterialWidth of MatrixHeight of Matrix	50°C L °C bar °C °C °C °C °C °C °C °C °C °C °C °C °C	0.93:1 12 Aluminum Blowing Tropical 315 105 0,5 95 95 95 98 71 85 21,00 0,5 21,00 0,5 5,72 4 10 10 Aluminum 2080 2750
DiameterDrive RatioNumber of BladesMaterialTypeCOOLING SYSTEMRadiator TypeTotal Coolant CapacityMax. Perm. Coolant Outlet TemperatureMax. Perm. Flow Resist. (Cool. System And Piping)Max. Temperature of Coolant WarningMax. Temperature of Coolant ShutdownThermostat Operation Temperature - Initial OpenThermostat Operation Temperature - Full OpenDelivery of Coolant PumpMin. Pressure Before Coolant PumpRadiator Face AreaRowsMatrix DensityMaterialWidth of MatrixHeight of MatrixPressure Cap Setting	50°C L °C bar °C °C °C °C °C °C °C °C °C °C °C °C °C	0.93:1 12 Aluminum Blowing Tropical 315 105 0,5 95 98 71 85 21,00 0,5 5,72 4 10 Aluminum 2080 2750 70
DiameterDrive RatioNumber of BladesMaterialTypeCOOLING SYSTEMRadiator TypeTotal Coolant CapacityMax. Perm. Coolant Outlet TemperatureMax. Perm. Flow Resist. (Cool. System And Piping)Max. Temperature of Coolant WarningMax. Temperature of Coolant ShutdownThermostat Operation Temperature - Initial OpenThermostat Operation Temperature - Full OpenDelivery of Coolant PumpMin. Pressure Before Coolant PumpRadiator Face AreaRowsMatrix DensityMaterialWidth of MatrixHeight of Matrix	50°C L °C bar °C °C °C °C °C °C °C °C °C °C °C °C °C	0.93:1 12 Aluminum Blowing Tropical 315 105 0,5 95 95 95 98 71 85 21,00 0,5 21,00 0,5 5,72 4 10 10 Aluminum 2080 2750





DIESEL ENGINE MAIN TECHNICAL PARAMETERS

LUBRICATION SYSTEM		
Total System	L	213
Minimum Oil Level	L	157
Nominal Motor Operating Temperature	₅C	40
Lubricating Oil Pressure (Rated Speed)	bar	4
Relief Valve Opens	kPa	340
Oil / Fuel Consumption Ratio	%	0,52
Normal Oil Temperature	₅C	105

DIESEL ENGINE MATCHING PARAMETERS- 50 HZ

50 HZ @ 1500 R/MIN		STAND BY
Gross Engine Power	kW	1985,0
Net Engine Power	kW	1895,0
Fan Power Consumption (Belt Pulley Driven)	kW	90,0
Other Power Loss	kW	-
Mean Effective Pressure	MPa	2598,00
Intake Air Flow	m ³ / min	175,00
Exhaust Temperature Limit	°C	489
Exhaust Flow	m ³/ min	490,00
Boost Pressure Ratio		139,00
Mean Piston Speed	m / s	9,5
Cooling Fan Air Flow	m ³/ min	2081,0
Typical Generator Output Power	kVA	2250
HEAT REJECTION		STAND BY
Energy in Fuel (Heat of Combustion)	kW	4939,0
Gross Heat to Power	kW	1985,0
Energy to Coolant and Lubricating Oil	kW	750,0
Energy to Exhaust	kW	1380,0
Heat to Radiation	kW	139,0





231 / 400 V – 50 Hz



ALTERNATOR SPECIFICATIONS



ALTERNATOR TECHNICAL	. PARAMETERS				
Insulation Class		Н	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	m³/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

ALTERNATOR SPECIFICATIONS

50 HZ / 231-400V COSQ 0,8 / 1500 RPM									
STANDARD USING ALT	ERNATOR			OPTIONAL U	SING ALTERN	IATOR			
BRAND/MODEL	JUENERGY	JCB 450M		LEROY-SO	OMER	LSA 52.3S6	STAMFORD	P7 F	
DUTY				Continuous				Stand By	
AMBIENT	C°			40°C				27°C	
CLASS / TEMP. RISE	C°			Н/ 125° К				Н/ 163° К	
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	2045,0	2045,0	2122,0	-	2250,0	2250,0	2334,0	-
OUTPUT POWER	kW	1636,0	1636,0	1698,0	-	1800,0	1800,0	1867,0	-





231 / 400 V – 50 Hz



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





- ATS (Automatic Transfer Panel)
 Optional
- Control Module
- Battery Charger
- Emergency Stop Button

- Terminal Blocks
- Load Output Terminal
- System Protection MSBs
- Circuit Breaker-Optional
- o LCD Screen
- Control Relays
- Backlit, 128x64 Pixels

