



**INNOVATIVE SOLUTION FOR
ELECTRIC DRIVE SYSTEMS**





Our Mission

We are convinced that boating can be sustainable and smart. With our electric propulsion system we want to make an impact on the marine industry. Pushing it towards sustainable mobility solutions, built on high quality components with automotive standards.

ELECTRIC DRIVE SYSTEMS

for yachts and boats

- ✓ The Omega Grey electric drive system combines sustainability and smart connectivity
- ✓ The system is based on the highest quality and safety standards
- ✓ Fully electric with solar power and with additional range extender systems available

Propulsive Power
90 - 350 kW

Turnkey Solution

We offer complete solutions for electric drive systems. The key feature of our system is the ability to scale it individually to the customer's needs. So our intelligent system can be adapted to your specific requirements. It is designed for yachts and boats with a typical length of 30 ft to 90 ft.

Electromobility has been pushed forward in the automotive industry for decades. This resulted in high quality standards which are yet to be applied to the boating industry. Coming from the automotive industry, we only use proven components from reliable suppliers. They meet the highest standards regarding waterproofness, vibration resistance and durability.

Electric drive systems can use the energy up to three times more efficiently than conventional drives. The components installed are durable and require little maintenance. As a result, operating costs are lower than for internal combustion engines.

Electric boat owners can enjoy nature completely free of exhaust fumes and loud engine noises. The smart system transparently provides all relevant information, which can be viewed on the on-board display as well as the app, regardless of location.

Safety

Efficiency

Comfort

Next Generation of Boating.

WHY ELECTRIC?

- ✓ No CO2 emission and water pollution
- ✓ No disturbing engine noise
- ✓ Higher efficiency
- ✓ Less maintenance
- ✓ No route restrictions

Environment Protection

Conventional ship propulsion systems using fossil fuels have a negative impact on the CO2 balance and the environment. Exhaust fumes, oil pollution and engine noises disturb the marine life. While for decades there was hardly any alternative to conventional combustion engines, the development of alternative drives is now advancing rapidly in the boating industry. Especially with regard to climate change, this development is more important than ever before.

Driving Comfort

Electric propulsion systems cause no emissions - neither carbon dioxide, carbon monoxide, nor nitrogen. With an electric drive, you enjoy the sound of the water and the tranquility of nature. Loud engine noises or the smell of diesel are a thing of the past. Best of all: As an e-boat owner, you protect the environment and experience driving fun at the same time!

Smart System

A higher degree of digitization enables our system to provide the boat owner with all the important information at the right time. The system is therefore designed to help our customers while they can enjoy their boat ride.

Regenerative Energy

Boats with our electric propulsion system have an efficient high voltage energy storage system. It can be charged continuously by solar panels or wind turbines.

This energy will then be distributed to where it is needed. It can either be used to charge the ship batteries or send to the hotel loads, such as the refrigerator. This allows you to sail completely self-sufficient with renewable energy sources.

Low Maintenance

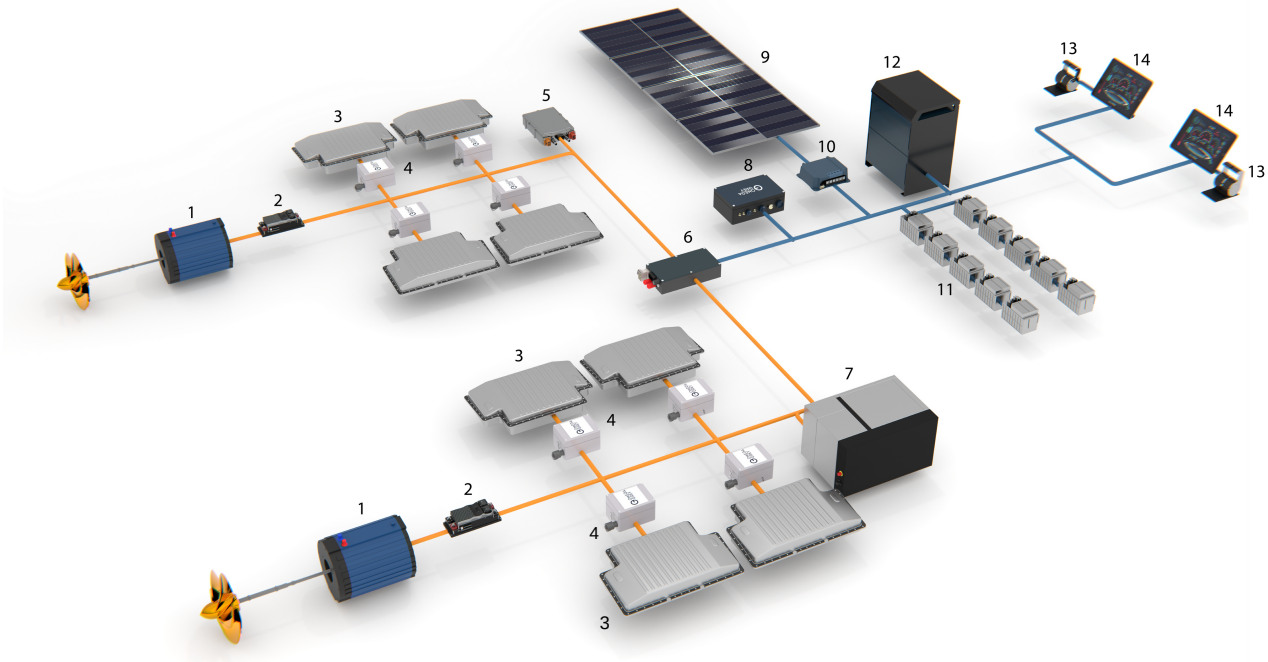
Electric motors are much simpler in design, using a less complex structure with fewer moving parts than conventional engines. Also, an electric engine is much more efficient generating less heat. This results in less maintenance and thus lower operating costs. Recurring services such as oil changes are also no longer required.

