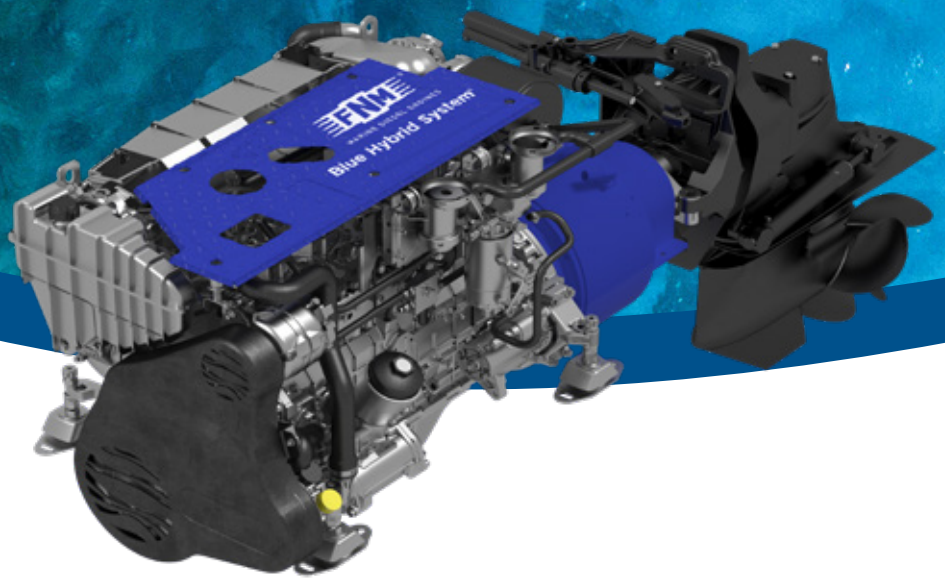
FNM Hybrid System


Noiseless and low emissions:
FNM for the marine ecosystem
safeguard.

Blue Hybrid System®

Blue Hybrid System is a marine hybrid system entirely designed and developed by CMD.



The pleasure of silent navigation and low-emission mobility.

It's the perfect combination of all advantages between conventional drive system and an electric motor.

