# MultiPower:

environment friendly all-in-one hybrid energy

www.victronenergy.com

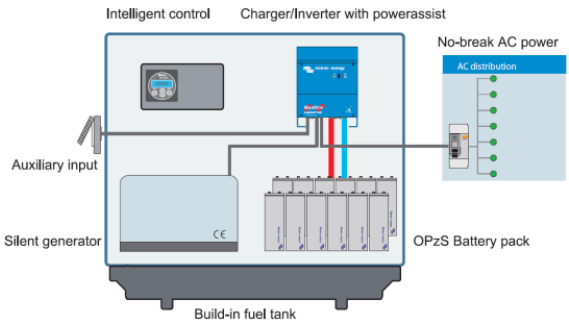
**MultiPower**

## The case for a hybrid system

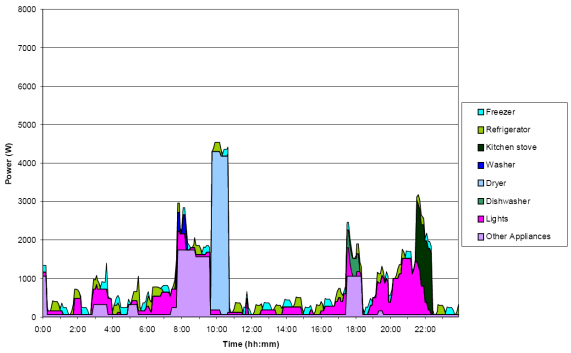
Per Watt AC-power, an inverter is generally more expensive than a generator. So why would one add an inverter to an AC-generator system?

Apart from the obvious advantage of "silent AC-power", there are other major considerations why it is attractive to add a Multi or Quattro inverter/charger to a system with ac-generator:

- More power: generator **plus** inverter instead of generator **or** inverter
- Reduces fuel consumption (and pollution) by a factor three or more
- Cost and time savings as a result of reduced maintenance
- Extended generator life
- 24/7 availability of AC power




**Block diagram**




**Typical daily load distribution of a household**

## More power: generator + inverter

The VE Quattro inverter-chargers feature PowerAssist, a unique capability of supplementing power to the generator. Insufficient generator power is immediately compensated for by the inverter/charger with extra power from the battery. The total output power of the system can reach up to 3 times the nominal generator power for temporary heavy loads, and problems related to insufficient generator power are solved once and for all. Electric cooking, washing machines, power tools, water pumping and pressurisation… there are virtually no limitations.

## Fuel savings and less pollution

Tests have shown that a generator is incredibly inefficient when operating at low load (see references below). By combining a generator with an inverter/charger and batteries, efficiency can be increased as follows:

- By operating the generator in parallel with the inverter/charger, peak power available is equal to the sum of generator power and inverter power. A smaller generator can therefore be installed.
- When the generator is operating, any available power that is not needed to supply the load will be used to recharge the batteries. The generator will therefore always operate at maximum efficiency.

## Cost and time savings as a result of reduced maintenance, and extended generator life

In most applications the generator, instead of running 24/7, will operate only a few hours per day.

## 24/7 availability of AC power

With AC power available from both the generator and the inverter, the MultiPower has built-in redundancy.

## Preassembled and ready for use

The MultiPower includes all controls for fully automatic operation.
Solar or wind power can be added to further reduce generator run hours.

## More information

Several downloads are available on our website:

- Victron Marine Generator Test, in particular chapter 4: "The case for a hybrid system"
- "Using the Phoenix MultiPlus to reduce operating cost of a generator"
- "How to reduce the cost of supplying power to an off-grid BTS"

## Configure or assemble your own MultiPower

Please contact us for more information.

