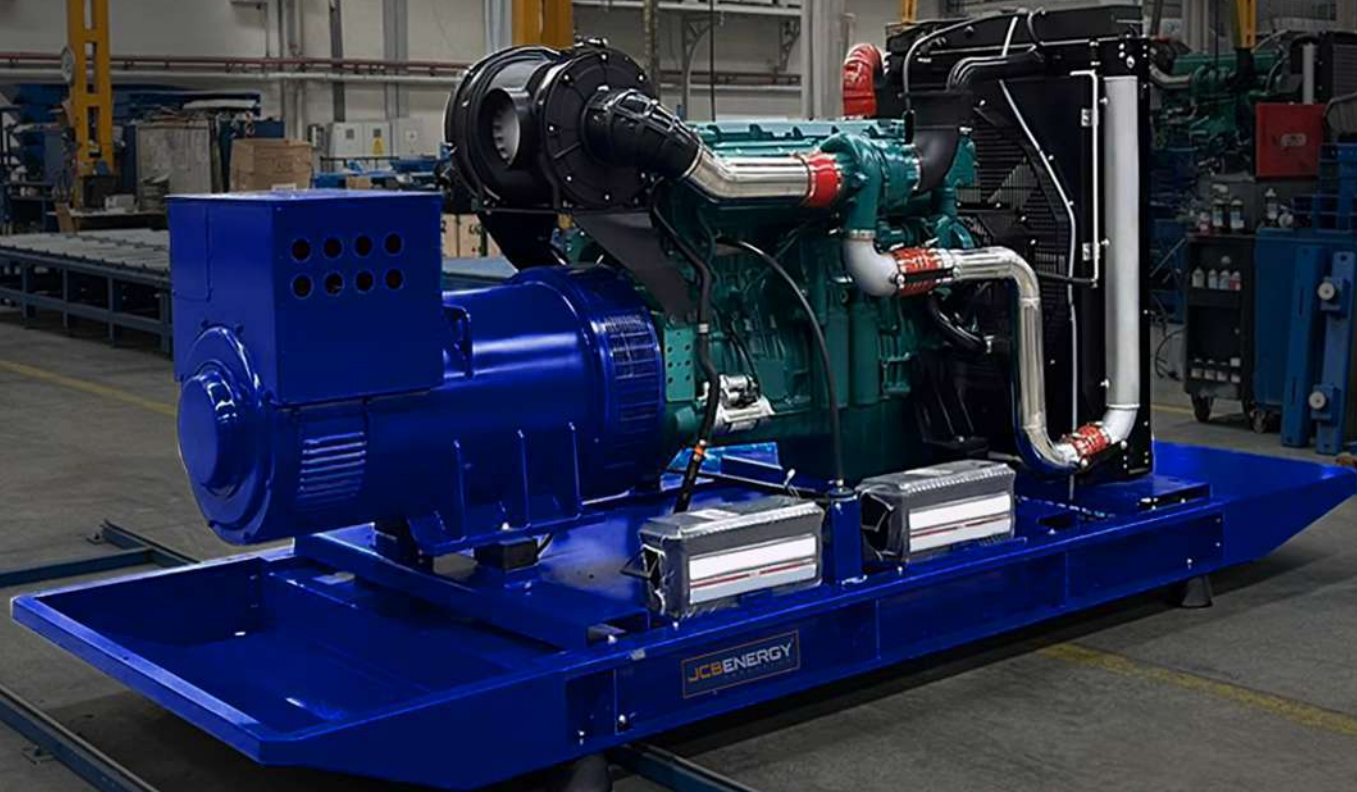




JCB ENERGY ELECTRIC POWER INDUSTRY

📍 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 450	50	231/400	0.8	1500		TCD13.0G1	TCD		JCB	315M	Standby	450,0	360,0	650,3
JCD 510	60	277/480	0.8	1800							Prime	455,0	364,0	657,5
											Continuous	413,6	330,9	597,7
											Standby	510,0	408,0	737,0
											Prime	463,6	370,9	670,0
											Continuous	431,2	345,0	623,2

- 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

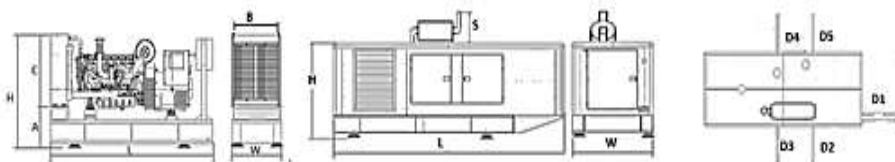
- * Generators can work on Continuous Power at 70% of Prime power value if only all maintenances are done on time with original spare parts and high-quality oils that manufacturer advice.
- * Generators should not operate below 50% of Prime Power value. In such a case, the engine will burn excessive 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	1200	1646
LENGTH	mm	3374	4632
HEIGHT	mm	1953	2641
WEIGHT (NET)	Kg	2878	3740
FUEL TANK CAPACITY	L	673	400

