# JCB ENERGY ELECTRIC POWER INDUSTRY

MADRID / SPAIN

JCBENERGY

26

\*

The stratspart



 JCEBENERGY
 INECO
 INECO
 IBaudouin
 Schneider
 Image: Sc

www.jcbenergy.es



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





## **GENERATOR GENERAL INFORMATION**

GENERATOR	FREQUENCY	VOLTAGE	POWER FACTOR	SPEED	DIESEL E	NGINE		ALTERN	ATOR		TYPE OF	GENER	ATOR OI	UTPUT							
Model	Hz	V	Cos Q	Rpm	Brand	Model	Series	Brand	Model	Series	Operation	kVA	kW	А							
								Ľ			Standby	110,0	88,0	159,0							
JCD 110	50	231/400	0.8	1500	Å		F4M1013EC			225LX	Prime	100,0	80,0	144,5							
					BF4M1013EC	BF4M1013EC					Continuous	97,9	78,4	141,5							
						DEUTŽ	DEUTZ	DEUTZ	DEUTZ	DEUTZ	DEUTZ	DEUTZ	DEUTZ	G1	BF	Я	JCB		Standby	120,0	96,0
JCD 120	60	277/480	0.8	1800				icY.	Ĝ,	225M2	Prime	109,1	87,3	157,6							
											Continuous	107,0	85,6	154,7							

<ul> <li>Diesel Engines with Advanced Technology and Quality</li> <li>Alternators with Advanced Technology and Quality</li> <li>Low Exhaust Emission</li> <li>Control Panel Suitable for Flexible Application</li> <li>Patented Compact Designed and Sound proof Capopy</li> </ul>	<ul> <li>Tropical 50 °C Radiator, First Class Product Support</li> <li>Fuel Filter with Water and Particle Separator</li> <li>Low Fuel Consumption, Low Oil Consumption</li> <li>Global Technical Service and Maintenance Support</li> <li>Wide Range of Affordable Spare Parts</li> </ul>
Patented Compact Designed and Sound proof Canopy	Wide Range of Affordable Spare Parts
<ul> <li>Low Operating Cost, Suitable for Heavy-Duty</li> </ul>	High Quality and Reliable Technology
Durability , Low Noise Level	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.



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



# 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**

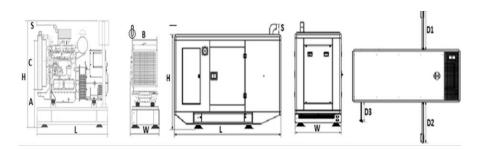




VALUES		OPEN TYPE GENERATOR	CANOPY TYPE GENERATOR
WIDTH	mm	700	1042
LENGTH	mm	1900	2615
HEIGHT	mm	1562	1766
WEIGHT (NET)	Kg	1067	1240
FUEL TANK CAPACITY	L	161	205

SYMBOL	OPEN	CANOPY
L	1900	2615
W	700	1042
н	1562	1594
S	95	172
Α	580	
В	530	
С	590	
D1		750
D2		750
D3		520
D4		
D5		

ENE



# **FUEL CONSUMPTION**

PERCENT OF PRIME POWER	1500 rpm	1800 rpm
	l/hr	l/hr
110 %	25,14	27,12
100 %	23,91	24,65
75 %	17,85	18,40
50 %	12,07	12,44



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

DIESEL ENGINE MAIN TECHNICAL PARAMETERS



<b>50 Hz – 1500</b> min <sup>-1</sup>			<b>60 Hz – 1800</b> min <sup>-1</sup>		
Type		BF4M2013EC	Type		BF4M2013EC
Speed	min <sup>-1</sup>	1500	Speed	min <sup>-1</sup>	1800
Net Frequency Power Standard	Hz	50 LTP	Net Frequency Power Standard	Hz	60 LTP
Power Level		G1	Power Level		G1
Exhaust Emission Standard		COM II	Exhaust Emission Standard		COMI
GENERAL		contra	GENERAL		comm
Aspiration		Turbo,CAC	Aspiration		Turbo,CAC
Governing System		Electronic	Governing System		Electronic
Governor Brand		Heinzmann/DDE	Governor Brand		Heinzmann/DDI
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	17,10	Mean Effective Pressure	Bar	15,50
Piston Speed	m/s	6,50	Piston Speed	m/s	7,80
	117.3		Rotation (looking at flywheel)	117.5	
Rotation (looking at flywheel)		ccw			CCW
No of Teeth on Flywheel Ring Gear		129	No of Teeth on Flywheel Ring Gear		129
GOVERNOR PERFORMANCE Speed droop (static) mech. gov.	%	4.5	GOVERNOR PERFORMANCE Speed droop (static) mech. gov.	%	4 5
		4-5			4-5
Speed droop (static) electr. gov.	%	0-3	Speed droop (static) electr. gov.	%	0-3
Governing standards		G3	Governing standards		G3
MOMENT OF INERTIA	ka m²	0.22	MOMENT OF INERTIA	ka m²	0.22
Engine without flywheel Flywheel (standard genset spec.)	kg m² kg m²	0,23 2,60	Engine without flywheel Flywheel (standard genset spec.)	kg m² kg m²	0,23 2,60
Max. step load acceptance, 1st step	%	-	Max. step load acceptance, 1st step	%	2,00
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)	97	Sound press. (1m average, full load), incl. cool. syst.	dB(A)	103,5
ENGINE WEIGHT			ENGINE WEIGHT		
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
LUBRICATION SYSTEM			YAĞLAMA SİSTEMİ		
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)	Ι	11	Oil capacity (sump)	I	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
OUTPUT	V	103	OUTPUT Gross Output(LTD or StandBy Dower)	<b>V</b>	140
Gross Output(LTP or StandBy Power) Fan Reduction	Kw Kw	102 5,90	Gross Output(LTP or StandBy Power) Fan Reduction	Kw Kw	110 10,20
Net flywheel	KW	96,1	Net flywheel	NW	99,8
Electrical Output (Stand By)	Kva	110	Electrical Output (Stand By)	Kva	120
Gross Output (PRP or Prime Power)	Kw	97	Gross Output(PRP or Prime Power)	Kw	105
GIUSS OULDULLENE OF FILLE FOWER					



