



## Fischer Panda Electric and Hybrid Drive Systems

# Fischer Panda Electric and Hybrid Drive Systems

*The Fischer Panda "EasyBox" Systems are designed for boat owners wanting to experience electric cruising. Whether you just want to cruise, support your ship's diesel or power a complete electrical system - 100 % battery solutions, parallel hybrid drives and generator supported systems are available.*

## **... quiet, comfortable with hours and hours of energy.**

The systems are battery-based so that a wide range of performances can be covered. A battery bank with sufficient capacity is used to power the electrical drive system. A Fischer Panda diesel generator can also be used to supply energy to the battery bank keeping it charged when away from shore power. Manoeuvring difficulties (especially in the lower speed range) are solved using dynamic permanent magnet motors with very high thrust. The batteries can also be recharged when sailing by dragging the propeller. The Fischer Panda drive systems are available with 48 V and 360 V.

## **12 good reasons for Fischer Panda Electric and Hybrid Drive Systems**

### **Enjoyment**

- Silent drive
- Electric power in abundance
- Unique manoeuvrability

### **Future**

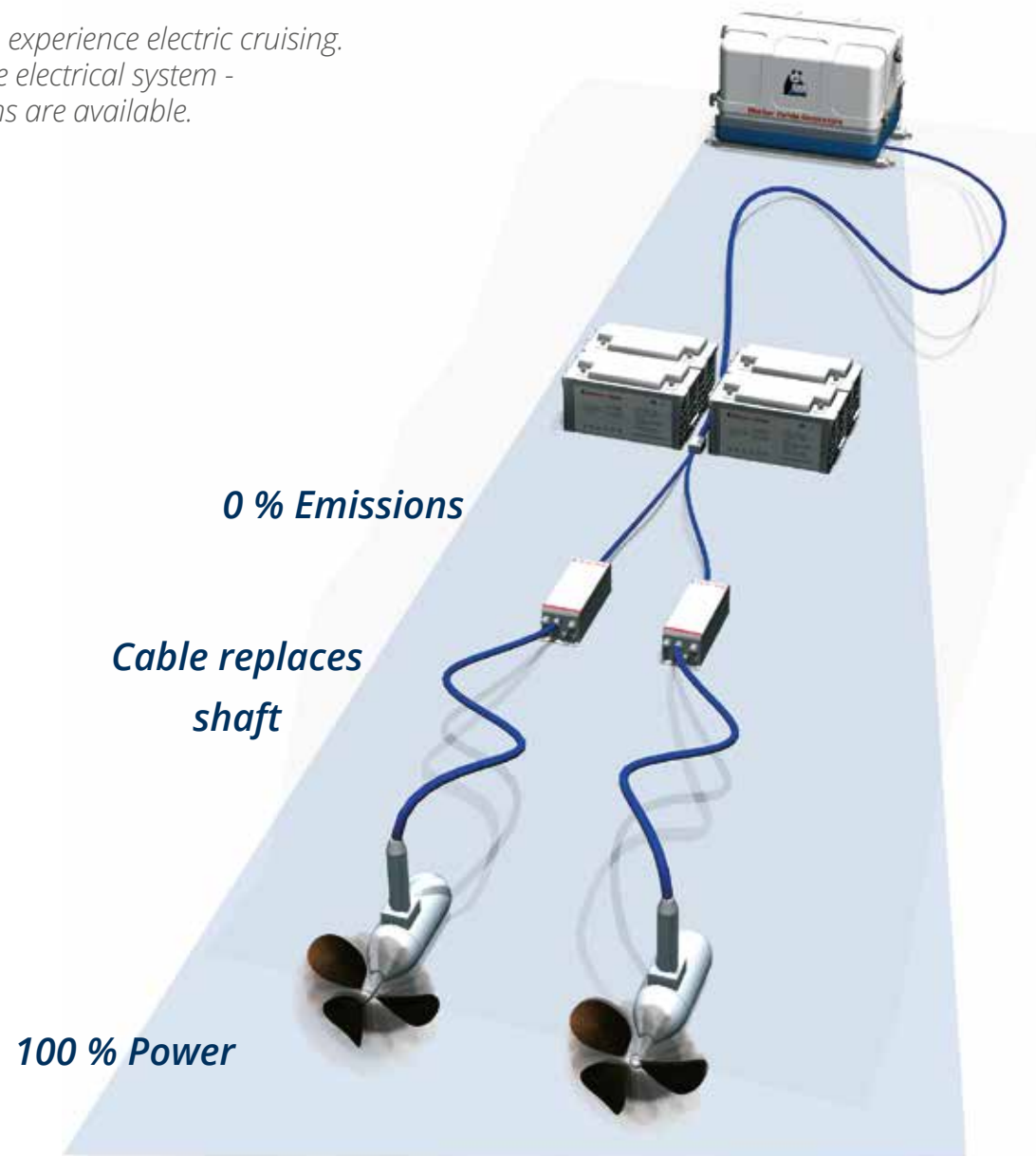
- Tomorrow's technology available now
- New design possibilities
- Professional 24 h support

