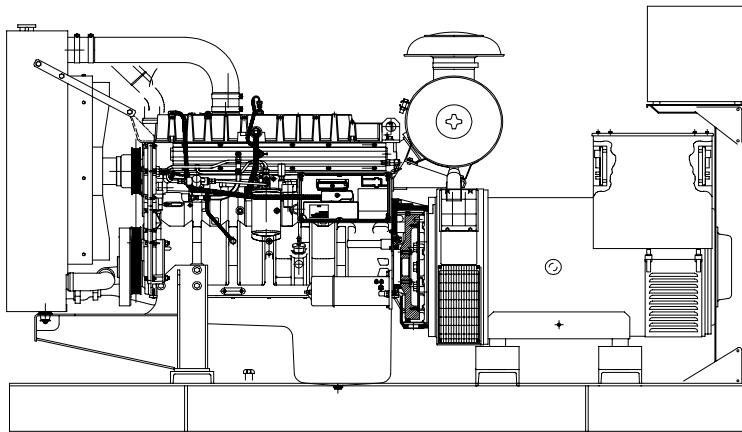


**CUKUROVA GENERATOR SYSTEMS**

1500 Rpm, 50Hz, 400V

Perkins 1306C-E87TAG4 diesel engine

Mecc Alte ECO38-3SN/4 alternator



**Standard Generator Features**

- ◊ AMF, Automatic mains failure unit
- ◊ Heavy duty type, 6 cylinder, water cooled engine
- ◊ 50°C tropical type radiator
- ◊ Starter motor
- ◊ Lead acid battery
- ◊ Charging alternator
- ◊ Battery charge redressor
- ◊ Heavy duty, brushless type alternator
- ◊ Base frame with anti-vibration units
- ◊ Industrial type silencers
- ◊ Flexible exhaust compensator
- ◊ Block water heater unit
- ◊ Control panel with digital-automatic main control module
- ◊ Fan, fan drive, charging alternator drive and all rotating parts covered
- ◊ Radiator matrix covered by metal mesh against the mechanical damages
- ◊ Fabricated and welded steel base frame
- ◊ Anti-vibration mountings
- ◊ Engine and alternator manufacturer test reports
- ◊ Factory load, performance and function tests

**Optional Features**

- ◊ Automatic load transfer panel
- ◊ Automatic synchronization and power sharing systems
- ◊ Soundproof canopy
- ◊ Container type enclosers
- ◊ Road trailer
- ◊ Job-site trailer
- ◊ Protection circuit breaker
- ◊ Air start
- ◊ Remote type radiator
- ◊ Base fuel tank
- ◊ External type fuel tank
- ◊ Automatic fuel transfer system
- ◊ Residential silencer



Model	Standby		Prime	
	kVA	kW	kVA	kW
<b>CJ250PC</b>	<b>250</b>	<b>200</b>	<b>225</b>	<b>180</b>

**APPLICATION DATA**

**Perkins 1306C-E87TAG4 Engine**

**Standard Features**

**High Performance Productive Power**

◊Hydraulically actuated Electronically controlled Unit Injectors-high-pressure fuel injection gives consistent, reliable high performance.

◊Constant electronic engine management and monitoring enable precise fuel metering and injection timing to ensure reliable low temperature starting, superb economy with performance and very close governing.

**Quiet, Clean Power**

◊A rigid structure minimises noise transmission and helically cut gears provide quiet power transfer to auxiliaries.

◊Forced induction and electronic fuel injection control combine to reduce combustion noise while electronically optimised fuel/air mixing ensures complete combustion resulting in virtually smoke free operation with emissions capability matching current and future emissions legislation.

**Durable Power**

◊A fully balanced induction-hardened steel crankshaft gives smooth performance with minimised bearing loads.

◊Oil cooled pistons with keystone top and second rings give longer life while positive rotational valves and roller cam followers reduce wear on valve seats, tappets and cam lobes.

**Reliable Power**

◊Cylinder head coolant is directed to valve bridges and injectors and lub oil is cooled in a high efficiency oil cooler, both features enhancing engine reliability.

◊Electronic safety shutdown option protects the engine while event and fault warning codes protect operations.

