

# Variable-Speed Hybrid DC Generators

*Hybrid  
Power*



*20-VS Hybrid  
Power*



*35-VS Hybrid  
Power*



*50-VS Hybrid  
Power*



*75-VS Hybrid  
Power*



*100-VS Hybrid  
Power*

for all electric boats

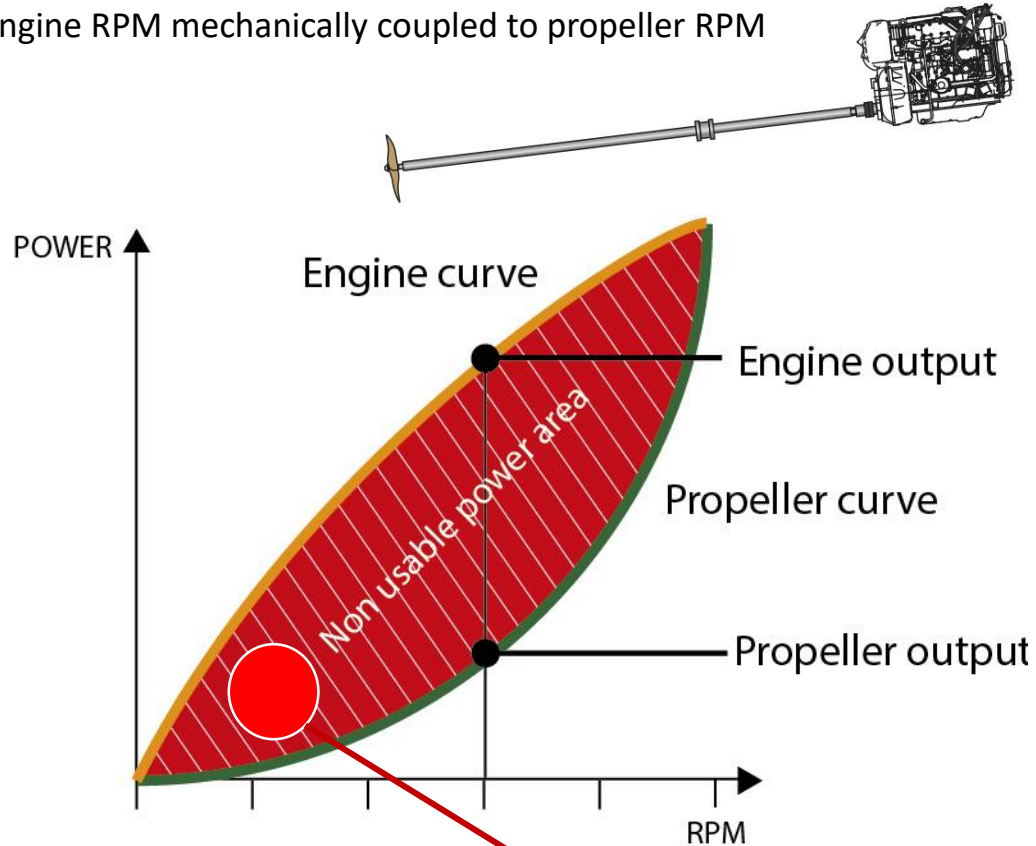
# Key Benefits

- Small size and low weight – compact installation
- Highly efficient – maximum energy
- Variable speed – load – dependent
- Easy to install – no forced air circulation required in machine room
- Environmental friendly – low fuel consumption
- Digital display – up to date all the time.
- An autostart function prevents the batteries from being drained.
- A CAN bus connection transfers and receives information from a ship's control systems.
- The **variable-speed** Hybrid DC generator is available in various output voltages up to a current of 300 A and an output power of up to 100 kW