### **Environmentally friendly**

- Extremely low running costs
- Up to 100 % emission-free
- Efficient motor (efficiency up to 96 %)

### **Intelligent**

- Complete - one system from one source
- Can be monitored from other onboard systems
- 48 V low voltage - safe for recreational boats







Istanbul, Turkey

# Completely new cruising experience with Fischer Panda...

## Greater peace through silent cruising

Treat yourself to the peace and quiet you deserve. The main advantage of a Fischer Panda electric drive is that the motor is practically inaudible when operating with the battery. There is nothing better than cruising silently. The one question you will ask yourself again and again, 'is the motor running?' Noises are minimal even when the generator is switched on.

*Enjoy the natural environment without disturbance!*



Wörthersee, Austria



Paris, France





## Unique manoeuvrability

Manoeuvring can be a strenuous undertaking, especially when in the harbour or marina. Fischer Panda Electric and Hybrid Drive Systems make this very easy. Their electric motors provide maximum torque throughout the speed range. Exact manoeuvring with the accuracy of a centimetre is possible even in low speed ranges.

*Precise manoeuvring... even at low speeds!*

## Tomorrow's technology available now

Even though low battery capacity limits 'battery only' cruising at high speeds to a very short distance, the range increases overproportionately when cruising at lower speeds.

By combining the electric drive system with a generator, Fischer Panda offers a competitive alternative to the conventional combustion engine. Lower speeds are supplied by the battery and the additional performance required at high speeds can be supplied by a generator. Range problems are now a thing of the past.

An inverter supplies all the domestic electrical consumers with 230 volts AC, pure sine wave of course. Power on board is a true luxury – and this is available in ample quantities at all times. Do you want to use (ideally all at the same time) your laptop, TV, air conditioning, coffee machine, refrigerator, freezer and the oven?



Amsterdam



Monaco



Worldwide

*suited for  
commercial  
applications*





Passenger ferry in Paris fitted with  
2 x 20 kW podded underwater motors

# Conventional drives vs. Fischer Panda electric drives

## Conventional drive systems

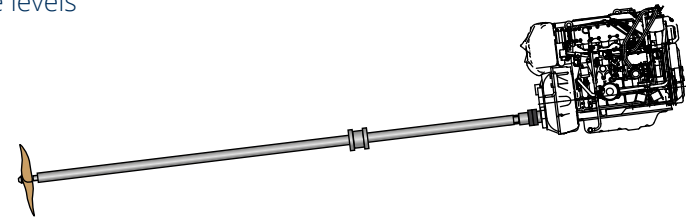
A conventional drive system consists of a diesel engine, a transmission and a propeller. The components are coupled together via a shaft. The diesel engine is mechanically controlled by the throttle.

A major disadvantage of the conventional drive system is that the transmission is heavily used which causes early wear.

Additionally, a large amount of space is required for the shaft which connects the diesel engine and the gearbox (transmission) to the propeller. If the shaft rotates throughout the boat's length, it may also result in increased noise levels.

### Disadvantages of conventional drive systems:

- Large space requirements
- A lot of wear
- High noise levels



## Hybrid drive systems from Fischer Panda

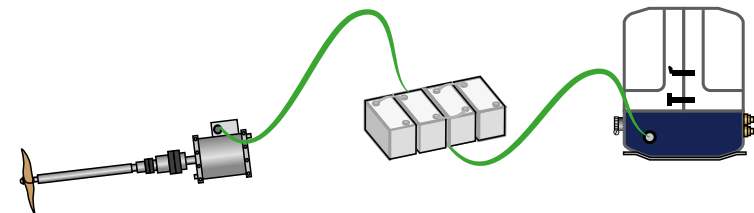
In these drive systems, the "cable replaces shaft" concept requires far less space. Energy is stored in a battery bank and supplied via cable to an electric motor. A synchronous (permanent magnet) electric motor is mechanically coupled directly to the ship's propeller. These modern, dynamic permanent-magnet motors have very high thrust even in the lower speed range. Battery-only operation, already required on many inland waterways and lakes, is now possible.

An efficient Fischer Panda diesel generator can also be installed into the system. This is only required to run when the batteries need charging or a higher amount of continuous power is required. The battery also ensures that operation is still possible if the generator fails so power for manoeuvring is available at all times.

Fischer Panda generators have a very low sound level and operating noise on board is barely audible.

