CMCA Integrated Systems Ltd

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Military Packaged Hybrid Generators, Redefining Battlefield Power.

CMCA Integrated Systems range of in service Military Packaged Hybrid Generators lead the way in mission power optimisation, with unmatched form factors to reduce the logistical burden on personnel and supply chain. The MPHG range is perfectly suited for vehicle integration and proven in a range of military vehicle platforms as auxiliary power, battery charging and deployable power.

Available in a 2kW 28V DC package and a 3kW 230V 50Hz AC package the MPHG range can be paralleled to provide a modular, scalable and efficient power distribution system, reducing the logistical and procurement needs, high commonality between the MPHG-002 and MPHG-003 simplifies training, support and NATO codified spares.

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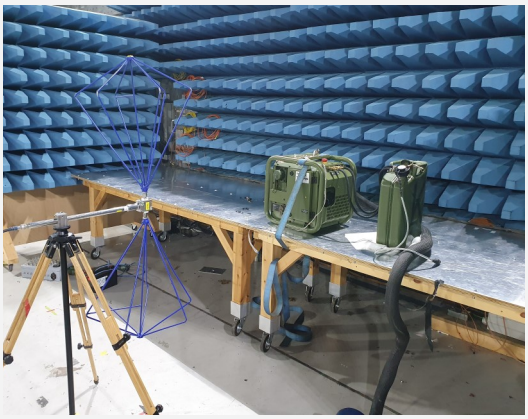
High Quality Mission Power

CMCA Integrated Systems' MPHG range of generators are being utilised by allied nations around the world in a range of technically complex platforms, the high quality power supports sensitive electronic loads and with a minimal EMC signature designed to Def Stan 59 411 Land Class A.



The MPHG-002 offers 2kW 28V DC utilising two independent alternator systems a primary of 70A and a secondary of 10A with the inclusion of a 24V 6Ah AGM battery pack smoothing the output. The variable engine speed tracks power consumption, incrementally slowing the engine down to reduce fuel consumption whilst maintaining a stable output voltage and current, in the event of a sudden load surge the engine speed is instantaneously increased to deliver the required power.

The MPHG-003 offers 3kW 230V AC 50Hz through an advanced permanent magnet generator and true sine wave inverter, this provides high quality smooth power with a variable engine speed between 2000 and 3000 rpm to reduce fuel consumption. This system also allows two MPHG-003 generators to be paralleled to provide a modular, scalable power grid. A supplementary 24V 10A charging output is also available to maintain the internal batteries and support external batteries.

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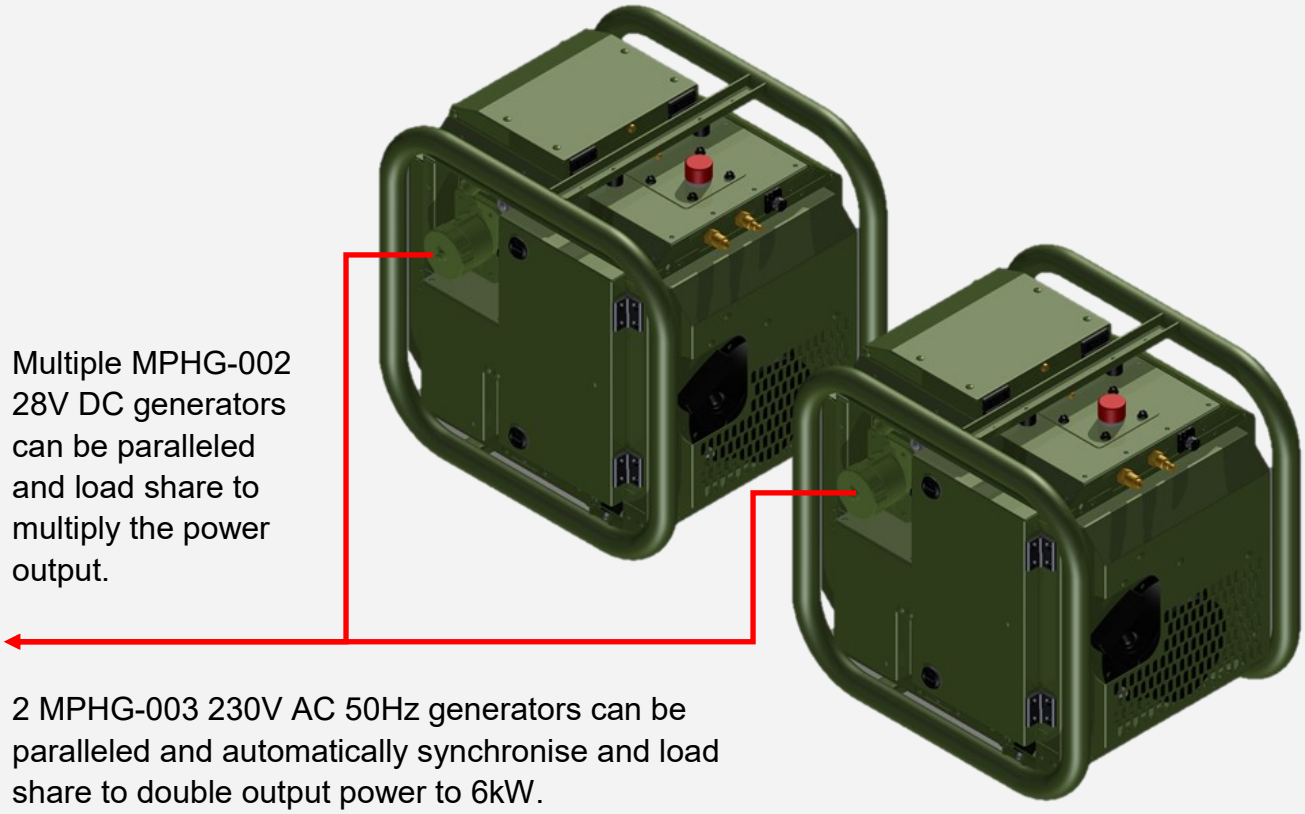
Modular & Scalable