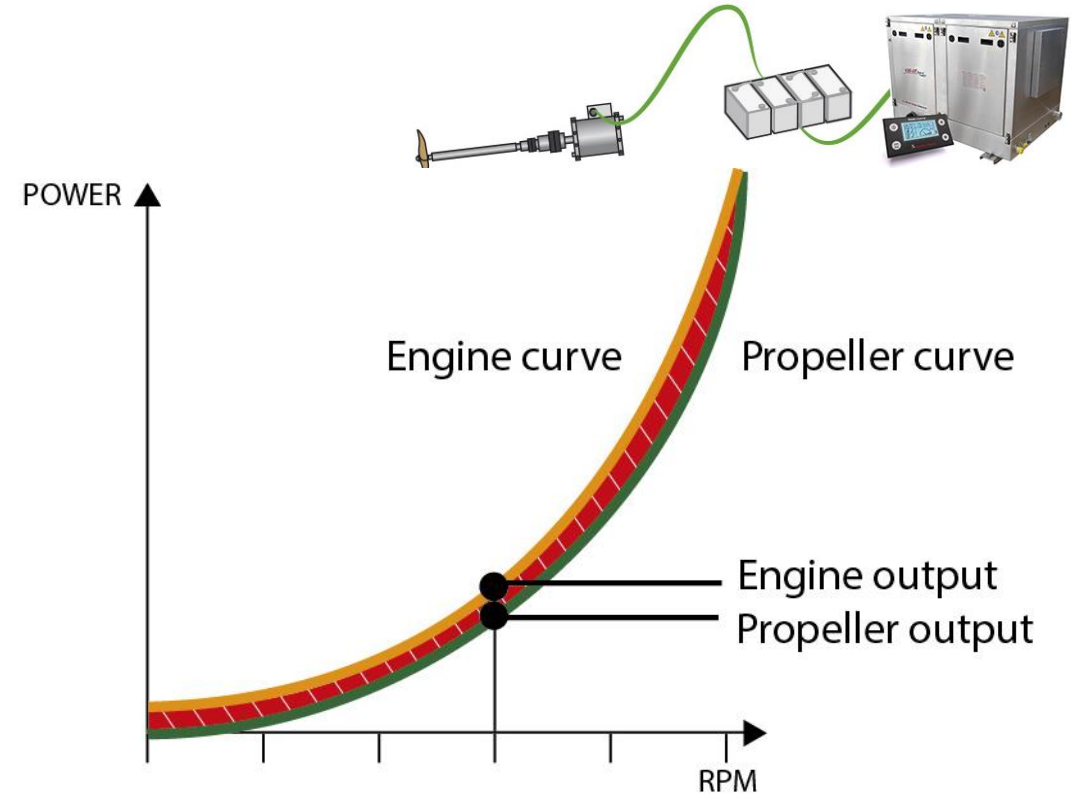
## Conventional Engine

Engine RPM mechanically coupled to propeller RPM



## Variable-speed Hybrid DC Generator

Engine RPM according to propeller power demand

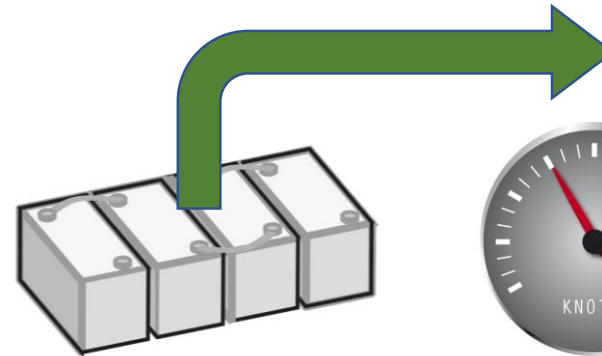


Operation within this area results in reduced engine life, increased noise and inefficient fuel consumption