### Advantages of Fischer Panda drive systems:

- Space-saving
- Low fuel costs
- Low maintenance costs
- On board power supply included
- Very quiet operation
- Good manoeuvrability even in the low speed range





# Benefits of Fischer Panda Electric and Hybrid Drive Systems

## Is it worth it for me?

- Initial investment is covered over the long term.

Fischer Panda systems consist of more than just a drive system. They can also be used to ensure a continuous power supply for other electrical consumers. When comparing the Hybrid Drive System with a conventional drive and including an additional power system with generator + control, it is even more favourable in the long term just from the fuel savings and the low shore power costs.

The generator in a hybrid drive system is used far less than the engine in a diesel-only setup. Maintenance costs are reduced further because an electric motor is virtually maintenance-free.



## Will the system fit in my boat?

- Individual room solutions

Space on board is very limited. The advantage of Fischer Panda Electric and Hybrid Drive Systems is that it uses components that can be installed wherever space is available. The space of the boat can be utilised optimally. It is possible to install the generator even in the boat's centre. This offers a wide range of installation variations.





## Where do I get support?

- A complete system from one source

Fischer Panda provides you with the complete system from one source! All the components are exactly matched to each other. This includes the electric motor, display, throttle, generator and all the additional electronic parts required. This ensures that you have a complete system you can rely on.

A further advantage for you is having Fischer Panda as a reliable partner at your side. We take care of repairs, warranty issues or any unexpected problems. Through an extensive network in eighty countries, Fischer Panda can provide expert help to customers almost anywhere in the world.

- Professional advice and after-sales service

We can assist you right from the planning stage. Our competent team of professionals is available to consult and offer you advice. We also support you afterwards with a full after-sales service.

- SOS-24/7 Hotline

We provide a 24/7 contact service in the event of any technical problems or urgent requests (Tel. +49 5254 9202-767 - SOS on a key-operated telephone).

- Worldwide service and sales network

With a coordinated network of distributors, dealers and service stations Fischer Panda has trained specialists worldwide. They will provide you with advice and support and recommend you the best service stations, depending on the location of your boat. They can help you with the organisation and coordination of resources and spares, so you get the best service - wherever you are. The "Global Service Directory" can be downloaded from the [www.fischerpanda.de](http://www.fischerpanda.de) website.



