


# 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
JCN 71	50	231/400	0.8	1500	JCN	E88JC	EII		JCB	225S2	Standby	71,0	56,8	102,6
				Prime							64,5	51,6	93,3	
				Continuous							45,2	36,1	65,3	
JCN 85	60	277/480	0.8	1800							Standby	85,0	68,0	122,8
										225S2	Prime	77,3	61,8	111,7
											Continuous	54,1	43,3	78,2

- 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

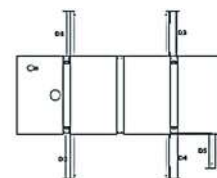
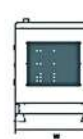
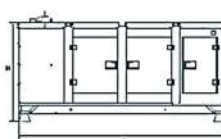
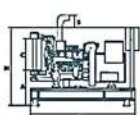
- \* Generators can work on Continuous Power at 70% of Prime power value if only all maintenances are done on time with original spare parts and high-quality oils that manufacturer advice.
- \* Generators should not operate below 50% of Prime Power value. In such a case, the engine will burn excessive 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	700	1000
LENGTH	mm	1700	2700
HEIGHT	mm	1562	1190
WEIGHT (NET)	Kg	877	1010
FUEL TANK CAPACITY	L	134	100

SYMBOL	OPEN	CANOPY
L	1700	2700
W	700	1000
H	1212	1390
S	930	80
A	870	
B	900	
C	515	
D1		100
D2		100
D3		400
D4		400
D5		483



## FUEL CONSUMPTION

PERCENT OF PRIME POWER	1500 rpm	1800 rpm
	l/hr	l/hr
110 %	16,37	19,64
100 %	14,94	17,86
75 %	11,48	13,72
50 %	8,20	9,81



## DIESEL ENGINE MAIN TECHNICAL PARAMETERS

### GENERAL

Number of Cylinders		4
Configuration		Vertical, In Line
Aspiration		Turbocharged
Combustion System		Direct Injection
Compression Ratio		17.5:1
Bore	mm	102
Stroke	mm	115
Displacement	L	3,76
Governing Type		Mechanic
Governing Class		G2
Rotation		Counterclockwise
Firing Order		1-3-4-2
Emission		Tier II
Moments of Rotation Inertia		
Engine	Kg - m <sup>2</sup>	0,16
Flywheel	Kg - m <sup>2</sup>	1,2
Performance Rating		
Speed Droop	%	≤3
Steady State Speed Band	%	≤0,5

### FILTERS

Air Filter		Dry Type, Replaceable
Fuel Filter		With Water Separator
Oil Filter		Element Type, Particulate Trap

### FLYWHEEL HOUSING AND FLEX COUPLING

Flywheel Housing	SAE (J620)	3
Flex Coupling Disc	Inch (")	11,5

### TEST CONDITIONS

Ambient Temperature	%	25
Atmospheric Pressure	KPa	100
Relative Humidity	Rh (%)	30
Max. Operating Intake Resistance	KPa	5
Exhaust Backpressure Limit	KPa	5
Fuel Temperature (Fuel Inlet Pump)	°C	38±2

### OVERALL DIMENSIONS

Length*	mm	1015
Width	mm	700
Height	mm	985
Dry Weight	kg	450

\*From front end of radiator to near end of air filter

### FAN

Diameter	mm	450
Drive Ratio		1,3:1
Number of Blades		8
Material		Plastic
Type		Blowing

## DIESEL ENGINE MAIN TECHNICAL PARAMETERS

### COOLING SYSTEM

Radiator Type	50°C	Tropical
Total Coolant Capacity	L	18
Max. Perm. Coolant Outlet Temperature	°C	103
Max. Perm. Flow Resist. (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	75
Delivery of Coolant Pump	m <sup>3</sup> / h	1,60
Min. Pressure Before Coolant Pump	bar	0,15
Radiator Face Area	m <sup>2</sup>	0,26
Rows	Row	2
Matrix Density	Per / Inch	15,5
Material		Aluminum
Width of Matrix	mm	538
Height of Matrix	mm	510
Pressure Cap Setting	kPa	90
Estimated Cooling Air Flow Reserve	kPa	0,125
Engine Pre Heater-Tube (with Circulation Pump)	W	1500

### LUBRICATION SYSTEM

Total System	L	12
Minimum Oil Level	L	11
Nominal Motor Operating Temperature	°C	40
Lubricating Oil Pressure (Rated Speed)	bar	5
Relief Valve Opens	kPa	352
Oil / Fuel Consumption Ratio	%	≤0,3
Normal Oil Temperature	°C	110