SYMBOL	OPEN	CANOPY
L	3374	4632
W	1200	1646
H	1953	2000
S		641
A	775	
B	940	
C	1000	
D1		1002
D2		800
D3		800
D4		800
D5		800



FUEL CONSUMPTION

PERCENT OF PRIME POWER	1500 rpm	1800 rpm
	l/hr	l/hr
110 %	85,95	98,83
100 %	79,00	91,79
75 %	59,25	68,09
50 %	38,88	44,69

DIESEL ENGINE MAIN TECHNICAL PARAMETERS

50 Hz – 1500 min ⁻¹			60 Hz – 1800 min ⁻¹		
Type		TCD13.0	Type		TCD13.0
Speed	min ⁻¹	1500	Speed	min ⁻¹	1800
Net Frequency	Hz	50	Net Frequency	Hz	60
Power Standard		LTP	Power Standard		LTP
Power Level		G1	Power Level		G1
Exhaust Emission Standard		Fuel Optimized	Exhaust Emission Standard		Fuel Optimized
GENERAL			GENERAL		
Aspiration		Turbo, CAC	Aspiration		Turbo, CAC
Governing System		Electronic	Governing System		Electronic
Governor Brand		Bosch	Governor Brand		Bosch
No of Cylinders		6	No of Cylinders		6
Configuration		in-line	Configuration		in-line
Injection System		Common Rail	Injection System		Common Rail
Displacement	L	12,94	Displacement	L	12,94
Bore	mm	131	Bore	mm	131
Stroke	mm	160	Stroke	mm	160
Compression Ratio		19:1	Compression Ratio		19:1
Mean Effective Pressure	Bar	28	Mean Effective Pressure	Bar	26
Piston Speed	m/s	8	Piston Speed	m/s	9,6
Rotation (looking at flywheel)		ccw	Rotation (looking at flywheel)		ccw
No of Teeth on Flywheel Ring Gear		143	No of Teeth on Flywheel Ring Gear		143
GOVERNOR PERFORMANCE			GOVERNOR PERFORMANCE		
Speed droop (static) electr. gov.	%	0	Speed droop (static) electr. gov.	%	0
Governing standards to ISO 8528 Parts 1 and 5		G3	Governing standards to ISO 8528 Parts 1 and 5		G3
MOMENT OF INERTIA			MOMENT OF INERTIA		
Flywheel (standard genset spec.)	kg m ²	2,16	Flywheel (standard genset spec.)	kg m ²	2,16
Max. step load acceptance, 1st step	%	-	Max. step load acceptance, 1st step	%	-
Sound power at full load, incl. cooling system	dB(A)	110,30	Sound power at full load, incl. cooling system	dB(A)	111,30
Sound press. (1m average, full load), incl. cool. syst.	dB(A)	96,50	Sound press. (1m average, full load), incl. cool. syst.	dB(A)	97,50
ENGINE WEIGHT			ENGINE WEIGHT		
Engine Dry, w/o Cooling System	kg	1154	Engine Dry, w/o Cooling System	Kg	1154
Engine With Cooling System	kg	1260	Engine With Cooling System	kg	1260
LUBRICATION SYSTEM			LUBRICATION SYSTEM		
Oil specification		15W40/CI-4/SL	Oil specification		15W40/CI-4/SL
Oil consumption (as % of fuel consumption)	%	0,10	Oil consumption (as % of fuel consumption)	%	0,10
Oil capacity (sump)	l	30	Oil capacity (sump)	l	30
Min. oil pressure (warning)	Bar	0,80	Min. oil pressure (warning)	Bar	0,80
Min. oil pressure (shut down)	Bar	0,60	Min. oil pressure (shut down)	Bar	0,60
Max. permissible oil temperature (oil pan)	°C	130	Max. permissible oil temperature (oil pan)	°C	130
OUTPUT			OUTPUT		
Gross Output(LTP or StandBy Power)	Kw	435	Gross Output(LTP or StandBy Power)	Kw	445
Fan Reduction	Kw	13	Fan Reduction	Kw	17,50
Net Flywheel	Kw	422	Net Flywheel	Kw	427,50
Electrical Output (Stand By)	Kva	500	Electrical Output (Stand By)	Kva	510
Gross Output(PRP or Prime Power)	Kw	395	Gross Output(PRP or Prime Power)	Kw	410
Gross Output(Continuous Power)	kw	365	Gross Output(Continuous Power)	kw	380