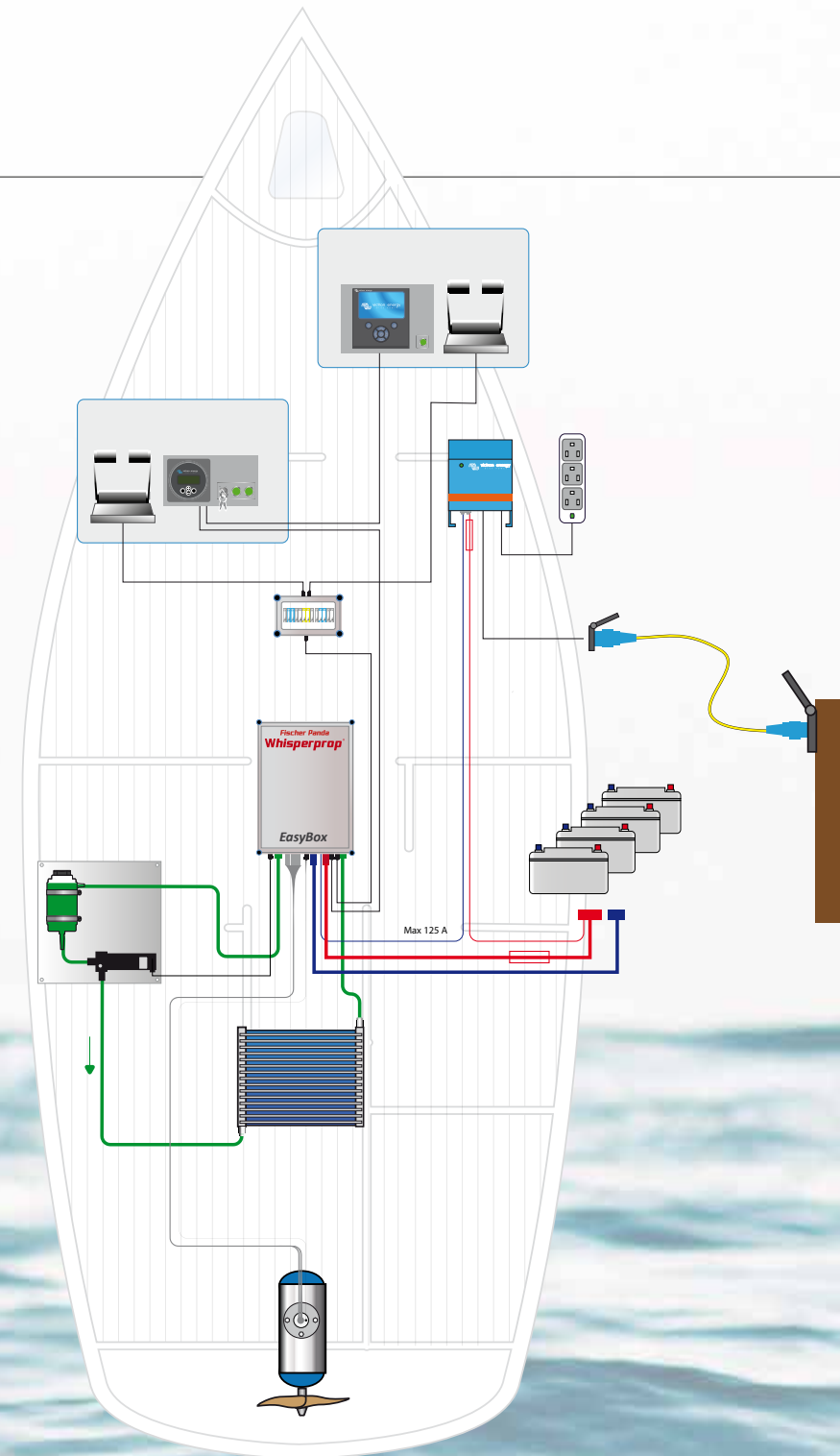
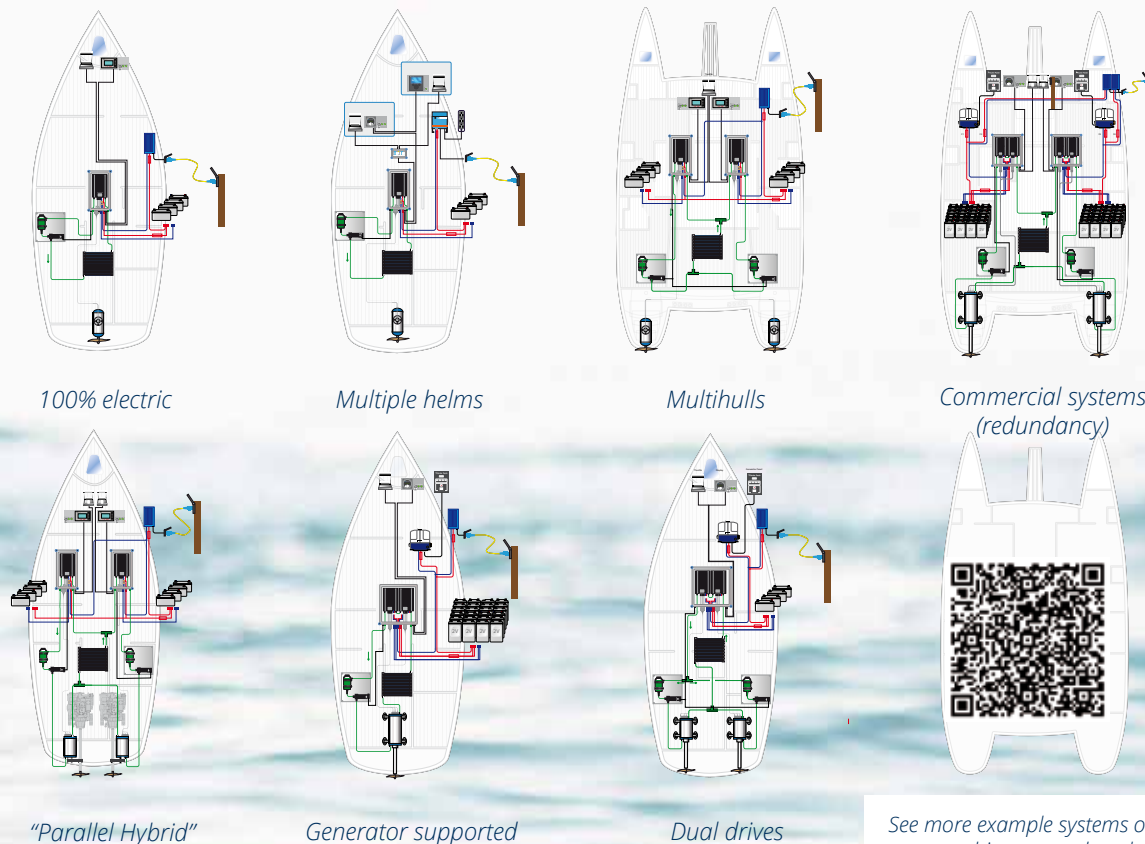
*Global Service Directory*