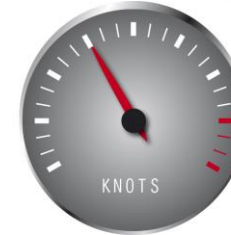
## Electric cruising with battery only



*"variable-speed"*  
Hybrid DC Generator



Battery Bank



Electric Drive System



Shore power



Electrical distribution

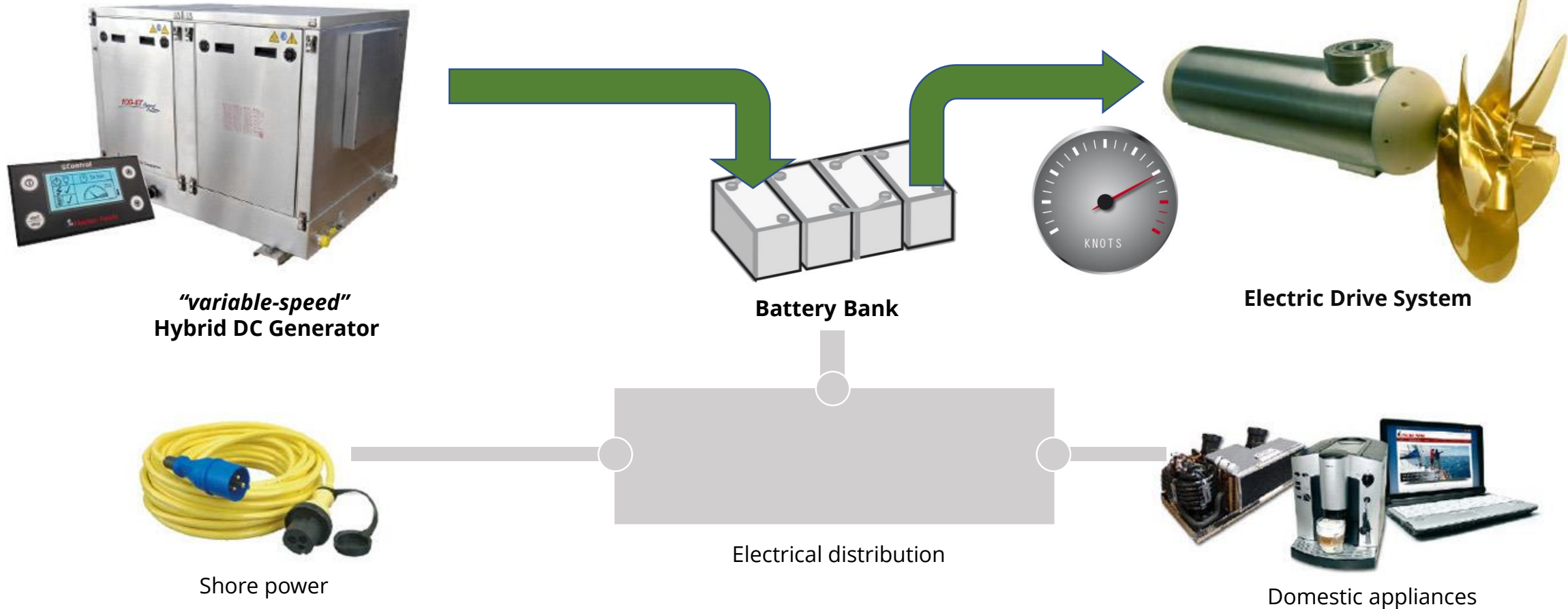


Domestic appliances

*During "silent cruising" the electric drive is powered from the battery bank*



# Hybrid cruising with battery and generator

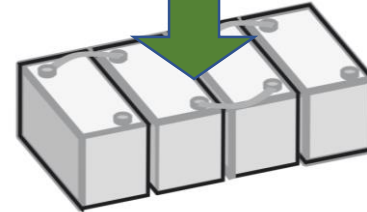
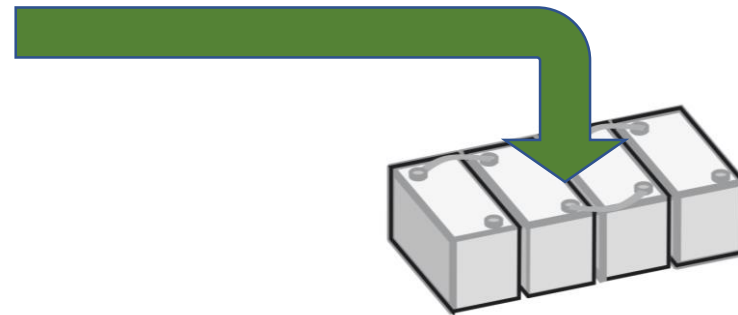


The **variable-speed** Hybrid DC generator functions as a range extender.

