



**OFFER FOR  
GENERATOR SET  
CATERPILLAR C1.1  
MODEL: DE11E3S  
CANOPIED**

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# Cuprins

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# A Project presentation

MIHAIL KOGALNICEANU AIRPORT

# B Engine technical specification

## ENGINE SPECIFICATIONS

<i>Model</i>	Cat® C1.5
<i>Cycles</i>	4
<i>Displacement</i>	1.5 l
<i>Cylinder configuration</i>	3 in line
<i>Aspiration</i>	Naturally aspirated
<i>Speed</i>	1500 RPM
<i>Speed regulator</i>	Mechanical
<i>Maximum Power</i>	16.0 HP (12.2 kW)
<i>Voltage/Ground</i>	12 Vcc/ Negative
<b>Fuel</b>	
<i>Fuel type</i>	Diesel
<i>Fuel consumption at 100%</i>	3.6 l/h (±3%)
<i>Fuel consumption at 75%</i>	2.7 l/h (±3%)
<i>Fuel consumption at 50%</i>	2.0 l/h (±3%)

# C Alternator technical specification

## 1. ALTERNATOR SPECIFICATION

<i>Model</i>	LC series – LCB1114F
<i>Number of bearings</i>	1
<i>Excitation System</i>	SHUNT
<i>Insulation class</i>	H
<i>Number of phases</i>	1 + null
<i>Voltage regulator</i>	Automat R220
<i>Voltage regulation</i>	± 1.0% (steady state)
<i>Ingress Protection Rating</i>	IP 23
<i>Cos phi</i>	1
<i>Wave Form NEMA = TIF:</i>	100
<i>Total Harmonic Content LL/LN:</i>	5.0%
<i>Radio Interference</i>	Suppression is in line with European Standard EN61000-6

## 2. OUTPUT RATINGS

<i>Apparent electric power</i>	10 kVA - prime <sup>(*)</sup> , 11 kVA – standby <sup>(*)</sup>
<i>Active electric power</i>	10 kW - prime <sup>(*)</sup> , 10 kW - standby <sup>(*)</sup>
<i>Voltage</i>	230 V
<i>Frequency</i>	50 Hz
<i>Cos phi</i>	1.0

(\*) Refer to ratings definitions

## 3. ACCESORIES

The alternator is designed to operate in normal environment situations and is equipped with:

- 63A 2 poles circuit breaker with overload and short-circuit protection, fitted in a compact box

# D Auxiliaries equipment technical specifications

## 1. COOLING SYSTEM

- Centrifugal water pump,
- Engine mounted radiator,
- Ventilator,
- Caterpillar cooling agent,
- Quick cooling agent emptying system

## 2. ELECTRICAL SYSTEM

- Starting battery: 12 V,
- Electric starting device: 12 V,  
**Optional:**
- Battery key disconnect switch,
- Power plugs mounted on the enclosure

## 3. EXHAUST SYSTEM

- Stainless steel heat expansion compensator,
- Industrial type silencer
- Maximum Back Pressure: 10.2 kPa,
- Exhaust flow rate: 2.7 m<sup>3</sup>/min,
- Exhaust gas temperature: 445 °C.

## 4. LUBRICATION SYSTEM

- Spin-On, Full Flow oil filter,
- Total oil capacity 6.0 l,
- Oil pan 4.5 l,
- Carter gases discharge,
- Oil dipstick,
- Quick oil emptying system

## 5. AIR SYSTEM

- Air filter with service indicator for clogging,
- Combustion air flow: 1.1 m<sup>3</sup>/min,
- Maximum combustion air intake restriction: 3.0 kPa,
- Radiator cooling air flow: 28.8 m<sup>3</sup>/min
- External restriction to cooling air flow: 125 Pa

## 6. FUEL SYSTEM

- Fuel tank: 55 l,
- Fuel filter,
- Flexible lines for fuel turn / return
- Recommended fuel type: Class A2 Diesel or BSEN590,
- Fuel tank quick emptying possibility.

## 7. SECURITY INSTRUMENTATION

- Oil pressure sensor,
- Coolant temperature sensor,
- Low coolant level sensor
- Speed pick-up.
- Optional:**
- Low level fuel sensor.

## 8. MOUNTING

- Vibration isolators mounted between the generator set and the chassis,
- Steel chassis with integrated dual wall fuel tank.

## 9. EMCP 4.1 CONTROL PANNEL

The generator set is equipped with a manual and auto (external command) starting panel.

The panel combines in the same module the information regarding metering, protection, control and diagnostic.