# Fischer Panda offers a wide range of systems...

## Individual use of the available space

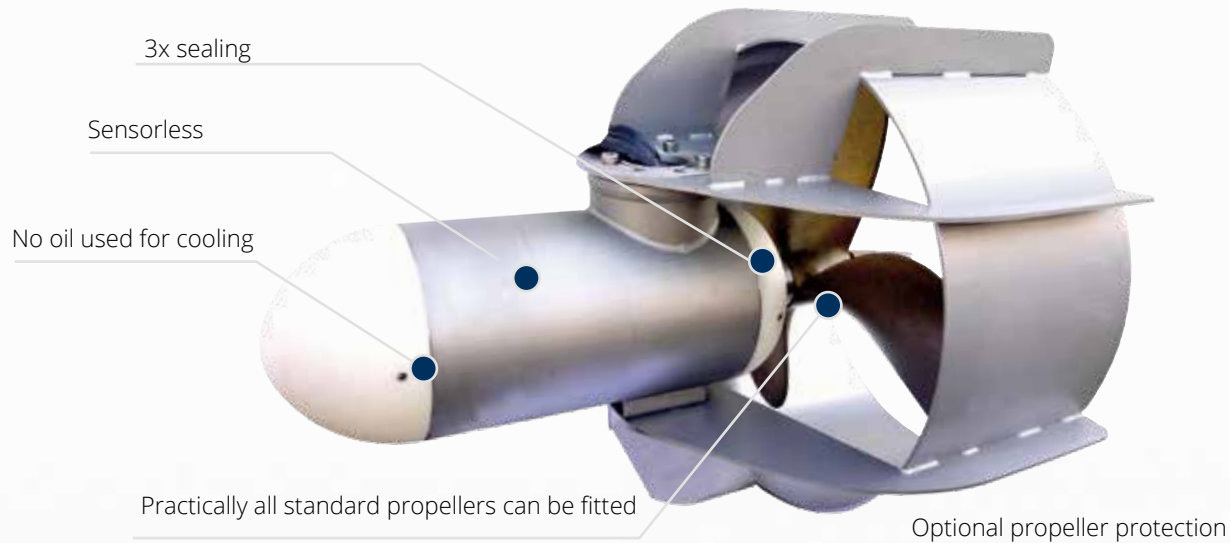
It is now possible to create completely new interior concepts when installing a Fischer Panda Electric and Hybrid Drive System. The position of both engine and shaft is already defined when constructing a boat with a conventional system. Fischer Panda's systems are far more flexible - mechanical components are connected using flexible electrical cables. The system can be distributed throughout the whole boat - wherever space is available. This gives you a far greater range of layout variations.

*Completely new design concepts can be realised with the idea "cable replaces shaft"*





# Robust technology



Version	Type	Voltage [V]	Performance [kW]	Speed [rpm]	Torque [Nm]	Weight [kg]
 Podded underwater drive	A06-140-6-AZ	48	7.5 / 3.8	2500 / 1250	28	18.7
	A50-160-6-AZ	48	10	1200	79	50
	B00-150-8-AZ	48	10	600	160	76
	B00-150-8-AZ	48	20	1200	160	76
	B00-300-8-AZ 20 kW	48	20	600	320	120
	B00-360-8-AZ	360	30	1200	238	107
	B00-360-8-AZ	360	50	1200	397	138
	B00-360-8-AZ	360	80	1900	398	138
	B00-430-8-AZ	420	100	1200	800	219
 Shaft drive	A50-160-6-SH	48	10	1200	79	44
	B00-150-8-SH 10kW	48	10	600	160	58
	B00-150-8-SH 20kW	48	20	1200	160	58
	B00-300-8-SH 20kW	48	20	600	320	96
	B00-360-8-AZ	360	30	1200	238	106
	B00-360-8-SH	360	50	1200	398	107
	B00-360-8-SH	360	80	1900	398	107
	B40-430-8-SH	420	100	1200	796	167
 Parallel-hybrid drive	B00-150-8-SH	48	10	600	160	71
	B00-300-8-SH	48	20	600	320	103
	B00-360-8-SH	360	50	1200	397	125

# Fischer Panda - we are your partner

*Fischer Panda supplies you with reliable power at any time:*

- Electric and Hybrid Drive Systems up to 100 kW
- Integration with the main control system of the boat
- Worldwide partners in your area
- 3 kW to 200 kW generator systems
- Extremely quiet and light generators
- Parallel operation with multiple generators

Owners set their expectations very high when it comes to the on-board power supply. Components must not take up too much space, be as light and quiet as possible. The power supply has to be just as reliable as it is at home and fool-proof to operate.

More than thirty years ago, Fischer Panda developed a generator technology that could meet these high demands.

Since then, numerous boat-owners in the world have appreciated both this and the quality of the technology used in the Fischer Panda generator. Years of experience with continuous research and development work have resulted in many developments, refinements and even award-winning innovations.