JCBENERGY

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



## **DIESEL ENGINE MAIN TECHNICAL PARAMETERS**

<b>50 Hz – 1500</b> min <sup>-1</sup>			<b>60 Hz – 1800</b> min <sup>-1</sup>		
COOLING SYSTEM, GENERAL ENGINE COOLING DATA	4		COOLING SYSTEM, GENERAL ENGINE COOLING DATA	4	
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	m³/h	10,20	Delivery of Coolant Pump	m³/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		7.40	ENGINE COOLING SYSTEM		7.40
Coolant Capacity (engine)	1	7,40	Coolant Capacity (engine)	I	7,40
Coolant Capacity (incl. cooling unit)	I	19,70	Coolant Capacity (incl. cooling unit)	I	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	59
Fan Power Consumption	kW	5,90	Fan Power Consumption	kW	10,20
Cooling air Flow	m³/h	6100	Cooling air Flow	m³/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	52,50	Heat Dissipation (engine radiator)	kW	53,30
Heat Dissipation (CAC)	kW	13,10	Heat Dissipation (CAC)	kW	21,00
Heat Dissipation (convection)	kW	10,00	Heat Dissipation (convection)	kW	11,00
INLET / EXHAUST DATA			INLET / EXHAUST DATA		
Max. intake Depression (Switch setting)	mbar	25	Max. intake Depression (Switch setting)	mbar	25
Combustion Air Volume	m³/h	365	Combustion Air Volume	m³/h	466
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)	m³/h	1102	Exhaust Gas Flow (at above temp)	m³/h	1316
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	А	35	Alternator Output	А	35
Batteries (minimum capacity, cold start limit -5°C)	Ah	1*85	Batteries (minimum capacity, cold start limit -5°C)	Ah	1*85



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



## **ALTERNATOR TECHNICAL PARAMETERS**



#### ALTERNATOR TECHNICAL PARAMETERS

Insulation Class		Н	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	1000	Total Harmonic (*) TGH / THC	%	< 5
Overspeed	rpm	2250	Wave Form: NEMA = TIF - (*)		< 50
Air Flow	m³/sec.	0.216	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

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

STANDARD USING ALTERNATOR				OPTIONAL USING ALTERNATOR					
BRAND/MODEL	JCBENERGY	JCB 225LX		LEROY-SO	OMER	TAL044D	STAMFORD	UC274C	
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	109,0	109,0	113,0	-	120,0	120,0	124,0	-
OUTPUT POWER	kW	87,2	87,2	90,4	-	96,0	96,0	99,2	-

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

STANDARD USING ALTERNATOR				OPTIONAL USING ALTERNATOR						
BRAND/MODEL	JCBENERGY	JCB 225M2		LEROY-SOM	ER	TAL044C	STAMF	ORD UC2	74C	
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 Phas	e <b>416/240</b>	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	103,0	108,0	114,0	-	113,0	119,0	125,0	-	
OUTPUT POWER	kW	82,4	86,4	91,2	-	90,4	95,2	100,0	-	



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



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

## **CONTROL MODULE TECHNICAL PARAMETERS**

CONTROL PANEL SPECIFICATIONS

Brand	JCBENERGY	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 & 277 / 480 V – 60 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	<ul> <li>Current / Voltage</li> <li>Asymmetry</li> </ul>	- 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