More Freedom

In many protected areas and cities, such as in the fjords of Norway or, from 2025, in the canals of Amsterdam, it is no longer permitted by law to drive with combustion engines. It is expected that these protected areas will be continuously expanded. Electric boats are excluded from these restrictions.

Our System

It's time for sustainable and intelligent mobility. Our electric drive system is an environmentally friendly alternative to conventional drive technology. Together with key components from the automotive industry, we are achieving a new standard in the boating industry. This illustration shows an example of our electric drive system.



Components

1. Powerful Electric Motor
2. Motor Controller
3. HV-Lithium-Ion Battery provided by Mercedes Benz Energy
4. OG Convert Module
5. Shore Power Connection
6. Bi-directional DC/DC-Converter
7. Range Extender
8. OG Connect
9. Solar Panels
10. Solar Charge Controller
11. LV-Lithium-Ion Battery
12. DC/AC-Converter
13. Lever
14. Display

Technical Data

SYSTEM VOLTAGE	LV: 12/24/48V HV: 400/800V
BATTERY	Lithium-ion battery provided by Mercedes Benz Energy Automotive standard Scalable >400kWh
MOTORS	90/190/350kW Electric engine including motor controller
CHARGING	22 kW AC Scalable up to 120kW AC CCS DC charging optional EU & US compatible
COMMUNICATION	CAN-bus/ Ethernet/ WiFi/ 4G/ Satellite
SYSTEM COOLING	Liquid cooling

90 to 350 kW
Drive Power

> 400 kWh
Scalable Battery Capacity

Simple. Smart. Scalable.

Integrated systems continue to find their way into our everyday lives. Whether it's the smart home or the smartphone that is connected to the car. In our system all components are connected to each other. too. The software handles all data and ensures the seamless function of the system. Using an intuitive and modern display, one can monitor and control the entire system.

Safety

Ensuring safety at all times is our highest priority. Our system has several functional safety features implemented, in both hard- and software. Under normal conditions, the safest state of operation is always maintained. In case this condition can not be kept, the system will automatically find the next safest state of operation. It's aim always is to restore the original condition when possible. With this feature, complete system collapses can mostly be prevented. On a component level, single point of failure is prevented by redundancy. Besides that, all standard safety measures, like fusing and isolation monitoring for the high voltage system are in place, too.

Component Distribution

Besides offering a turnkey solution, we can help our customers design their own system and supply market-leading components.

By being proud partners of Mercedes Benz Energy we can supply their powerful high-voltage batteries. There are various battery sizes possible.

In addition, we offer other components of our system, e.g. the automotive chargers. We are constantly striving for the latest and best technology in order to always provide the best solutions the market has to offer.

Engineering Services

As experienced engineers with a broad understanding of software engineering, electrical engineering, and project management, we can support your related projects. We have great partners and a well established network which can be activated for your success of bigger projects.

As a standard, we are following an agile development process with measurable outcomes. We value close communication with our customers and constant feedback loops to ensure that your expectations are met at all times.