Today, Fischer Panda has an extensive range of standard products and also offers custom solutions for an individual energy supply that is tailored precisely to the customer.

## Global dealers and partners

Numerous dealers and partners worldwide are available to advise and support you.







Power  
wherever  
you are™

# Fischer Panda 48 V "EasyBox" System

*The 48 V "EasyBox" System provides your boat with a basic electric drive system. The system is quick to install (plug and play) and all electrical components are contained in one unit.*

- 100 % electric
- up to 2 x 20 kW
- up to 320 Nm

The electric drive motors meet all essential requirements of the applicable European directives and standards. They are operated at extra-low voltage > 60 V DC. Maximum safety in use and installation is guaranteed.

The systems are designed primarily for battery-only operation with a 48 V battery bank of sufficient capacity. The batteries are charged via shore power connection with a battery charger. They can also be charged at the touch of a button using the re-generation 'RE-GEN' function (when main engine is running or using propeller drag when sailing).

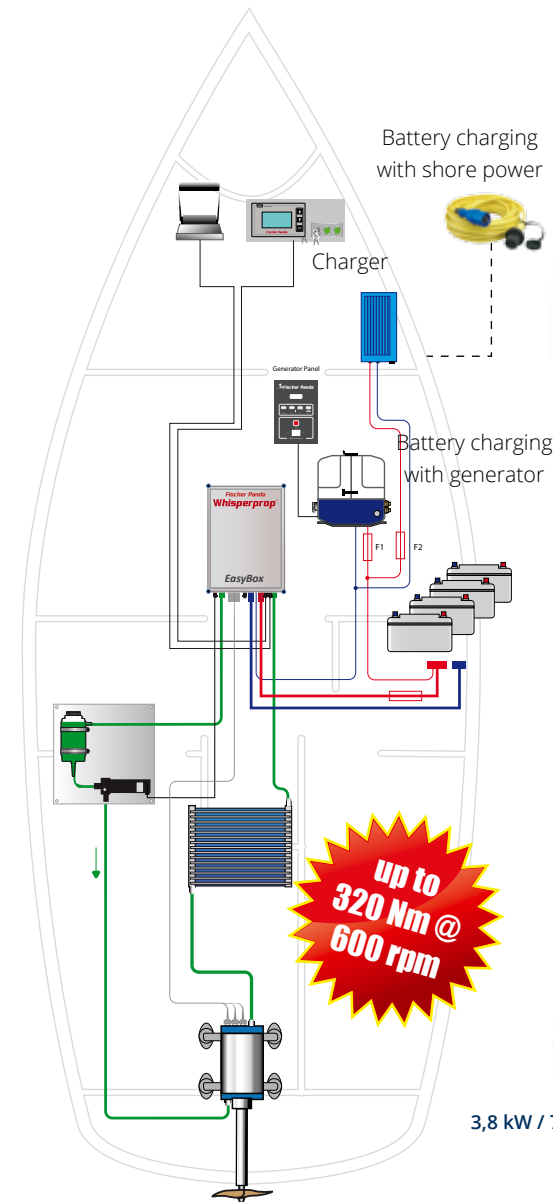
- Entry level electric drive system
- 'Plug and play' connectors and LCD panel
- Charging via shore power / charger or using RE-GEN function

Perfect for cruising on waters where combustion engines are not allowed. The system is designed for monohulls, catamarans or trimarans requiring a single or dual drive system.

- 3.5 kW / 7.5 kW / 10 kW / 20 kW

- shaft or podded drive
- single or dual drives
- 48 V battery bank

- Extremely quiet battery operation
- Charge batteries with shore power or onboard generator