**Technical Specifications**

Manufacturer	PERKINS
Model	1306C-E87TAG4
Type	4 cycle, water-cooled, diesel engine
Number of cylinders	6
Cylinder arrangement	Vertical In-line
Displacement, Liters	8.7
Bore X Stroke, mm	116.6 X 135.9
Compression Ratio	16.9:1
Combustion System	Direct injection
Aspiration	Turbocharged, air to air charge cooled
Rotation	Anti-clockwise, viewed on flywheel
Gross engine power, kWb	224
Fan Power, kWm	7
BMEP gross, bar	20.55
Combustion air flow, m <sup>3</sup> / min	14.9
Exhaust gas temp.(after turbo), °C	526
Exhaust gas flow (after turbo),m <sup>3</sup> / min	40.3
Mean piston speed, m / s	6.8

**Cooling System**

Type	Tropical, heavy duty type
Ambient temperature, °C	50
Engine+Radiator coolant cap., Liters	37.2
Pressure cap setting, kPa	68.9
◊Thermostatically controlled cooling system with belt-driven circulating pump and 24 inch belt-driven fan	
◊Radiator mounted with all guards and pipes	
◊Air/air charge cooler incorporated in radiator	
◊Coolant filter/conditioner	

Model	Standby kW		Prime kW	
	Gross	Net	Gross	Net
<b>1306C-E87TAG4</b>	<b>224</b>	<b>217</b>	<b>205</b>	<b>164</b>

**Lubricating System**

Type	Pressurized
Capacity, Liters	28.3
Lub oil pressure (min), kPa	552
◊Wet rear well steel sump with filler and dipstick	
◊Full-flow spin-on filter	
◊Tube-type oil cooler thermostatically controlled	

**Fuel System**

Type of injection system	Direct injection
Fuel atomiser	Heui
Fuel Feed Pump	Bosch
Hydraulic pump	Rexroth
Delivery/hour at 1500rev/min, Liters	180
Governor type	Electronic
◊Electronic governing to ISO3046-4 with stand alone isochronous or load sharing capabilities	
◊Hydraulically actuated electronically controlled unit fuel injectors with full authority electronic control	
◊Spin-on fuel filter with pre-filter and hand primer pump	

**Electrical System**

Alternator	24 Volt Lucas AC5R, 45 Amp
Starter motor (DC)	24 Volt Lucas S115
◊Electronic Control Module mounted on engine with wiring looms and sensors	
◊3 level engine protection system	

**Fuel Consumption**

liters per hour	%110 Load	53 L
	%100 Load	48.5 L
	%75 Load	37.5 L
	%50 Load	26.1 L
grams per kWh	%110 Load	198.7 g/kWh
	%100 Load	199.7 g/kWh
	%75 Load	205.9 g/kWh
	%50 Load	214.9 g/kWh

## Mecc Alte ECO38-3SN/4

### Standard Features

#### Range

The ECO generators are available with a 50/60 Hz frequency, either with 2 poles ranging from 8 to 114 KVA or with 4 poles ranging from 6.5 to 3,000 KVA, with a single or double support. In order to couple them with the prime mover it is possible to choose among a wide range of flanges and couplings.

#### Mechanical Structure

The robust mechanical structure permits easy access to the connections and components during routine and extraordinary maintenance check-ups. The materials used for the manufacture of the mechanical structure are the following: FeP12 steel for the frame, C45 steel for the shaft and cast iron for the end-brackets.

The standard degree of protection is IP21 or IP23; upon the customer's request, other higher degrees of protection, such as IP45, IP54, etc., are available.

#### Insulation And Impregnation

Insulation is of class H standard. Impregnation is made with tropicalized epoxy resins by dipping and dripping, whilst for the high voltage parts by vacuum, so that the insulation level is always very good. In the highpower models, the stator windings undergo a further insulation. Special treatments for particular environmental conditions are available on request.

#### Regulation

The self-regulation is obtained through an electronic regulator. The regulator is fed by an auxiliary winding which guarantees an almost constant supply under any possible operating condition of the generator. The ECO series can be equipped with the new interchangeable U.V.R.6-F or S.R.7/2-G regulator, ensuring the same performance.

#### Voltage Accuracy

The voltage accuracy is  $\pm 1\%$  in static condition with any power factor and with speed variation between 5% and +30% with reference to the rated speed.

#### Voltage Regulation

The voltage can be regulated by the "VOLT" potentiometer of the electronic regulator. By connecting a 100K potentiometer in the proper terminals it is also possible to obtain a remote voltage regulation in a range of 5% of the rated voltage.