Range Prediction

Smart Energy Management

Predictive Maintenance

Failure Analysis

Over-the-Air-Updates

Mobile App

Next Generation of Boating.

OG CONNECT SYSTEM

- ✓ Dedicated control units for next generation electric boats
- ✓ Connects all components to one intelligent solution
- ✓ Enables new features such as range prediction and predictive maintenance by using AI technologies

Software first!

Hardware without smart software is outdated. Therefore, the heart of our system consists of proven and reliable software which is independent of the connected hardware. Our Software can be neatly applied to an existing design or be part of our turnkey solution.

Functions for Safety and Security

Our inhouse developed software meets the highest standards to ensure safety and security. The following features represent the key functionalities of the OG Connect System:

Smart Energy Management

It's used to determine where energy comes from (solar panels / shore / generator), where energy has to go (LV / HV batteries) and what's the most efficient way to achieve this goal. It always determines the highest energy priority. If the drive system is active, all the energy available is going to be transferred to it.

Charge Control

The charger can be controlled manually to charge from shore or to charge from the generator automatically.

Range Prediction

The system determines how far the vehicle can travel using electricity only or combined with alternative sources (Generator / Solar). It takes the current situation including weather conditions and overall energy usage into account.

Predictive Maintenance

By using AI, our system can analyse the gathered data and help the owner determine the durability of the ship's devices before the necessity of maintenance. Therefore, it increases overall system reliability.



Hardware

MEASUREMENTS	140 x 120 x 35 (LxWxH)
TIGHTNESS	IP69K - Waterproof
MOUNTING	Wall mounting
OPERATION VOLTAGE	12 - 48V
SENSORS	Temperature/ Level/ Pressure
BILGE PUMPS	8-16, incl. alarms
CONTROLLABLE OUTPUTS	8x (5-60 V) - 15 A
COMMUNICATION	6x CAN-bus; WiFi

Connected App

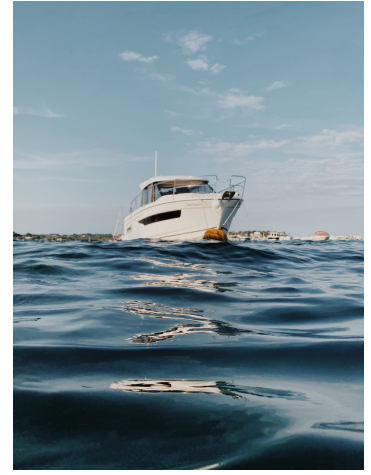
This feature offers the possibility of remote supervision to determine and control the system's status. Moreover, one can control charging and the air conditioning.

Over-the-Air-Updates (OTA)

The system can be updated remotely without the necessity of entering a shipyard and requiring maintenance personnel.