### ELECTRICAL SYSTEM

Voltage	V	12
Starter	kW	3,8
Alternator Output Ampers	A	25
Alternator Output Voltage	V	14
Batteries Capacity	Ah	55

## JCB ENERGY DIESEL ENGINE POWER RATINGS

ENGINE MODEL	E88JC	ENGINE FAMILY		JC61	ENGINE SERIES	EII	
Speed (Rpm)	Type of Operation	TYPICAL GENERATOR OUTPUT (NET)		ENGINE POWER			
				Gross		Net	
		kVA	kWe	KWm	Hp	kWm	Hp
1500	Stand By(Maximum)	72,1	57,7	69,0	92,6	65,0	87,2
	Prime	65,6	52,5	63,0	84,6	59,0	79,2
1800	Stand By(Maximum)	87,3	69,8	82,8	111,1	78,0	104,7
	Prime	79,1	63,3	75,3	101,1	70,7	94,9

## DIESEL ENGINE MATCHING PARAMETERS - 50 HZ

50 HZ @ 1500 R/MIN		STAND BY	PRIME
Gross Engine Power	kW	69,0	63,0
Net Engine Power	kW	65,0	59,0
Fan Power Consumption (Belt Pulley Driven)	kW	3,0	3,0
Other Power Loss	kW	1,47	1,34
Mean Effective Pressure	MPa	1,54	1,54
Intake Air Flow	m <sup>3</sup> / min	3,54	3,54
Exhaust Temperature Limit	°C	450	430
Exhaust Flow	m <sup>3</sup> / min	3,97	3,60
Boost Pressure Ratio		9,40	8,60
Mean Piston Speed	m / s	5,8	5,8
Cooling Fan Air Flow	m <sup>3</sup> / min	70,0	70,0
Typical Generator Output Power	kVA	72	66
HEAT REJECTION		STAND BY	PRIME
Energy in Fuel (Heat of Combustion)	kW	165,0	150,0
Gross Heat to Power	kW	69,0	63,0
Energy to Coolant and Lubricating Oil	kW	39,6	35,6
Heat Dissipation Capacity *	kW	-	-
Energy to Exhaust	kW	46,3	41,7
Heat to Radiation	kW	10,6	9,5

\*Intake Intercooled system

## DIESEL ENGINE MATCHING PARAMETERS - 60 HZ

60 HZ @ 1800 R/MIN		STAND BY	PRIME
Gross Engine Power	kW	82,8	75,3
Net Engine Power	kW	78,0	70,7
Fan Power Consumption (Belt Pulley Driven)	kW	3,6	3,0
Other Power Loss	kW	1,2	1,0
Mean Effective Pressure	MPa	1,47	1,34
Intake Air Flow	m <sup>3</sup> / min	4,25	4,25
Exhaust Temperature Limit	°C	540	540
Exhaust Flow	m <sup>3</sup> / min	4,75	4,30
Boost Pressure Ratio		11,30	10,30
Mean Piston Speed	m / s	6,9	6,9
Cooling Fan Air Flow	m <sup>3</sup> / min	84,0	84,0
Typical Generator Output Power	kVA	87	79
HEAT REJECTION		STAND BY	PRIME
Energy in Fuel (Heat of Combustion)	kW	198,6	174,5
Gross Heat to Power	kW	82,8	70,7
Energy to Coolant and Lubricating Oil	kW	47,5	42,6
Heat Dissipation Capacity *	kW	-	-
Energy to Exhaust	kW	55,6	49,8
Heat to Radiation	kW	12,7	11,4

\*Intake Intercooled system

## JCB ALTERNATOR TECHNICAL PARAMETERS AND SPECIFICATIONS



ALTERNATOR TECHNICAL PARAMETERS				
Insulation Class	H	Field Control System	Self-Excited	
Winding Pitch	2/3 - (N° 6)	A.V.R. Model	Standard	SX460
Wires	12	Voltage Regulation	%	± 1
Protection	IP 23	Sustained Short-Circuit Current	10 sec	300% (3 IN)
Altitude	m	Total Harmonic (*) TGH / THC	%	< 5
Overspeed	rpm	Wave Form: NEMA = TIF - (*)		< 50
Air Flow	m <sup>3</sup> /sec.	Wave Form: I.E.C. = THF - (*)	%	< 2
Bearing Drive	N/A	Bearing Non-Drive	Bearing	6309-2RZ
Rotor Winding	100%	Copper	Stator Winding	100% Copper