#### Standards

The entire series is manufactured according to and complies with the most common specifications such as CEI 2-3, IEC 34-1, EN 60034-1, VDE 0530, BS 4999-5000, CAN/CSA-C22.2 N°14-95 – N°100-95; special versions are available on request to meet specific specifications and regulations.

Model	Standby		Prime	
	kVA	kW	kVA	kW
<b>ECO38-3SN/4</b>	<b>250</b>	<b>200</b>	<b>225</b>	<b>180</b>

### Technical Specifications

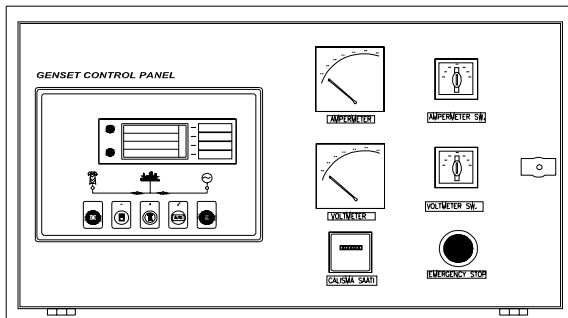
Manufacturer	Mecc Alte
Model	ECO38-3SN/4
Type	4-Poles, Rotating Field, Brushless
Standby power at rated voltage, kVA	250
Efficiency, %	92,7
Power factor	0.8
Phase	3
Frequency, Hz	50
Speed, Rpm	1500
Voltage, V	380/415
Excitation	Self excited
Stator winding	12 ends
Regulation	Universal Voltage Regulator, sixth generation
Voltage Regulator	UVR6
Voltage Regulation, %	$\pm 1$
R.F.I Suppression	EN50081-1, EN50082-1, VDE0875K. For others standards apply to factory
Waveform Distors.at f. load LL/LN %	2,8 / 2,9
Waveform Distors.at no load LL/LN %	2,6 / 2,8
Rotor	with damping cage
Overspeed, Rpm	2250
Short circuit current	>300%
TIF Telephone Interference	THF < 2%
Insultion class	H
Stator Winding Resistance (20°C), $\Omega$	0,0085
Rotor Winding Resistance (20°C), $\Omega$	4,449
DE bearing	6318.2RS
NDE bearing	6314.2RS
Protection class	IP 21 (other protection on request)

### Optional Equipment

- ◊Anti Condensation Heaters
- ◊Air Filters
- ◊Temperature Indication RTD's
- ◊Winding Protection Thermistors
- ◊UVR6 Universal Voltage Regulator, sixth generation

## Control Panel

### Standard Equipments



- ◊Deeapse 5220 digital automatic control module
- ◊Hourmeter
- ◊Voltmeter
- ◊Voltmeter commutator
- ◊Ammeter
- ◊Ammeter commutator
- ◊Emergency stop button

### Deepsea 5220 Control Module

#### Description

- ◊The model 5220 is an Automatic Mains Failure Control module.
- ◊The modul is used to monitor a mains supply and automatically start a standby generator set.
- ◊The module also provides indication of operational status and fault conditions automatically shutting down the genset and indicating failures by means of an LCD display, and appropriate flashing LED on the front panel.
- ◊Selected timers and alarms can be altered by the user from the front panel.
- ◊Alterations to the system are made using the 810 interface and a PC. This interface also provides real time diagnostic facilities

#### Specifications

- ◊240mm x 172mm dimensions
- ◊70mm x 40mm dimensions, 4 segment grafical LCD monitor
- ◊Developed 16-bit Microprocessor design
- ◊Easy comprehended display (Hid-Til-Lit SMD LED technology)
- ◊LED mimic diagram
- ◊SMS messaging capability with suitable GSM Modem
- ◊PC software is MS Windows based and allows the operator to control the module from a remote location (P810 Software Kit necessary)
- ◊Easy pushbutton controls
- ◊System parameters can be adjusted manually from the front panel
- ◊kVA,kW ve Cosφ measurements
- ◊Communication with MODEM

#### Pushbutton Controls

STOP / START  
 AUTO, TEST, MANUAL  
 LCD PAGE

#### Input Functions display on LCD

Generator Volts	Volts L1-N, L2-N, L3-N
Generator Volts	Volts L1-L2, L2-L3, L3-L1
Generator Amps	Amps L1, L2, L3
Generator Frequency	Hz
Mains Volts	Volts L1-N, L2-N, L3-N
Mains Volts	Volts L1-L2, L2-L3, L3-L1
Mains Frequency	Hz
Engine Speed	RPM
Plant Battery Volts	Volts
Engine Hours Run	Hour
Generator total power	kVA L1, L2, L3,total
Generator total power	KW L1, L2, L3,total
Generator power factor	Cosφ L1, L2, L3,total