Repair Manual

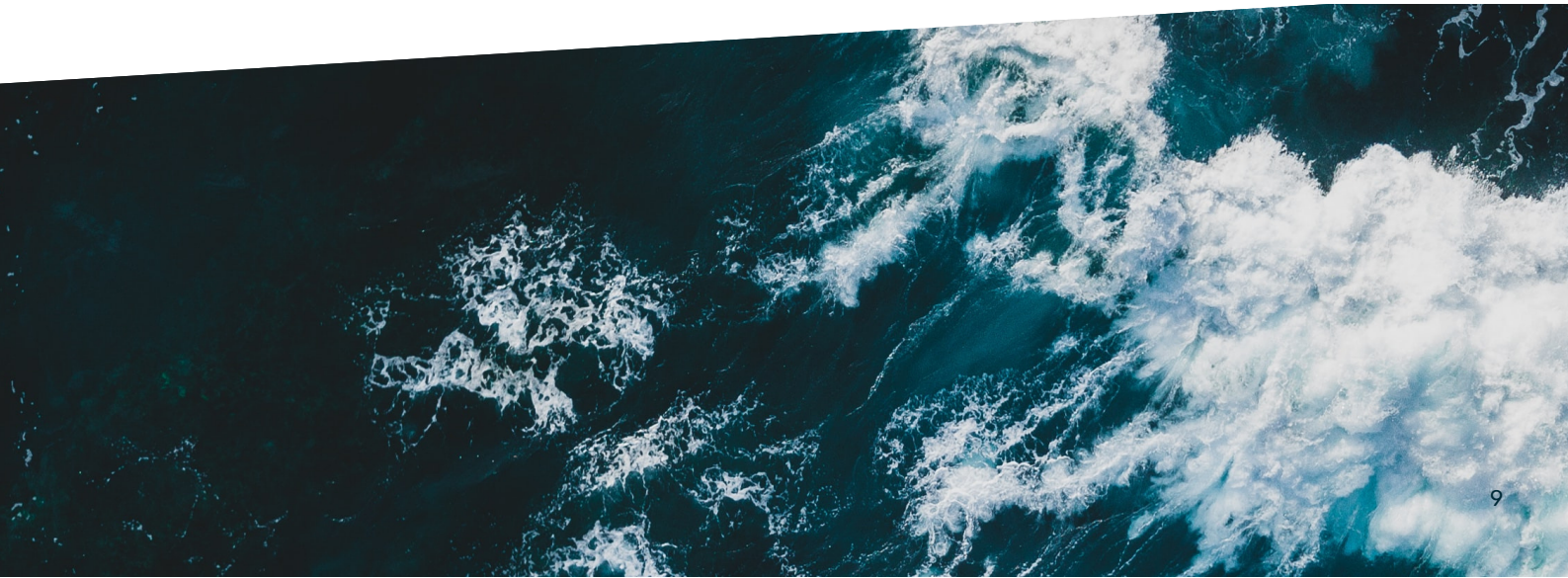
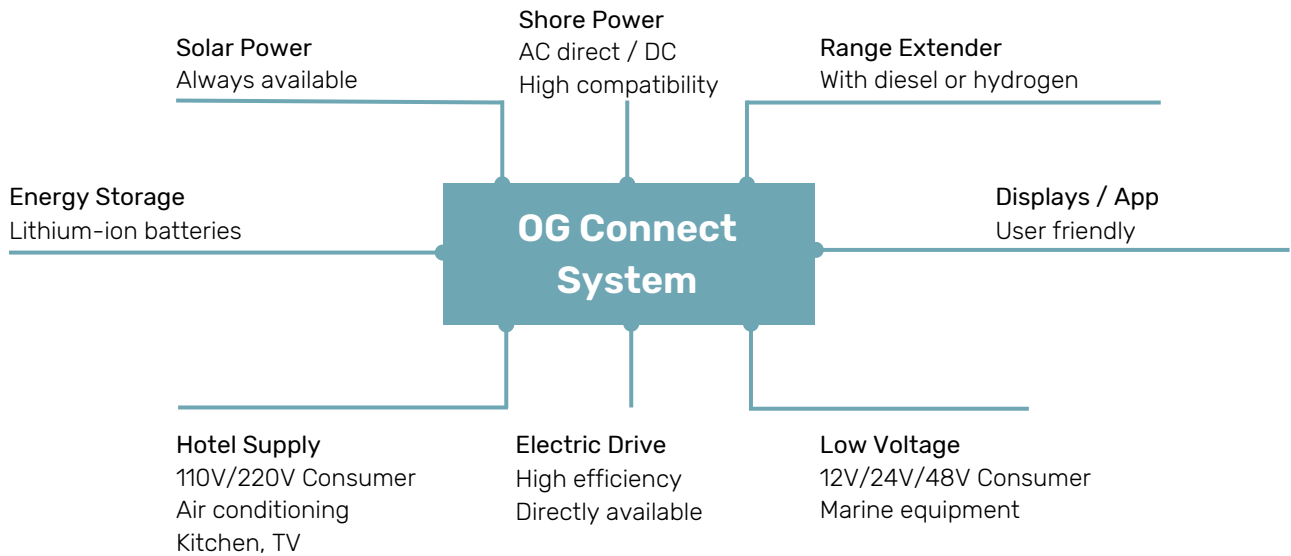
The owner can access documentation regarding quick repair measures within the system. Additionally, alarms notify about necessary adjustments.



Multiple Energy Sources

The boat's energy supply is based on **three sources**:

The **solar panels** on the roof supply the batteries with regenerative energy. A **range extender**, which can be switched on if necessary, provides additional safety and freedom. In addition to classic diesel generators, innovative solutions such as fuel cells can be used. During the laytime the boat can be connected to **shore power** and charged via solar as well as shore power. This combination allows a self-sufficient and sustainable boating experience.





About Us

We are convinced that mobility can be sustainable and smart. With our electric propulsion system, we want to make a change and guide the marine industry towards electric mobility and digitalization. We are deeply focused on the quality and safety of each component while constantly trying to improve our product with innovations and development. Together we have more than 20 years of experience from the automotive industry.

Omega Grey's propulsion system is making your driving experience quiet, odorless, comfortable and smartly connected. The time is now for modern and sustainable technologies.

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