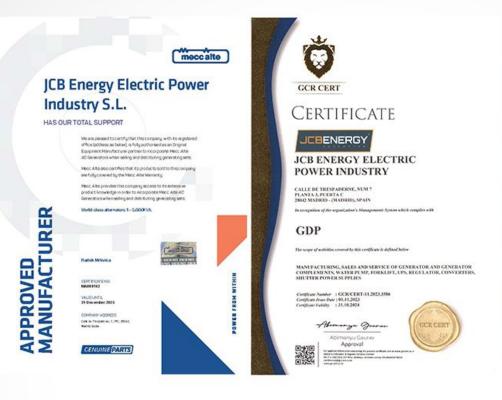
- Special, Registered JCB Energy Design and Colour
- A1 Quality DKP / HRU / Galvanized Steel
- Sensitive Twist on Automatic Press Brake
- Delicate Cut on Automatic Punch and Laser Bench
- Sensitive Welding on Robotic Welding Bench
- Chemical Cleaning Nano Technology Before Painting
- Robotic Painting with Electrostatic Powder Paint
- Drying and stabilizing on 200 °C Ovens
- 1500 Hour Salt Test
- o Glass wool Isolation, A1 Class Material -50/+500 ℃
- 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
- o Internal Exhaust Mufflers (Silencers)
- External Exhaust Mufflers (Silencers)
- Radiator water Filling Cap
- Daily Fuel Tank, External Fuel Tank

# **Our Quality Certificates**

legistration 🔊	Certificate of Registration a	
lanagement System of	This is to certify that the Environmental Management System of	
RGY	JCBENERGY	
OWER INDUSTRY	JCB ENERGY ELECTRIC POWER INDUSTRY	
ITA C 28042 MADRID - (MADRID), SPAIN	CALLE DE TRESPADERNE, NUM 7 PLANTA 3, PUERTA C 28042 MADRID - (MADRID), SPAN	
ts of the following standard	is in accordance with the requirements of the following standard	
:2015 nt System)	ISO 14001:2015 (Environmental Management System)	
	SCOPE	
RATOR AND GENERATOR COMPLEMENTS, WERTERS, SHUTTER POWER SUPPLIES		
(,19)	(AF Code: 18,19)	
hital Registration Date : 35-Sec-3020 11 Schwellinere Date : 35-Sec-3024 27 Schwellinere Date : 35-Sec-3025 Certificate Expty Date : 36-Sec-3026	Centices Number: 2010/2020	initial Registration Data : 25-047-0828 1" Serveillance Data : 25-047-2828 2" Surveillance Data : 25-549-2828 Centicute Euply Data : 24-047-828
Issued by ARS Assessment Private Limited		Issued by ARS Assessment Private Limited
Managing Director		-Managing Director
	anagement System of COWER INDUSTRY TA C 20042 MADRID - (MADRID), SPAIN ts of the following standard 2015 mt System) AND GENERATOR COMPLEMENTS, NEATOR AND GENERATOR COMPLEMENTS, NEATOR	enagement System of RECEV OWER INDUSTRY TA C 2004E MADRID. (MADRID]. SPAN ts of the following standard 20155 mt System) Market Contract Cont







Certificate

#### JEBENERGY

JCB ENERGY ELECTRIC POWER INDUSTRY

CALLE DE TRESPADERNE, NUM ? PLANTA 3, PUERTA C 28642 MADRID - (MADRID), SPAIN

In reception of the organization's Manegoments System which complex with

ISO 22716:2013:GMP GOOD MANUFACTURING PRACTICES The scope of methodise control by this conflictor is defined below

MANUFACTURING, XALIS AND SERVICE OF GENERATOR AND GENERATOR COMPLEMENTS, WATER PUMP, FORKLIFT, UPS, REGULATOR, CONVERTERS, SHUTTER POWER SUPPLIES

Confficute Number : GCR/CERT-11.2023.3585 Confficute Fund Date : 01.11.2023 Confficute Fadialty : 31.31.2024

Abimarya Gaurae Abimarya Gaurae Approval

Approval





GCRCERI

## Certificate

HEALTHY & SAFE WORKPLACE CERTIFICATE

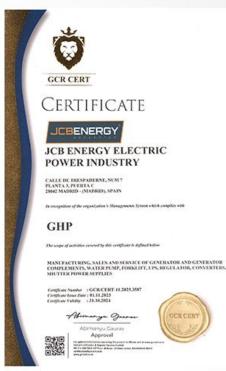
JCB ENERGY ELECTRIC POWER INDUSTRY

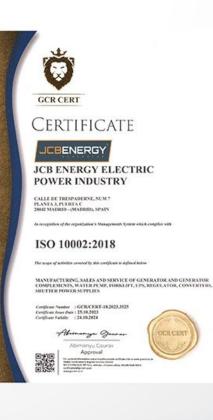
CALLE DE TRESPADERNE, NUN 7 PLANTA & PETRETA C 2006 MARDING - OADBRIDS, PAIN B has been entried to obtain a Healthy and Sele Workslase Conflicts by fulfiling the regimements for COVI-55 measures, within the physical conditions of the Dubries with in the regime of the Nealthy and Sele Workslase Ended on the Dubries

FACTORIES - PRODUCTION LOCATIONS: ELECTRICAL AND ELECTRONICS INDUSTRY

Certifican Number : GCR:CERT-11.2023.3650 Certifican Inac Date : 07.31.2023 Certifican Fullity : 06.31.2024



Alexandra a generation and a second and a second 








www.jcbenergy.es