# JCN 71 & 85

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



## ALTERNATOR SPECIFICATIONS

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

STANDARD USING ALTERNATOR

OPTIONAL USING ALTERNATOR

BRAND/MODEL



JCB 225S2



TAL044A

STAMFORD

S1L2-Y1

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

65,0

65,0

67,0

-

71,0

71,0

74,0

-

OUTPUT POWER

kW

52,0

52,0

53,6

-

56,8

56,8

59,2

-

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

STANDARD USING ALTERNATOR

OPTIONAL USING ALTERNATOR

BRAND/MODEL



JCB 225S2



TAL042H

STAMFORD

S1L2-Y

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

77,0

81,0

85,0

-

85,0

89,0

93,0

-

OUTPUT POWER

kW

61,6

64,8

68,0

-

68,0

71,2

74,4

-



## 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	JO ENERGY <sup>®</sup>	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

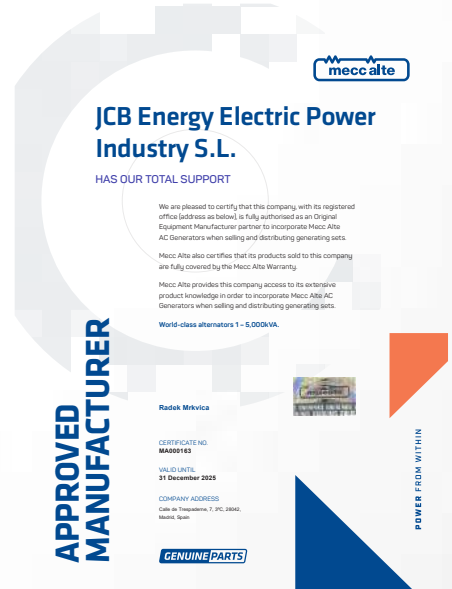
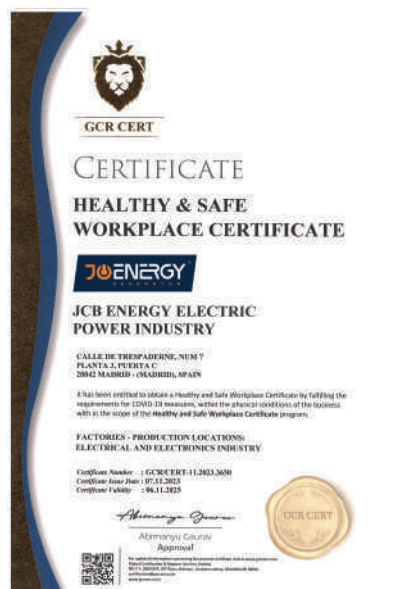
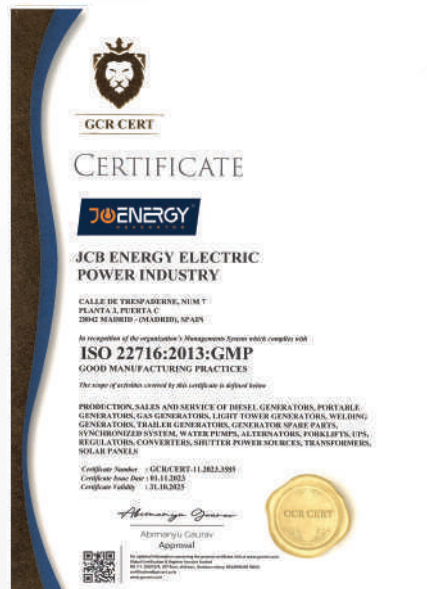
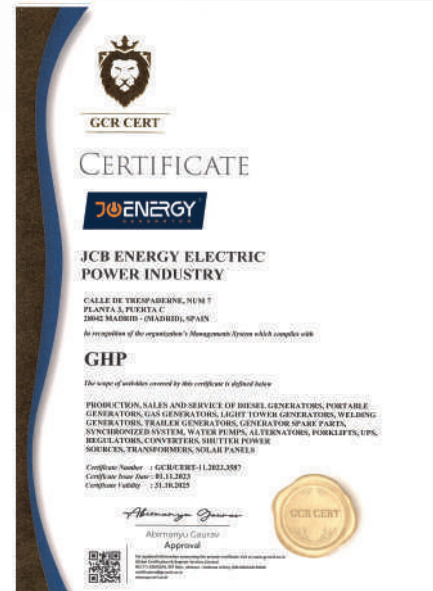
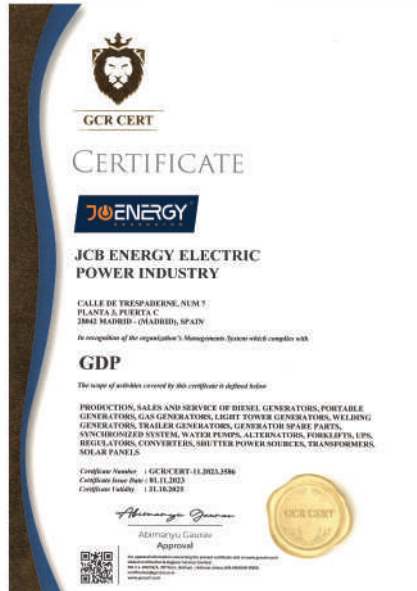
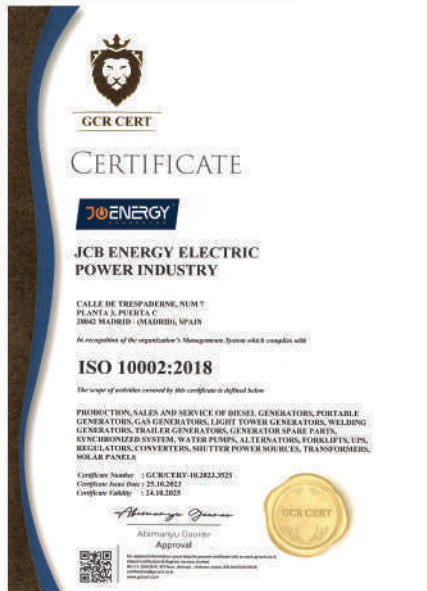
Mains Voltage Level Control	Generator Voltage Level Control	3 Phase Generator Protections	3 Phase AMF Function	Alarm Horn
Network Frequency Level Control	Generator Frequency level Control	- High / Low Voltage	- High / Low Frequency	Heater Tube Thermostat Control
Engine Operating Option Control	Generator 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