10 kW underwater podded drive



20 kW shaft drive







Berlin



Wörthersee, Österreich



Hamburg



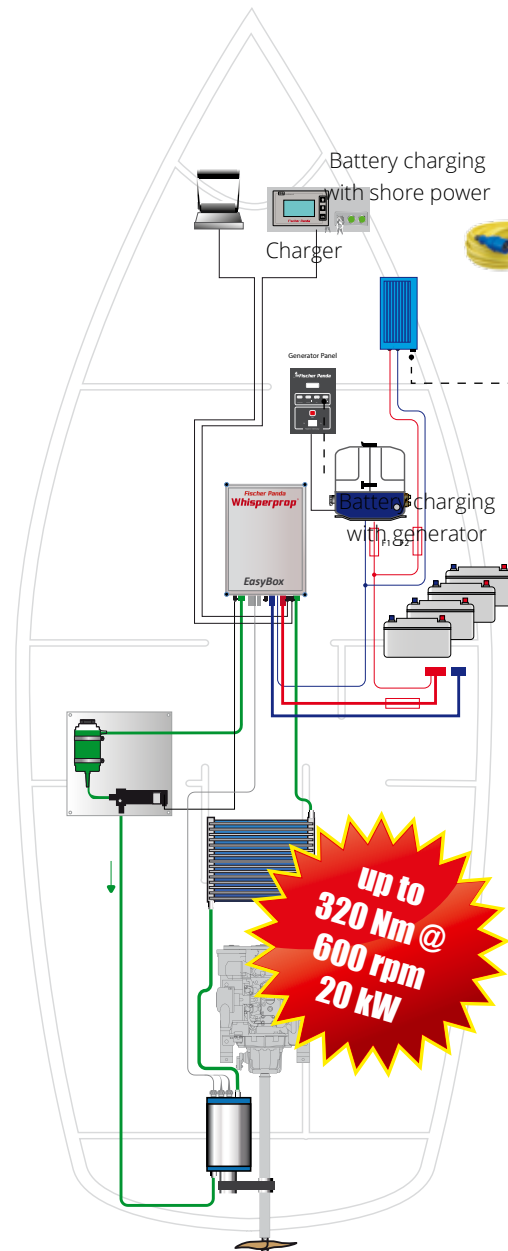
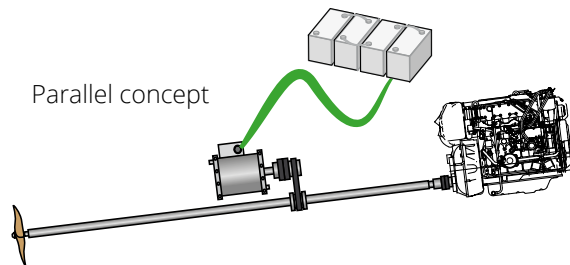
# Fischer Panda 48 V "EasyBox" Parallel-Hybrid Drive

- 10 kW / 20 kW electric motors
- Parallel-hybrid drive with electric coupling
- 48 V battery bank
- Options for powering domestic electrical consumers

This system is ideal for cruising or manoeuvring (especially at low speeds) when a traditional main engine is installed. The drive engine is mounted parallel to the existing shaft. No modification to the shaft or engine is required.

The electric drive motors meet all essential requirements of the applicable European directives and standards. They are operated at extra-low voltage < 60 V DC. Maximum safety in use and installation is guaranteed.

The battery bank can be recharged by simply pressing the RE-GEN button when the main engine is running. This system is suited for any vessel with a traditional combustion engine/gear.



10 kW parallel-hybrid drive



*Fischer Panda electric drives are also suited for commercial applications. The 10 kW parallel drive enables this 70 ton vessel to cruise at 7 km/h*



# Fischer Panda 420 V “EasyBox HV” High Voltage Drive System

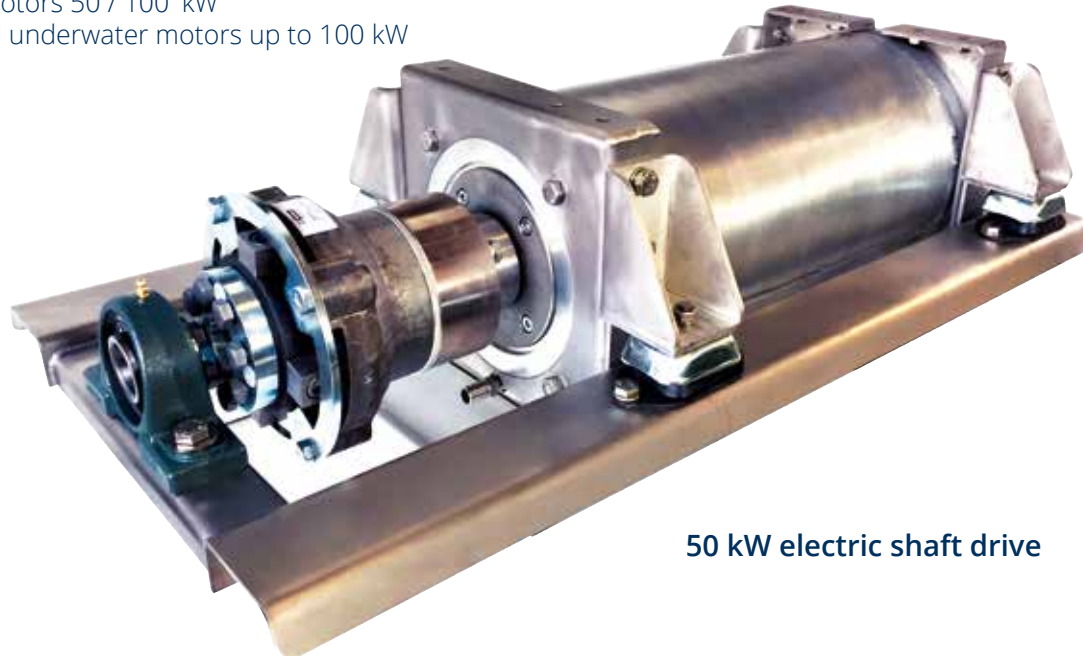
Fischer Panda can also supply high-voltage systems with up to 100 kW of mechanical power. These high-voltage and high-power propulsion systems are based on the EasyBox “Plug & Play” concept.