# Battery charging with generator



**"variable-speed"**  
Hybrid DC Generator



Battery Bank



Electric Drive System



Shore power



Electrical distribution



Domestic appliances

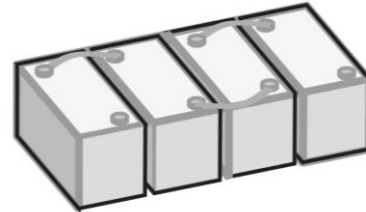
*Battery recharging at lower speeds with reduces sound levels*

# Silent onboard power

with battery only for domestic appliances



*"variable-speed"*  
Hybrid DC Generator



**Battery Bank**



Electric Drive System



Shore power



Electrical distribution



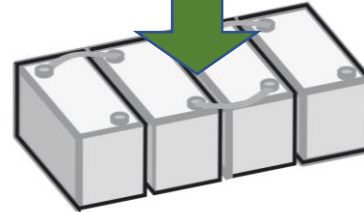
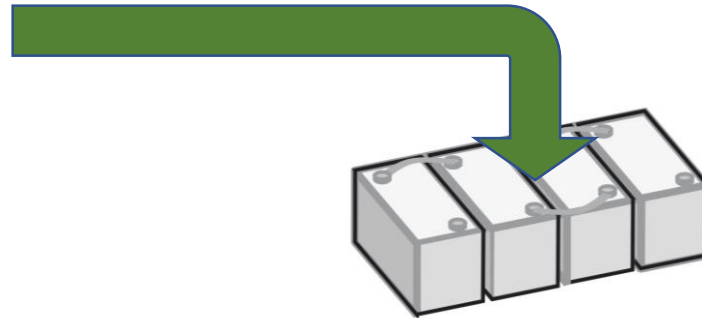
**Domestic appliances**

*Power for domestic appliances can be supplied indirectly using an inverter*

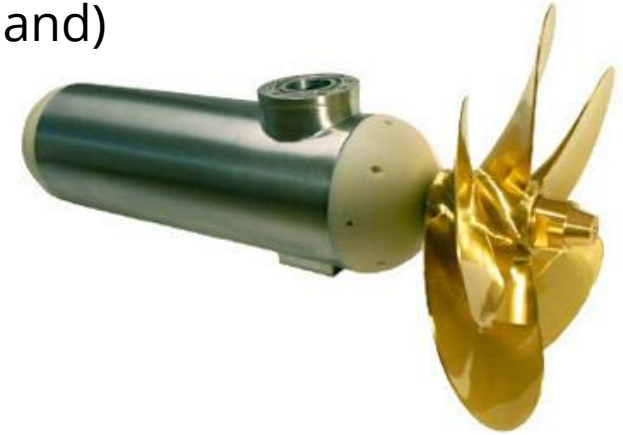
# Hybrid onboard power with battery and generator (high power demand)



**"variable-speed"  
Hybrid DC Generator**



**Battery Bank**



**Electric Drive System**



**Shore power**



**Electrical distribution**



**Domestic appliances**

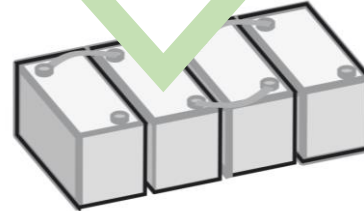
*Domestic appliances can be supplied for prolonged periods by generator and battery bank*



# Emergency mode



**"variable-speed"**  
Hybrid DC Generator



Battery Bank



Electric Drive System



Shore power



Electrical distribution



Domestic appliances

*The variable-speed Hybrid DC generator can power the drive system directly*

# Connectivity with CANbus



Fischer Panda  
CANbus module



Higher control system



Battery management system (BMS)



fpControl View

**Power – wherever you are**

[www.fischerpanda.de](http://www.fischerpanda.de)