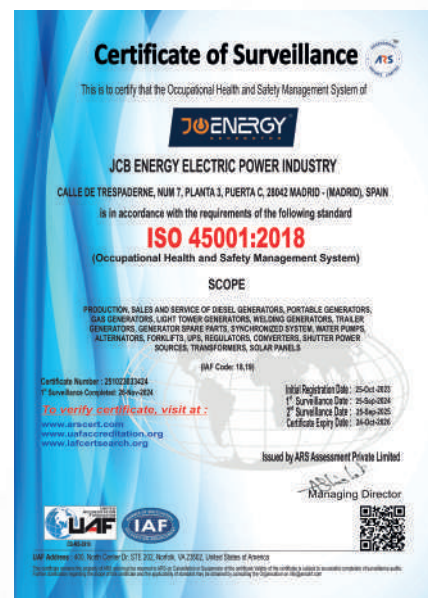
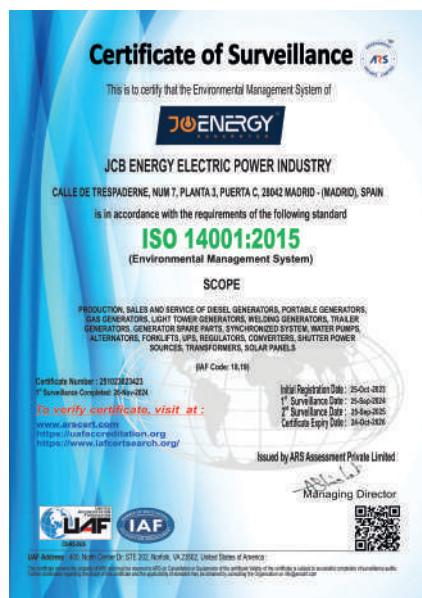
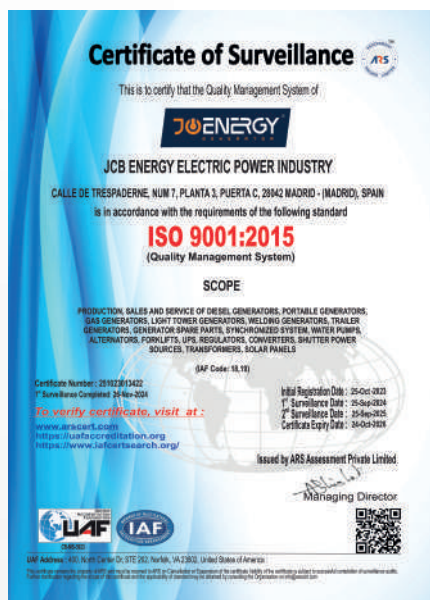


- Special, Registered JCB Energy Design and Colour
- A1 Quality DKP / HRU / Galvanized Steel
- Sensitive Twist on Automatic Press Brake
- Delicate Cut on Automatic Punch and Laser Bench
- Sensitive Welding on Robotic Welding Bench
- Chemical Cleaning Nano Technology Before Painting
- Robotic Painting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











**JCBENERGY**  
GENERATOR



**CE** -VERTA-106188  
-VERTA-106189

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