Working with governments and prime contractors for over two decades and as a original equipment manufacturer of military environmental control and integrated shelter systems, CMCA have built up a wealth of knowledge and experience in real time mission power profiles, understanding that generators are often rated for the worst case scenario which may never actually be experienced. This overrating increases procurement, maintenance and fuel cost as well as burdening logistics and front line personnel in delivering and supporting larger generators.

The MPHG's man portable form factor and scalability reduce the strain throughout the defence supply chain by scaling the number of generators to meet different mission needs for both AC and DC architecture. Auto start and load shedding features also optimise the scalability by autonomously running generators to meet the power demand.



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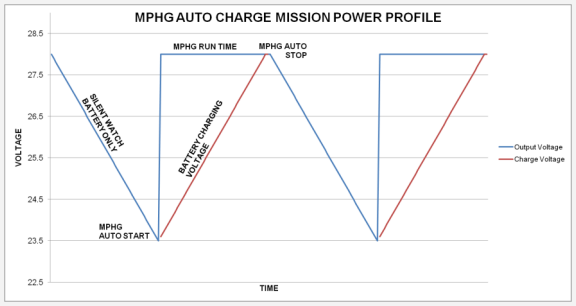
Hybrid Power Architecture

The MPHG range of generators employ a number of intelligent control sub systems to optimise power delivery and fuel efficiency. Utilising already efficient engines with power tracking engine speed regulation to reduce fuel usage and extend deployment capability, the MPHG generators support a range of hybrid power architectures.

The simplest hybrid power system utilises the MPHG and energy storage where the primary power is delivered through the energy storage capacity, when depleted the MPHG will automatically start and recharge the energy storage to an optimised state of charge then automatically stop and monitor the energy storage capacity. This platform reduces the generator run time, reducing fuel usage and supports silent watch capability.



A more advanced hybrid power system utilises a power distribution module such as CMCA's MPDS. These advanced hybrid energy solutions utilise an integrated high capacity Mil Spec 6T battery with a highly intelligent charger and power inverter system to monitor and sustain power demand and deliver power from the stored energy for prolonged silent watch capability and automatically start and stop the generator to meet power surges and maintain energy storage capacity, offering an exceptional tactical advantage in a silent power solution but also dramatically reduces fuel consumption. The MPDS accepts both AC and DC power inputs allowing optimised integration with the MPHG generator range and distributes AC and DC power from either power source, as well as supporting power from solar to further extend the fuel saving and silent power capability, delivering reliable clean power.