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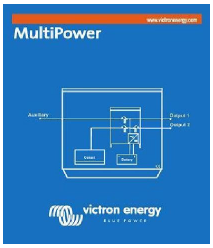
| MultiPower | A few examples of MultiPower configurations | | | | |
|---|---|---|---|---|---|
| | 5kVA/600Ah | 13kVA/800Ah | 17kVA/1000Ah | 17kVA/1000Ah | 17kVA/1000Ah |
| **MAXIMUM OUTPUT** | (5kVA inverter) | (Parallel operation of AC generator and Quattro(s)) | | | |
| Max. output power (kVA / kW) | 5 / 4,5 | 13 / 11 | 17 / 16 | 22 / 20 | 27 / 24 |
| **GENERATOR** | DC generator | AC generator | | | |
| Nominal output voltage | 24V DC | 230VAC ± 6% single-phase – 50Hz ± 4% | | | |
| Continuous output power (kW) | 4,8kW/200A DC | 8 | 12 | 12 | 12 |
| OUTPUT – Inverter mode | | | | | |
| Nominal AC output voltage | 230V ± 2% single-phase – 50Hz ± 0.1% | | | | |
| Cont. output power at 25°C (kVA / kW) | 5 / 4,5 | 5 / 4,5 | 5 / 4,5 | 10 / 9 | 15 /13,5 |
| Cont. output power at 40°C (kW) | 4 | 4 | 4 | 8 | 12 |
| Peak power (kW) | 10 | 10 | 10 | 20 | 30 |
| GENSET | | | | | |
| **Engine** (4-stoke direct injection diesel) | Air cooled | Air cooled | oil cooled | oil cooled | oil cooled |
| Model | Ruggerini RY 103 | Lombardini 9LD625.2L | Deutz FL2L2011 | Deutz FL2L2011 | Deutz FL2L2011 |
| Cylinders / displacement $cm^3$ | 1 / 401 | 2 / 1.248 | 2 / 1.550 | 2/ 1.550 | 2 / 1.550 |
| Rating ISO 3046/1 IFN (kW / HP) | 6,6 / 9 @3000rpm | 10,3 / 14 @1500rpm | 12,6 / 17 @1500rpm | 12,6 / 17 @1500rpm | 12,6 / 17 @1500rpm |
| Fuel consumption, nominal load (L/h) | 1,6 | 2,7 | 3,4 | 3,4 | 3,4 |
| Fuel consumption, nominal load (g/kWh) | 220 | 230 | 220 | 220 | 220 |
| Governor type | Mechanical | | | | |
| Electric start, starter battery, alternator | Standard | | | | |
| **Alternator** | DC | SINCRO single-phase AVR regulated | | | |
| Model / kW | ET2MCD / 4,8 | SK160SA1/8,2 | SK160CB1 / 12,8 | SK160CB1 / 12,8 | SK160CB1 / 12,8 |
| Voltage regulation | AVR (electronic voltage regulation) | | | | |
| INVERTER-CHARGER | | | | | |
| Model | Inverter 24/5000 | Quattro 24/5000/120 [1] | | | |
| Configuration | 1 unit single | 1 unit single | 1 unit single | 2 units parallel | 3 units parallel |
| Max. charge current (A) | 200 | 120 | 120 | 240 | 360 |
| BATTERY | | | | | |
| Type | OPzS flooded tubular plate, 12 cells, 24V | | | | |
| Cell capacity (Ah @ C10) | 600 | 800 | 800 | 1000 | 1200 |
| CONTROLS | | | | | |
| Generator controller | Auto/manual start/stop with oil pressure, temperature and voltage protection | | | | |
| Output voltage indicators | Voltage – Amps – Frequency | | | | |
| Tank level gauge | Standard | | | | |
| Hour counter | Standard | | | | |
| Battery monitor | BMV-600 [1] | | | | |
| External emergency stop button | Standard | | | | |
| ELECTRICAL CONNECTIONS | | | | | |
| External AC in (grid or emergency) | For external 230V AC source (MCB protected) | | | | |
| AC out 1 | Inverter or/and genset output (MCB protected) | | | | |
| AC out 2 | Genset only output (MCB protected) | | | | |
| ENCLOSURE | | | | | |
| Common characteristics | Chassis mounted 3-compartment enclosure with lifting ring, designed for outdoor use | | | | |
| Material, colour | Assembled steel soundproofing enclosure, blue RAL 5012, chassis black | | | | |
| Access doors | 3 doors with single-key locks, left (genset), front (battery), right (inverter-chargers & controls) | | | | |
| Engine silencer & exhaust | Integrated in enclosure | | | | |
| Ventilation | Extractor fans in genset and battery compartments, air outlets on back side | | | | |
| Fuel tank | 150L chassis tank | | | | |
| Dimensions (hxwxd, mm) | 1740 x 2000 x 1200 | | | | |
| Approx. weight (excl. Fuel, kg) | 1.300 | 1.500 | 1.700 | 1.900 | 2.200 |
| Approx. noise (open field, dB(A) @ 7m) | 65 | 65 | 60 | 60 | 60 |

1) for more details on Quattro Inverter-chargers and BMV-600 Battery monitor, please refer to our specific data sheets

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