#### Optional Input Functions

Engine Oil pressure	kPa
Fuel level	%
Engine Temperature	°C

#### Alarm Channels

Under/over generator voltage  
 Over-current  
 Under/over generator frequency  
 Under/over speed  
 Charge fail  
 Emergency stop  
 Low oil pressure  
 High engine temperature  
 Fail to start  
 Low/high DC battery voltage  
 Reverse power  
 Generator phase rotation error  
 Generator short-circuit protection  
 Loss of speed sensing signal  
 Mains out of limits

#### Environmental Testing Standards

##### Electromagnetic Compatibility

BS EN 50081-2:1992 and EN 61000-6-4:2000 EMC, Emission Standards for the Industrial Environment

EN 61000-6-2:1999 EMC, Immunity Standards for the Industrial Environment

##### Vibration

BS EN 60068-2-6 Ten sweeps (up and back down) at 1 octave/minute in each of the three major axes.

5Hz to @ +/-7.5mm constant displacement.

8Hz to 500Hz 2gn constant acceleration.

##### Temperature

Cold : BS EN 60068-2-1 to -30°C

Hot : BS EN 60068-2-2 to 70°C

##### Humidity

BS EN 2011 part 2.1 93% RH @ 40° for 48 hours

##### Shock

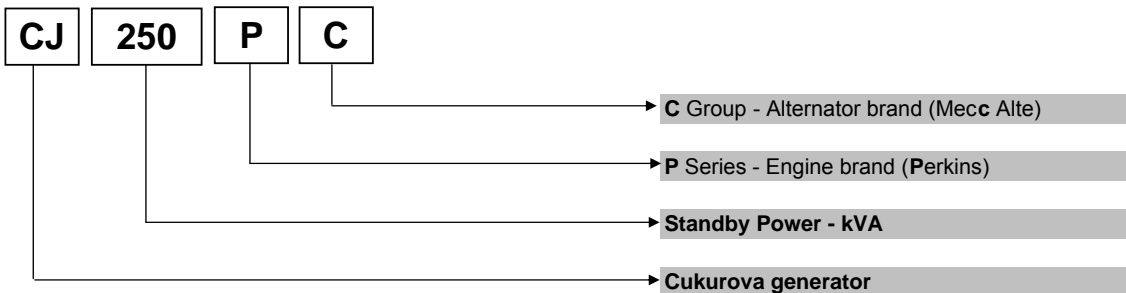
BS EN 6068-2-27 Three half sine shocks in each of the three major axes 15gn amplitude.11mS duration.

##### Electrical Safety

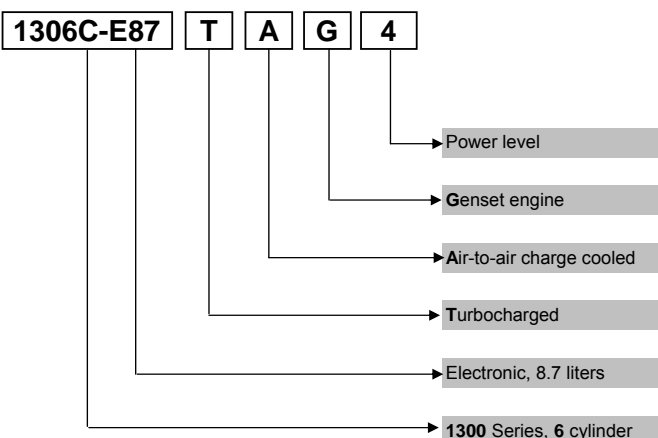
BS EN 60950 Low Voltage Directive/Safety of information technology equipments, including electrical business equipment

