

# Complete Narrow boat Hybrid Power & Propulsion Package

## BARRUS

By working closely with manufacturers and suppliers, Hybrid Marine are able to offer everything you need to Hybridise your canal boat in one cost effective package. This complete system provides enhanced propulsion and power supply for your boat. In short our Hybrid system makes pleasure boating more pleasurable.



*One of our canal boat systems manoeuvring under electric drive . Take a look at this link for a 5 min video.*  
<http://www.youtube.com/watch?v=iEeu5aUzBZo>

### Enhanced Propulsion

Our parallel Hybrid concept allows you to drive the propeller with the engine in the normal way or alternatively to use the efficient electric motor. When moving under engine power the system automatically reconfigures itself as a 8kW generator. At standard canal speeds, for every hour of engine propulsion, you generate enough electrical energy to go for a further two hours under clean / quiet electric drive. In general our Hybrid canal boats see a 50% reduction in engine hours.

The best way to use the Hybrid is to employ the engine on open stretches to rapidly charge up your batteries. When your batteries are charged you can then switch to electric drive and enjoy the countryside in complete silence. It takes about 3kW to 5kW to push a 60' narrow boat at canal speeds, the motor is rated at a peak power of 10kW so it has plenty of reserve power for manoeuvring. In adverse conditions, (e.g. river running with a strong flow), then revert back to the engine.

When manoeuvring past moorings, or transiting a flight of locks, use electric drive. Why sit in a lock for 15 minutes filling it with fumes and noise when you can do it on electric drive? You should never need to idle the engine again once you have a Hybrid. Overall you can expect up to a 50% improvement in fuel economy when Hybrid cycling.

Some of our customers install very large battery banks and can go for days on electric drive only. If you then marina hop to charge up over night you can drastically reduce your use of diesel fuel. Considerable savings in running costs can be achieved together with a large reduction in emissions.

With the high torque of the motor and no gear changes, you can turn the prop very slowly and accelerate from full forward to full reverse very quickly. This results in a considerable improvement in manoeuvrability. At tricky times when you need to instruct your crew, without a noisy diesel running, they can actually hear you and you can hear them, making the whole operation safer and less stressful

There is nothing quite like piloting twenty tons of boat in complete silence, there are no words to express this experience.



*The addition of solar panels can make a significant contribution to your power needs (1kW array shown disguised as a hatch)*

### Enhanced Power

Your Hybrid is a portable power station. With the powerful generator capability, a substantial battery bank and inverter technology, you have an optimum power solution. Some of our boats take full advantage of this by going all electric (no gas onboard). Every domestic appliance you use at home can now be powered on your boat : Washer/dryers, electric oven & hobs, toaster, kettle, fridge/freezer, bread maker etc.



## HybridMarine

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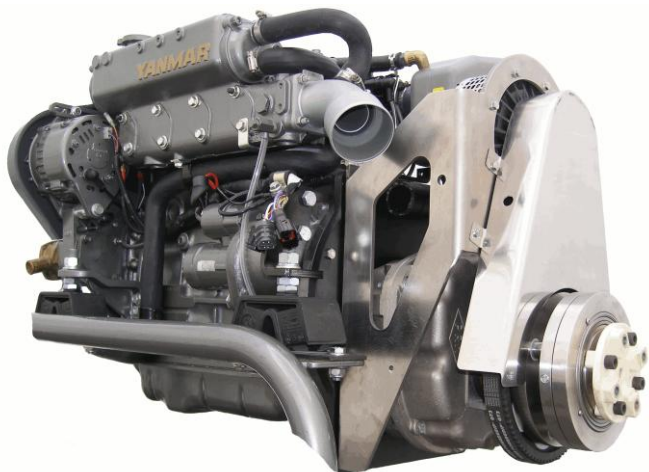


Forget running your generator at dusk/dawn to top up the batteries. The enhanced battery bank of the Hybrid supplies, in complete silence, more than enough power for the night and can be charged again when you are under way the next day.

A typical Hybrid System contains the following components

### Base engine

The well known and reliable Shire 40 (45hp and 50hp options also available).



### Hybrid system

The Hybrid system includes a motor/generator, master control box and user display. All mechanical components come integrated with the engine. The engine is installed in the normal way. The master control box is no more difficult to install than an inverter. Simple connections to the engine and display complete the Hybrid installation.



### Boost alternator

The Hybrid motor/generator has a kW charging capability. The boost alternator works together with the Hybrid generator to boost the charging rate up to 8 kW. The system allows full charging power at typically low propulsion speeds (just above idle speed at around 1,200 to 1,400RPM). If you moor up in the wilds for a few days and get caught out with flat batteries, the alternator gives you a 5kW charging capability without the need to spin the prop.

### Battery bank

The battery bank is constructed from top quality 2V wet traction cells used in industrial vehicles such as fork lift trucks and milk floats. These batteries give a long service life (in the region of 10 years) and carry a 5 year guarantee.



Twenty four cells are used to provide the Hybrid power supply of 48V. Two battery bank sizes are available, 400Ah giving 4 to 5 hours of electric drive and 800Ah providing up to two days of electric drive. A combined watering and venting system is provided to allow top up from one central point and simple safe venting of gases overboard.

### Charger / Inverter

A combined Battery charger and Inverter unit. This allows charging and conditioning of the batteries when mains power is available and powers the 240V circuit from the battery bank when away from the marina.

The standard system provides a 6kVA peak / 3kVA continuous rating that will power most domestic appliances (e.g. washer/dryer etc). The Enhanced Hybrid system has a 10KVA peak / 5KVA continuous rated unit that can give you an all electric boat (electric cooking).



### 12V cross charger

For those few items of equipment that do need 12V a cross charger is provided to charge a 12V buffer battery from the 48V battery bank. If you require a 12V bow thruster then you can place this buffer battery in the bows to provide the short bursts of high current required.

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