DIESEL ENGINE MAIN TECHNICAL PARAMETERS

50 Hz – 1500 min ⁻¹			60 Hz – 1800 min ⁻¹		
COOLING SYSTEM, GENERAL ENGINE COOLING DATA			COOLING SYSTEM, GENERAL ENGINE COOLING DATA		
Max. perm. Coolant Outlet Temperature	°C	99	Max. perm. Coolant Outlet Temperature	°C	99
Max. perm. Flow Resistance (cool. syst. and piping)	Bar	-	Max. perm. Flow Resistance (cool. syst. and piping)	Bar	-
Max. Temperature of Coolant (warning)	°C	105	Max. Temperature of Coolant (warning)	°C	105
Max. Temperature of Coolant (shutdown)	°C	108	Max. Temperature of Coolant (shutdown)	°C	108
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	95	Temperature at Which Thermostat is Fully Open	°C	95
Delivery of Coolant Pump	m ³ /h	34,80	Delivery of Coolant Pump	m ³ /h	34,80
Min. Pressure Before Coolant Pump	Bar	0,80	Min. Pressure Before Coolant Pump	Bar	0,80
Temperature at CAC Outlet at Standard Conditions	°C	50	Temperature at CAC Outlet at Standard Conditions	°C	50
ENGINE COOLING SYSTEM			ENGINE COOLING SYSTEM		
Coolant Capacity (engine)	l	20	Coolant Capacity (engine)	l	20
Coolant Capacity (incl. cooling unit)	l	35	Coolant Capacity (incl. cooling unit)	l	35
Air to Boil (max. permissible cool. air temp. at fan)	°C	55	Air to Boil (max. permissible cool. air temp. at fan)	°C	55
Fan Power Consumption	kW	13	Fan Power Consumption	kW	17,50
Cooling air Flow	m ³ /h	38486	Cooling air Flow	m ³ /h	43298
Air Pressure Loss	mbar	1,64	Air Pressure Loss	mbar	1,64
HEAT BALANCE			HEAT BALANCE		
Heat Dissipation (engine radiator)	kW	158	Heat Dissipation (engine radiator)	kW	133
Heat Dissipation (CAC)	kW	78,60	Heat Dissipation (CAC)	kW	77,00
INLET / EXHAUST DATA			INLET / EXHAUST DATA		
Max. intake Depression (Switch setting)	mbar	50	Max. intake Depression (Switch setting)	mbar	50
Combustion Air Volume	m ³ /h	1612	Combustion Air Volume	m ³ /h	1915
Max. Exhaust Back Pressure	mbar	50	Max. Exhaust Back Pressure	mbar	50
Max. Exhaust Gas Temperature	°C	528	Max. Exhaust Gas Temperature	°C	507
Exhaust Gas Flow (at above temp)	m ³ /h	4485	Exhaust Gas Flow (at above temp)	m ³ /h	5403
Exhaust Flange / Pipe Diameter	mm	120	Exhaust Flange / Pipe Diameter	mm	120
ELECTRICAL SYSTEM			ELECTRICAL SYSTEM		
Voltage	V	24	Voltage	V	24
Starter	KW	8,80	Starter	KW	8,80
Alternator Output	A	80	Alternator Output	A	80
Batteries (minimum capacity, cold start limit -5°C)	Ah	2*120	Batteries (minimum capacity, cold start limit -5°C)	Ah	2*120

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 315M				TAL047A		S4L1DF	
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	409,0	409,0	424,0	-	450,0	450,0	467,0	-
OUTPUT POWER	kW	327,2	327,2	339,2	-	360,0	360,0	373,6	-

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

STANDARD USING ALTERNATOR

OPTIONAL USING ALTERNATOR

BRAND/MODEL		JCB 315M				TAL046H				S4L1D-E
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	421,0	443,0	466,0	-	463,0	487,0	513,0	-	
OUTPUT POWER	kW	336,8	354,4	372,8	-	370,4	389,6	410,4	-	

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		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