**Model Codes and General Information**

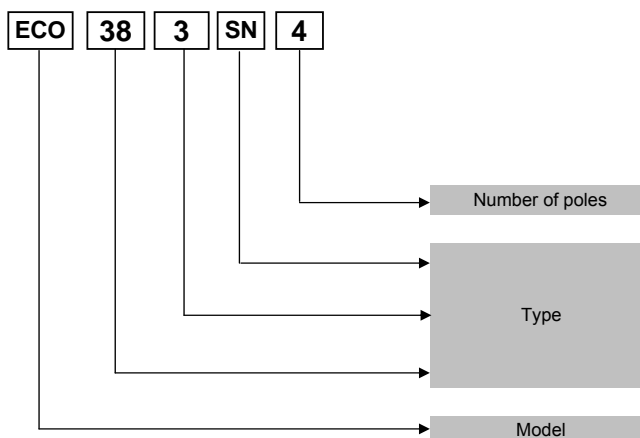
Cukurova Diesel Generator



Perkins 1300 Series Diesel Engine



Newage / Stamford Alternator



**Information**

**Power Ratings**

**Standby power rating** is for the supply of emergency power at variable load for the duration of the non-availability of the mains power supply. No overload capacity is available at this rating. A standby rated engine should be sized for an average load factor of 80% based on published standby rating for 500 operating hours per year. Standby ratings should never be applied except in true emergency power failure conditions.

**Prime power rating** is available for unlimited hours per year with a variable load of which the average engine load factor is 80% of the published power rating, incorporation of a 10% overload for 1 hour in every 12 hours of operation which permitted

**Continuous power rating** is available for continuous full load operation. No overload is permitted.

Acc. to ISO 3046/1, BS 5514, DIN6271

**Electric Formulas**

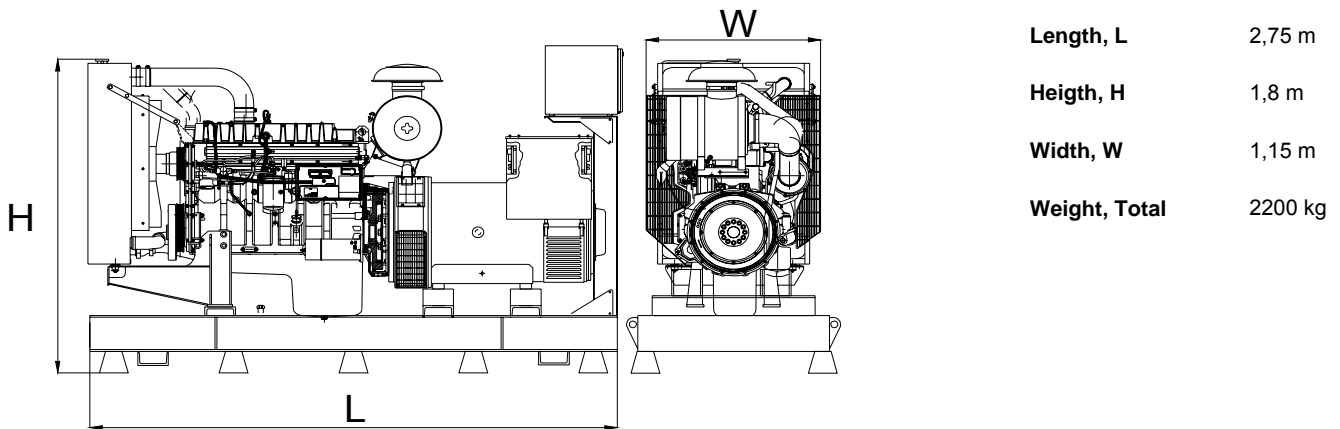
Values	Formula	
kWe	kWm X E	
kWe	$(U \times I \times 1.73 \times pf) / 1000$	kVA x pf
kVA	$(U \times I \times 1.73) / 1000$	kWe / pf
I (Amp)	$(kWe \times 1000) / (U \times 1.73 \times pf)$	$(kVA \times 1000) / (U \times 1.73)$
Frequency	$(Rpm \times N^{\circ}Pole) / (2 \times 60)$	
Rpm	$(2 \times 60 \times Frequency) / N^{\circ}Pole$	