The panel have the soring capability of up to 40 events in a non-volatile memory. The panel assures the following command and control functions:



### 9.1 > LCD 33x132 pixel for the next parameters:

- Voltage (L-L, L-N)
- Current (Phase),
- Frequency,
- Coolant temperature,
- Oil pressure,
- Engine speed (RPM),
- Battery voltage,
- Run hours,
- Crank attempt and successful start counter.

### 9.2 > LED signaling for:

- Generator set fault,
- Generator set alarm.

### 9.3 > Alarms and protections:

- Control switch not in auto (alarm),
- High coolant temperature (alarm and shutdown),
- Low coolant temperature (alarm),
- Low coolant level (alarm)(with optional sensor),
- Low fuel level (alarm and shutdown)( with optional sensor),
- Low oil pressure (alarm and shutdown),
- Failed start,
- Low and high battery voltage,
- Over speed,
- Over crank,
- Under/Over Voltage (27/59),
- Under/Over frequency (81 O/U).

### 9.4 > Command

- 3buttons for manual start / auto / stop
- Emergency stop button,
- Engine parameters button,
- Alternator parameters button,
- Directional buttons for scrolling through menus,
- Main menu button,
- Alarm reset button.

### 9.5 > Inputs and outputs

- 2 dedicated digital inputs,
- 6 programmable digital inputs,
- 2 dedicated outputs,
- 4 programmable outputs.



# E Embodiment

## 1. CANOPIED VERSION

The sound proof canopies are the result of a continuous research and development realized by the Caterpillar acoustic engineers. The canopies are reducing the sound level of the generator set to be in concordance Stage 2 levels of the European Community Directive 2000/14/EC  
Sound level: 77 (dBA) at 1 meter and 65 (dBA) la 7 meters for 100% load of the generator set.

Color: Caterpillar yellow.

The canopy is equipped with:

- Cable entry trough the chasee of the generator set,
- Durable and robust construction manufactured from galvanized steel with advanced powder-coated paint finish,
- Single-piece main roof,
- Easy access for maintenance: Large doors on each side, removable end panels allow access to radiator, exhaust outlet, and alternator rear,
- Security and safety: Secure, lockable doors prevent unauthorized access to control panel, fuel fill, and battery, emergency stop button mounted on exterior, convenient to control panel, cooling fan and battery charging alternator fully guarded
- Transportability: Tested and certified single point lifting facility, lifting and drag points on base frame facilitate handling from both sides



### 1.1 > Dimensions

- Length: 1704 mm,
- Width: 876 mm,
- Height: 1268 mm,
- Net weight: 1391 kg,
- Weight (oil, coolant, no fuel): 650 kg.

### 1.2 > Fuel system

The engine is supplied with diesel from an integrated fuel tank with a 55 l volume (~ 15.0 h autonomy for 100% load)

Optional the fuel tank may be equipped with an automatic fuel transfer kit.



# F Ratings definitions(\*)

## 1. STANDBY POWER RATING:

- Output available with varying load for the duration of the interruption of the normal source power. average power output is 70% of the standby power rating. Typical operation is 200 hours per year, with maximum expected usage of 500 hours per year.

## 2. PRIME POWER RATING:

- Output available with varying load for an unlimited time. Average power output is 70% of the prime power rating. Typical peak demand is 100% of prime rated kW with 10% overload capability for emergency use for a maximum of 1 hour in 12. Overload operation cannot exceed 25 hours per year.

## 3. STANDARD REFERENCE CONDITIONS:

- Note: Standard reference conditions 25°C (77°F) air inlet temp, 100m (328ft) A.S.L. 30% relative humidity. Fuel consumption data at full load with diesel fuel with specific gravity of 0.85 and conforming to BS2869: 1998, Class A2.

## 4. QUALITY STANDARDS:

- The equipment meets the following standards: IEC60034-1, IEC60034-22, ISO3046, ISO8528, NEMA MG 1-32, NEMA MG 1-33, 2004/108/EC, 2006/42/EC, 2006/95/EC.

# G Technical assistance and commissioning

## 1. TECHNICAL ASSISTANCE

- Free technical support is provided to perform all installation conditions,
- Technical assistance, warranty and commissioning ensures only on Romanian territory,
- We ensure service and spare parts for the lifetime of the machine

## 2. COMMISSIONING

This offer includes the commissioning of the generator set and will be performed by specialized technicians.

This benefit consists of:

- Checking of electrical connections and mechanical equipment supplied,
- Connecting the control cable and auxiliary power equipment provided,
- Commissioning of the generator set,
- Testing of the generator set functionality and important parameters,
- Testing the functionality of the entire system,
- Wrote a intervention of commissioning,
- Completion of the generator warranty documentation.

This offer does not include any other commissioning where, for reasons beyond the supplier, commissioning could not be achieved first time.