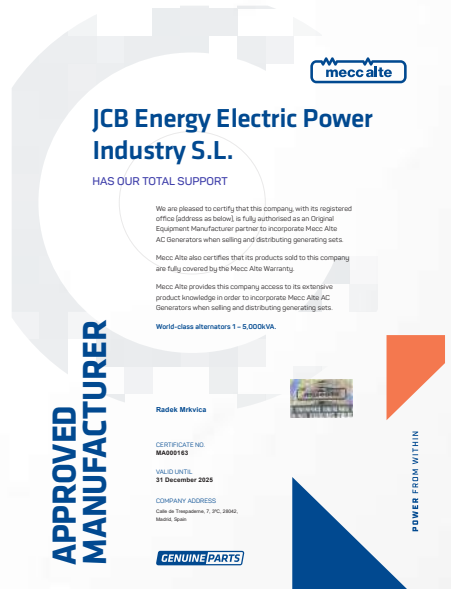
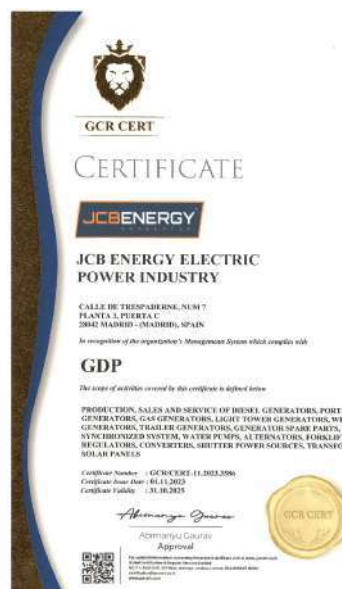
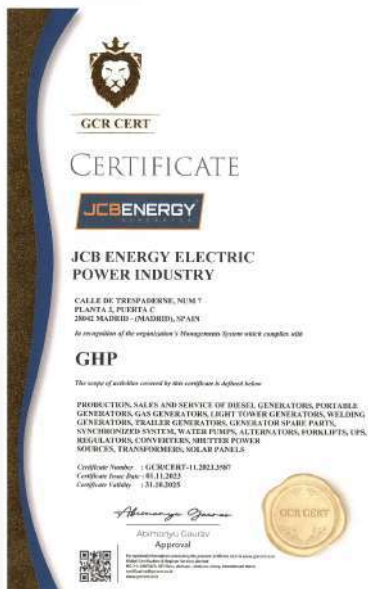
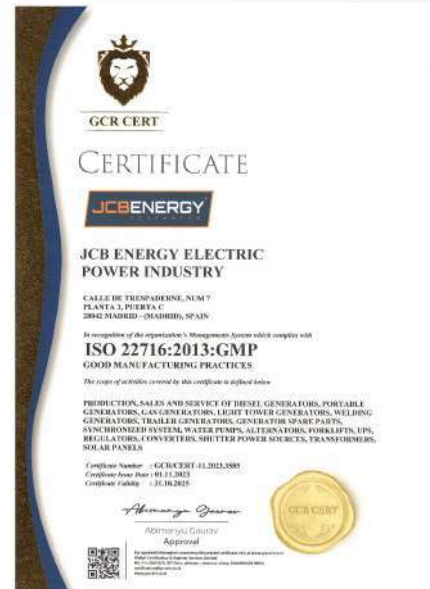
Mains Voltage Level Control	Generator Voltage Level Control	3 Phase Generator Protections	3 Phase AMF Function	Alarm Horn
Network Frequency Level Control	Generator Frequency level Control	- High / Low Voltage	- High / Low Frequency	Heater Tube Thermostat Control
Engine Operating Option Control	Generator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

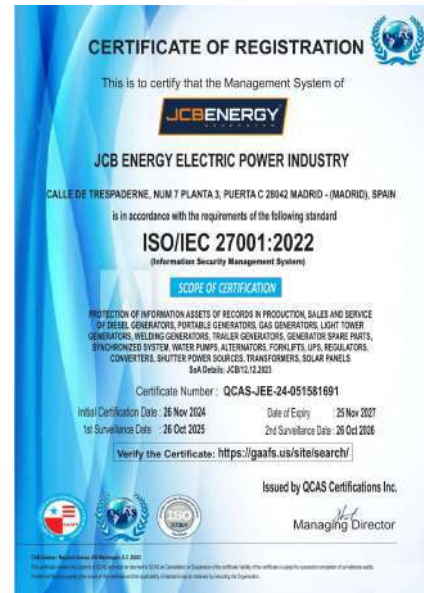
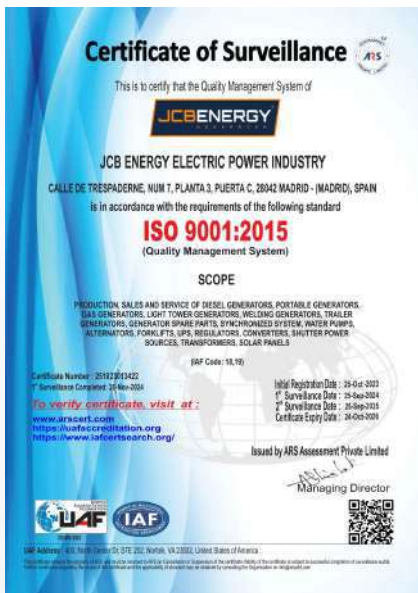
SOUND PROOF CANOPY AND BASE FRAME (CHASIS) SPECIFICATIONS



- 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









www.jcbenergy.com