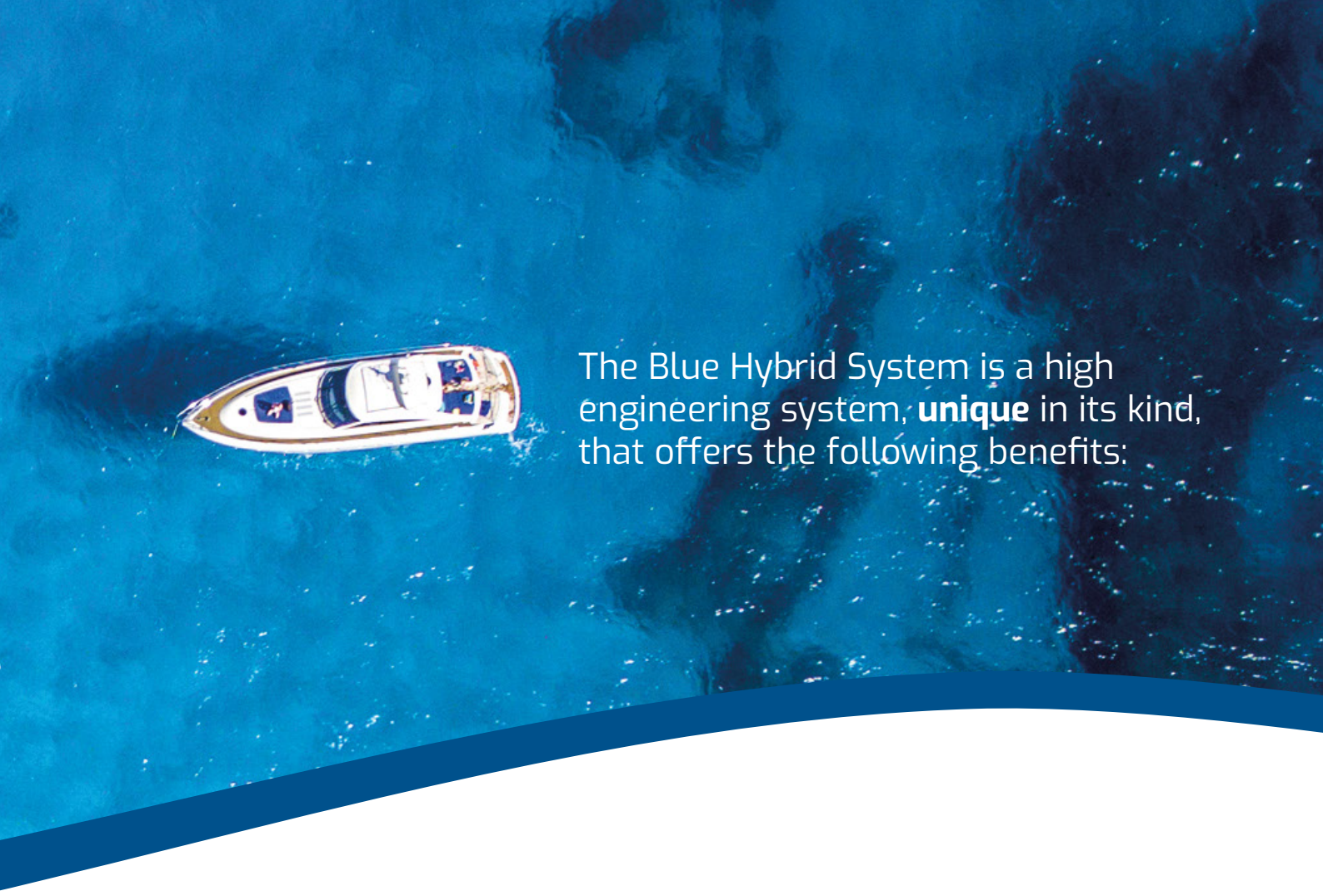
The Hybrid system **combines a traditional marine endothermic engine and an electric motor with batteries and on-board units**, exploring new opportunities to incorporate varying degrees of hybrid power into recreational or commercial boats.

Suitable for all types of transmission and boats such as

FISHING BOAT

PASSENGER TRANSPORT BOATS

SMALL OR MEDIUM YACHTS



The Blue Hybrid System is a high engineering system, **unique** in its kind, that offers the following benefits:

FAST AND EASY
Thanks to our high technology, your boat can easily switch from an operation mode to another one (electric/endothermic and endothermic/electric) in easy and fast way. Propulsion management takes place instantly thanks to a single selection on the dashboard.

MORE POWER IN SHORT TIME
Blue Hybrid System uses different configurations of navigation modalities thanks to a **HCU** (Hybrid Control Unit) supervision device entirely designed by CMD. With a quick engine throttle gear change, both in forward that turns backwards, HCU allows to change propulsion from electric to internal combustion in a moment, providing maximum power in case of emergency maneuver or during docking maneuvers.

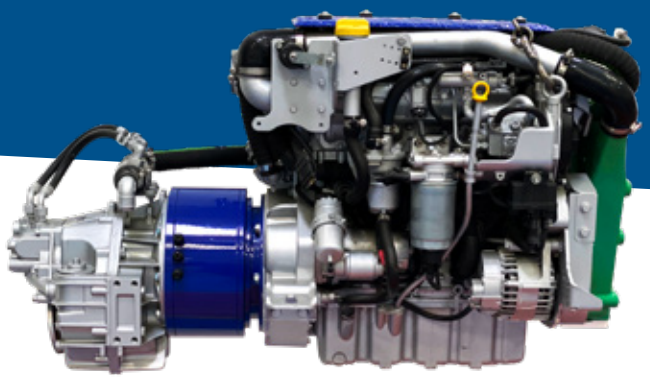
TAILOR – MADE SOLUTION
CMD supports its customers throughout an integrated solution. The Blue Hybrid System is not only highly customizable but is designed, developed and equipped with the electrical system supplied as standard equipment.