**kWm**: Mechanical Power  
**kWe** : Electrical Power  
**pf** : Power factor  
**E** : Alternator efficiency

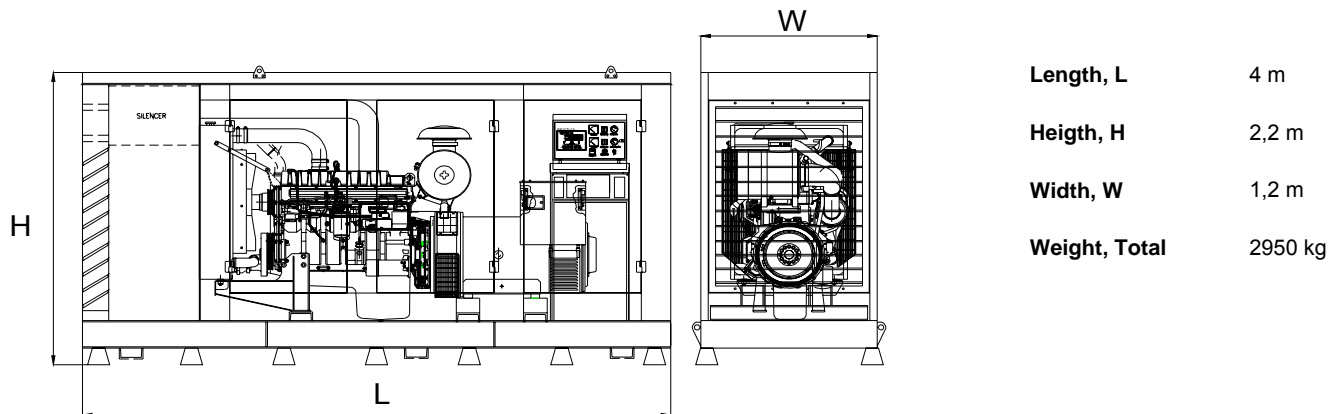
**I** : Current (A)  
**U** : Voltage (V)  
**kVA** : Power  
**Rpm**: Revolutions per minute

**General Dimensions**

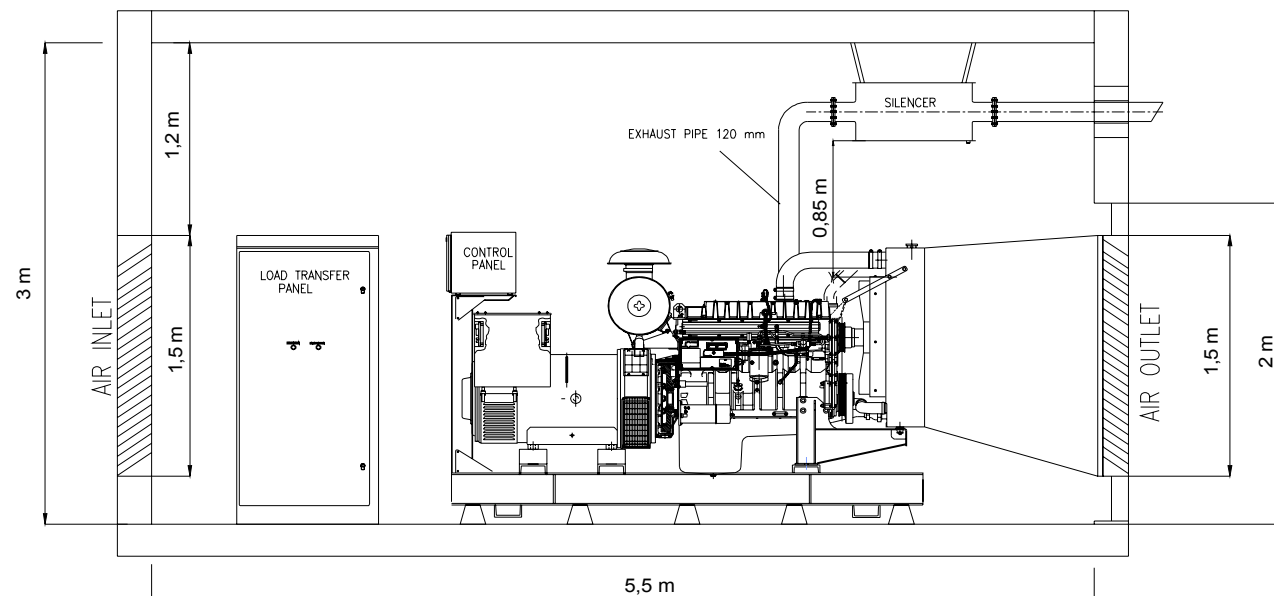
Standard Generator



Generator with Soundproof Canopy



**Generator Room Layout**



Above drawings dimensions and weights are only for guidance. For installation design of your specific application, necessary certified drawings, at site consultancy service as well as maintenance and installations manuals will be provided by Cukurova without any charge.

Specifications may change without notice

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