Below: MPHG-002, MPDS-002 & MPHG-003

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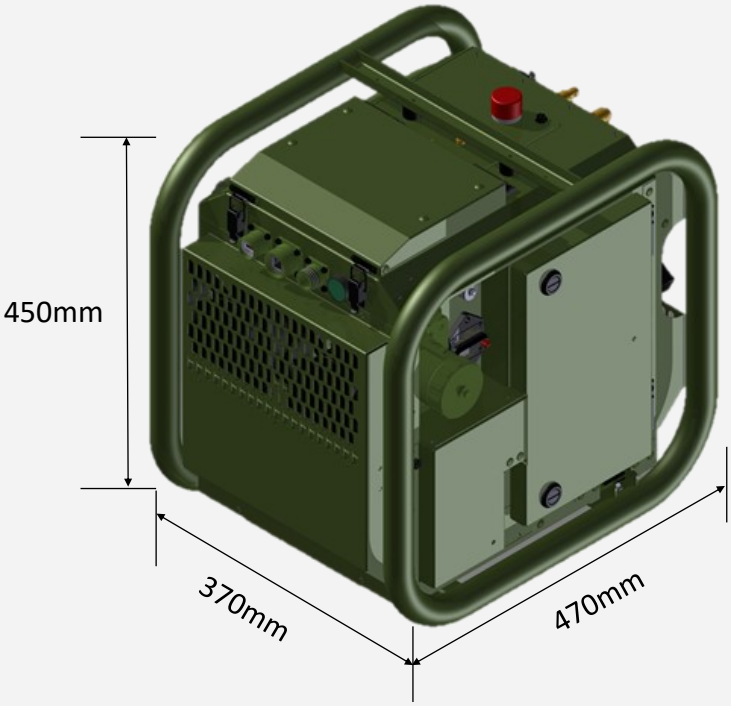
Optimised Form Factor

The MPHG range of generators benefits from an unrivalled form factor with overall dimensions of 470mm in length, 370mm in width and 450mm in height and weighing only 50kg and 55kg for the MPHG-002 and MPHG-003 respectively.

An acoustic and thermally insulated enclosure is resiliently mounted by 6 anti vibration mounts within a aluminium tubular frame of 31.75mm for ergonomic grip, with clearance for insulated gloves, allowing for comfortably and safe carrying over all terrains. The additional option for a wheeled caster module to tow the generator as opposed to carrying further reduces the logistical stain on the operator.

This compact and lightweight profile has been adopted into a range of vehicle based systems around the world due to the ease of integration and minimal space allocation, the man portability means the generator can be deployed with ease from a range of vehicle platforms with confidence following rigorous testing to Def Stan 00 35 for drop, topple, shock and vibration for tracked and wheels vehicles.



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Technical Specification

Model Reference:	MPHG-002	MPHG-003
Power Output:	28V DC 2kW	230V AC 50Hz 3kW
Parallel Capability:	Unlimited - Restricted by output cable size.	2 load sharing for 230V AC 50Hz 6kW. Load sharing cable provided.
Power Interface:	1 off NATO 2 pole socket, 1 off 38999 18 way socket, 5V USB socket, 2 pin charge socket	1 off 230V 16A socket, 2 pin charge socket
Power Protection	Manual reset 80A	Manual reset 16A
Human Interface	Ruggedised Digital interface with 4.3” LED Screen and command buttons.	
Communication Interface:	Modbus TCP over RS485 via Ruggedised RJ45 socket . Hand held/wall mounted master interface available. External 5V Auto Start/Stop Socket.	
Fuel:	Diesel, AVTUR. External fuel source. Intelligent 20L jerry can fuel sender available.	
Engine Spec:	Single Cylinder, Air Cooled, Auto Variable Speed	
Starting Method:	Manual Recoil Start, Electric Start From Internal Battery, Auto Start/Stop Battery Charge, Auto Start/Stop From 5V Command	Manual Recoil Start, Electric Start From Internal Battery, Auto Start/Stop on Mains Failure, Auto Start/Stop From 5V Command
Operating Options:	Continuous Power On Demand, Auto Start/Stop Battery Charging, Standby (Remote Command or External Auto Start/Stop)	
Dimensions:	Length: 470mm, Width: 370mm, Height: 450mm	
Dry Weight:	50kG	55kG
EMC:	Def Stan 59 411 Land Class A	
Temperature Range:	-30°C to +55°C	
Acoustic Profile:	65dBA to 75dBA @10m	
Ancillary Options:	3m Exhaust Extension 20L Jerry Can Intelligent Fuel Level Sensor Hand Held/Wall Mounted Master Controller & Ethernet Cable Ancillary Stowage Bag	