NO LIMITS DURING THE NAVIGATION
Due to electric zero emissions mobility is possible to navigate everywhere, in protected marine areas, safeguarding the environment.

TECHNICAL DATA

Blue Hybrid System®

HYBRID KIT FOR MARINE ENGINES



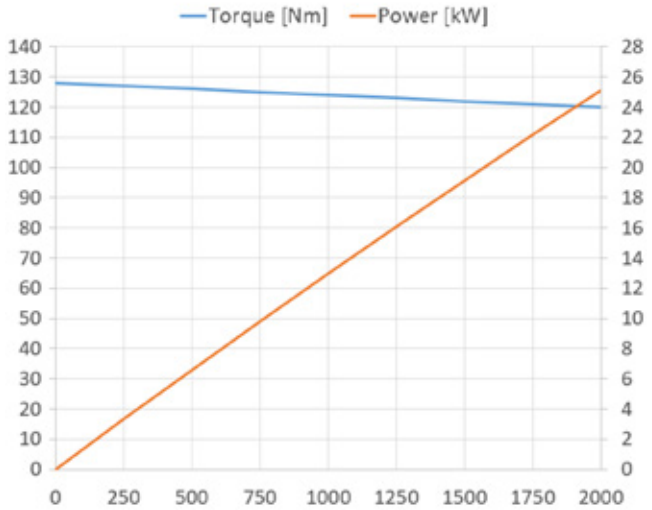
Blue Hybrid System® opens up new perspectives for recreational and commercial boats. Unique and compact, with minimal dimensions, **Blue Hybrid System®** allows you to **navigate with zero emissions** for producing energy and propulsion.

Designed for navigating in **protected and silent areas**, hence, it can be integrated with marine diesel engines which allow you to switch from traditional to electric navigation easily.

The boat equipped with this system can be used for eco-tourism as well as protected natural areas without polluting or making noise.

Electric motor / generator

Type	Brushless
Cooling	Liquid type
Number of poles	12
Nominal speed	2000 rpm
Nominal power	25 Kw
Nominal torque	120 Nm
Nominal current	265 A
Nominal efficiency	96 %



Wiring

Standard equipment	Up to 8 m boats
Type	Power, signal

Battery

Type	LiNMC
BMS	YES
Nominal Voltage	88,8 Vdc
Capacity	148 Ah
Standard discharge	0,5 C
Fast discharge	1 C
Maximum discharge	1,3 C
Energy density	104 Wh/kg
IP Rating	IP65

Aquarius system - Electrical Panel

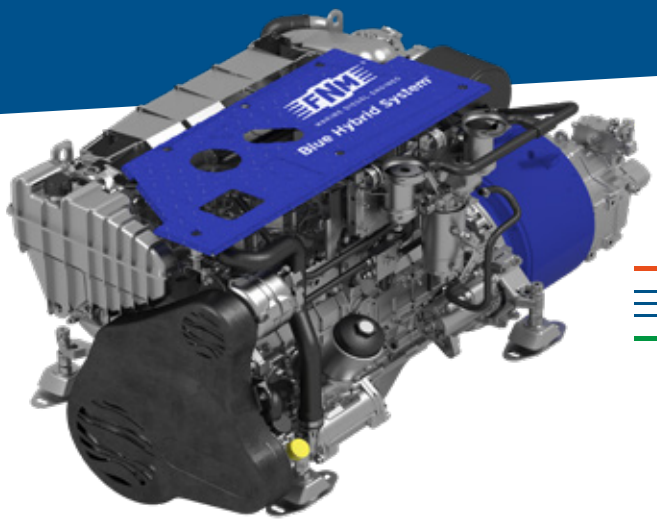
IP Rating	IP66
Nominal Voltage	96Vdc
Minimum - Maximum voltage	39 - 116 Vdc
Current (60 min.)	220 A
Hybrid Control Unit – HCU	
Safety Power Contractor	
Cooling plate	