With the extended power range up to 100 kW at 420 V DC, Fischer Panda can meet the demands of yacht owners with 40 t displacement or more - if used as parallel-hybrid drive in combination with a large combustion engine. Two electric motors can be attached to one drive shaft in parallel using a gear-box.

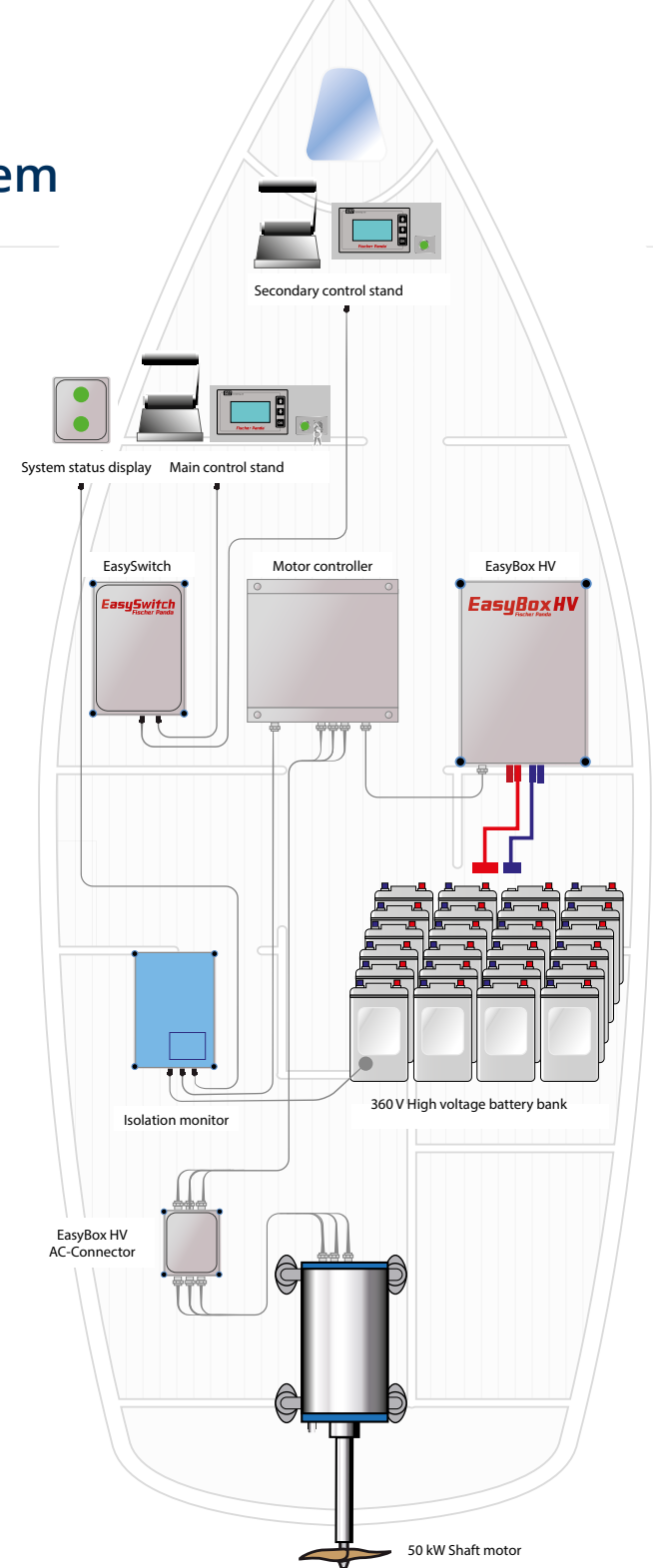
Almost all types of batteries can be used with Fischer Panda’s propulsion systems. Fischer Panda are also planning larger systems that operate without batteries, using only a DC generator as power source.

Robust and professionally engineered, the S1 certified motors and components make the Fischer Panda systems perfectly suitable for small public transportation ferries, commercial working vessels as well as privately owned leisure yachts. Fischer Panda exclusively constructs with water-cooled components.

- Shaft motors 50 / 100 kW
- Podded underwater motors up to 100 kW



50 kW electric shaft drive









# Fischer Panda Electric and Hybrid Drive Systems Worldwide



Berlin



London



Monaco



Worldwide



Edersee



Netherlands



La Rochelle



Hamburg



Worldwide



Paderborn



Paris



Amsterdam

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