CONTROL MODULE TECHNICAL PARAMETERS

Brand	JUENERGY	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





231 / 400 V – 50 Hz



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

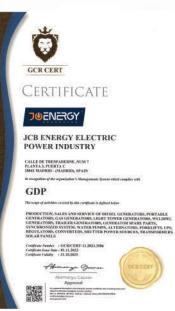


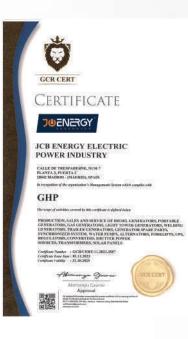
- Special, Registered JCB Energy Design and Colour
- A1 Quality DKP / HRU / Galvanized Steel
- Sensitive Twist on Automatic Press Brake
- Delicate Cut on Automatic Punch and Laser Bench
- Sensitive Welding on Robotic Welding Bench
- Chemical Cleaning Nano Technology Before Painting
- Robotic Painting with Electrostatic Powder Paint
- Drying and stabilizing on 200 °C Ovens
- 1500 Hour Salt Test
- Glass wool Isolation, A1 Class Material -50/+500 ⁰C
- Special Covering Over Glass Wool
- Best Sound Level (in Dba)
- Temperature Tests
- Rustproof Accessories

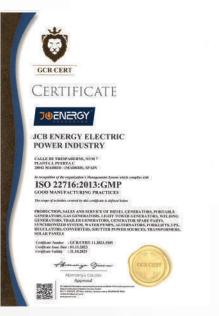
- Cable Exit Connectors and Glands
- Emergency Stop Button
- Fuel Level Gauge
- Fuel Drain Cap
- Fuel Inlet and Return Records
- I permeability Test for Fuel Tank
- Vacuumed Rubber Mounted
- High Quality weatherstrips
- High Quality Shock Absorbers
- Fuel Filling Cap (with ventilation)
- Lifting and Carrying Equipment
- Internal Exhaust Mufflers (Silencers)
- External Exhaust Mufflers (Silencers)
- Radiator water Filling Cap
- o Daily Fuel Tank, External Fuel Tank

OUR CERTIFICATES











CERTIFICATE HEALTHY & SAFE WORKPLACE CERTIFICATE

JUENERGY JCB ENERGY ELECTRIC POWER INDUSTRY

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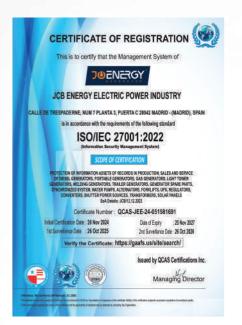
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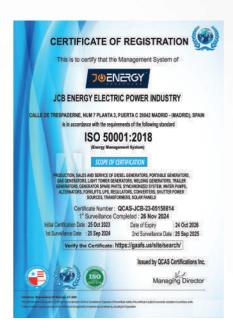
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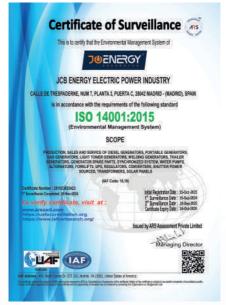


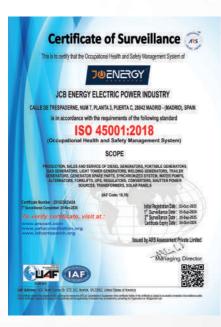
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DNV

MANAGEMENT SYSTEM CERTIFICATE

Certificate no: Initial certification date: D012084 14 August 2007

The site contribute the management system of **HD Hyundai Infracore Co., Ltd. Head Office & Incheon Plant** 40 (hipping) - Drops, Inderko, 2202, Republic of Korea and the sites an mentioned in the appendix accompanying this cartificate has been toxed to conform to the Environmental Management System standard. 150 (1400):1201

Valid: 14 October 2023 - 13 October 2026

The certificate is walls 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, Dezer], Testing of Earth Moving Equipment[Excavator and Wheel Loader].





DNV

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RENE SANCHEZ ROMAN, MANAGER CH'THE DERIMETATION OF LIGAL ADVISORY SERVICES AND THE DATAMASE OF THE OFFICIAL OMAXBER OF COMMERCE, MOUERRE AND SERVICES OF MARINE, WITH INDUSTRIED OFFICE AT PLAZA DE LA INDERDIDICA 1, MARINE, DAVIN

CERTIFY. That, according to the background data on moord at this Chambar and others produced by the Company.

CB-BERGY RECEISE FOMBLINGOTINE SL, a Company with Tax ID. Namine H1997554, and to registress office a strengt impactements in 2000 Masking is registred on MMp 2004, and the heading of the 3D Service comparise, of the Economic Activities Tax Tarihi function 540 spectrum the future gradient of the Service comparison.

· Menufacture of electrical material for use and equipment

In whites whereast, for the appropriate purpose, i have issued and signed this Certificate, to which Latts the stamp of this Chamilee, in Madrial on 28 July 2004.





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BENE SANCHEZ ROMAN, DIRECTORA DEL DERVICTAMENTO DE ASESORIA IMPRICA Y CINSO DE LA CIMARIA OFICIAL DE COMERCIO, INDUSTINA Y SURVICIS DE MARIRO, CON OCIACIONO SOCIAL EN LA TILAZA DE LA INDEPENDENCIA M. L'ANDRO-ENTANA CERTIFICA Qua de los antecedentes que obrin en ente Cuipenación y de coso entididos por la recordad, muntar

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METRODA: METRODA: An explore of expensive due la socitura de contitución, el capital encil de la compañía (x.p. 1980/07 18/2702). EXAME INDUSTRY SLL se fija en la centidad de 1980/08 el (Electorizador Met HONCENTOX MITEL Electorizador del participacione) sociales, de 1000 (UNI EIRO) de valor nominal cada una, minerador complementente al 1.a 19302 ambis: induzióne, que son integramente ausuridas y desemblostar por de com fundador.

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