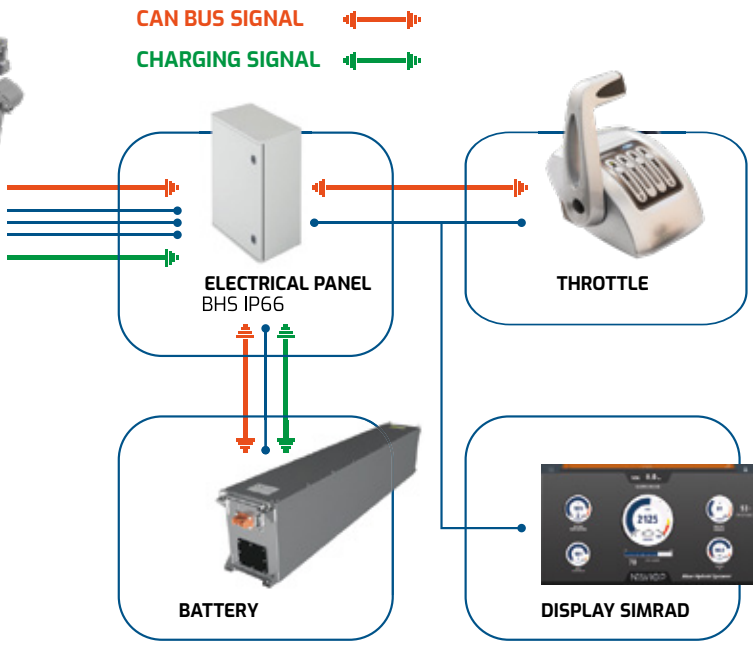
Engine types and characteristics may be subject to modification without prior notice.

TECHNICAL DATA

Blue Hybrid System®

HYBRID KIT FOR MARINE ENGINES





Display SIMRAD

Series	GO XSE with OP box
Standard equipment	7 inches
Optional	9 inches; 12 inches
Power Supply	12-24 Vdc

Throttle

Series	All powertrain is managed by original engine throttle
Type	Electronic with CAN BUS

Cooling kit

Components	Pumps and heat exchangers
Operation	Cooling of electronic components and auxiliaries working during electric mode

Battery charger (on request)

Type	Standard	Fast	Super
Supply	230 Vac	400 Vac	400 Vac
Charging power	3 kW	10 kW	20-30 kW
IP Rating	IP20	IP65	IP54
Location	On board	On board	Quay

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TECHNICAL DATA

Blue Hybrid System®

HYBRID KIT FOR MARINE ENGINES

Everything under control

Thanks to the collaboration with SYMRAD, an innovative app has been developed for showing you the main information during navigation:

- engine/generator data
- battery status
- all parameters necessary to navigation and whole system's control.

Everything is under control and clearly visible through the supplied display.

Choose your navigation style

The entire powertrain is managed by a single engine throttle enable to switch from endothermic to electric navigation with a simple action.

ECU developed in house

All system is controlled by a CMD ECU entirely designed by CMD. This control unit uses CANBUS technology to communicate with all powertrain's components and decides the operating status of the hybrid system.

Operating time

The battery capacity can be customized according to the customer's navigation needs. Protected and insulated in an inox box of 1.5mm thickness, LiNMC batteries cells ensure great reliability. CMD uses an advanced systems simulation software to define the right battery pack capacity based on the mission profile such as: MATLAB / SIMULINK.

Technical data according to ISO8665. Fuel complies EN590. Merchant fuel may differ in specification and may influence engine power output and consumption. Production tolerance within 5% (of power). Not all models, standard equipment and accessories are available in all countries. All specifications are subject to change without notice.