

# SYSTEMS FOR SUSTAINABLE SHIPPING

## HyPS builds hybrid system with Bachmann hardware

Reducing emissions and lowering fuel costs are not only the aims of the automotive industry. This is also becoming increasingly important in the shipping sector and can be achieved through the use of hybrid systems. The Dutch company HyPS is a specialist in this technology for propulsion and power supply applications in ships. In Bachmann they have found a partner that provides them with optimum support.



HyPS is a company based in Geldermalsen (Netherlands), which has specialized in hybrid power supplies and hybrid propulsion systems. Its service portfolio includes both the design and development as well as the supply and maintenance of the systems.

[www.hyps.nl](http://www.hyps.nl)

Hybrid power supply and hybrid propulsion systems are the passion of the employees at HyPS. »One day we were faced with the decision whether or not to invest our efforts in hybrid systems, and if so, then with all our energy and commitment,« explains Rudolf Van Heek, product manager at HyPS. »Only in this way were we able to be successful.« The company took the risk and won. »Through our concentration on hybrid systems we also had the necessary resources to examine every single order down to the smallest detail and supply a system that provides the best solution,« Rudolf Van Heek explains the reason for HyPS's success. »Thanks to our intensive exploration of the subject we were able to learn a lot and acquire a tremendous amount of specialist knowledge.«

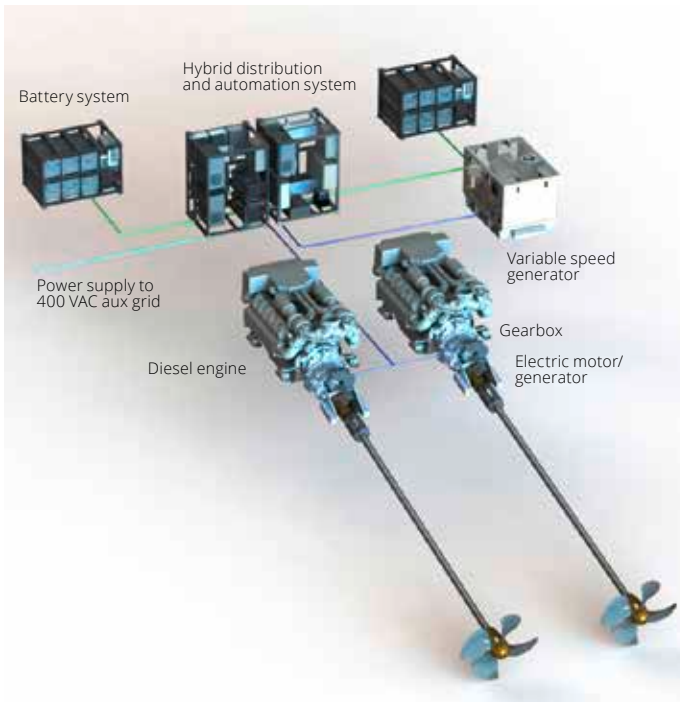
### **An optimum system for every ship**

Regardless of whether they are for commercial shipping or private yachts, hybrid systems offer some impressive benefits. »In commercial shipping it's the reduced emissions and low fuel costs, and in the private sector, the convenience of the system and the green image,« Rudolf van Heek describes the most important reasons why customers choose a hybrid system for their ships. Regardless of where it is used, the basic infrastructure is the same. »The difference is in the details,« explains Rudolf van Heek. »That's why we collect information on the range

of the ship, environmental conditions, and the requirements of the power supply and battery storage system.« From this information HyPs creates a system which is optimally suited to the particular ship.

### **Hybrid automation system**

The Hybrid Automation System (HAS) is required to meet several tasks. On the one hand it must process the drive commands from the bridge, provide the required power and continuously optimize operation. The core of the HAS is an MX213 processor module from Bachmann. A CAN bus master module is used to integrate components with local control units, such as the battery storage system and generators, into the control system. This process uses standards such as SAE J1939, CAN native and CANopen as a basis. All the required sensors are integrated via the GIO212. »The result is a very compact and at the same time flexible controller system,« Rudolf van Heek explains. »This allows us to expand our solution at any time without carrying out any major changes to the existing concept. For example, we are currently building a redundant control system – likewise with tried and tested Bachmann components.« HyPS was impressed by the flexibility offered by the M1 automation system. »However, we also chose Bachmann because we were able to implement the programming here in C++,« Rudolf van Heek



▲ HyPS hybrid power and propulsion system



▲ **SolutionCenter:** Engineering and diagnoses with SolutionCenter in C++ and IEC 61131-3 is combined with Simulink

recalls. All configurations of the system are defined with the SolutionCenter – Bachmann’s extensive engineering tool. The software module on the controller is designed so that it subsequently configures itself.

All inputs and outputs, runtime programs, project-specific features and functions, as well as communication protocols are thus activated automatically. »Every hybrid system we build is tested intensively by us in-house,« Rudolf van Heek explains. »To simulate onboard conditions as realistically as possible we have integrated a steel floor in the test bay.« With this procedure we can even detect and rectify early on faults which occur through electromagnetic phenomena. »The system is then normally accepted without any problem,« Rudolf van Heek confirms.

### Competitive team

The cooperation between HyPS and Bachmann works brilliantly. »Our software combined with the Bachmann hardware produces an unbeatable system for shipping,« Rudolf van Heek is certain. This successful partnership is also due to our shared corporate philosophy: »We are both future-oriented companies and are mutually inspiring each other with innovations,« Rudolf van Heek explains. It is therefore no surprise that HyPS is already working on the next innovation.

»The benefits of hybrid systems can be optimized if they are operated correctly. Today switching between propulsion with fuel or with electricity from the battery storage system is done manually,« Rudolf van Heek explains. »In future this process will be carried out automatically depending on the actual and forecast operating conditions, thus reducing maintenance costs, increasing the lifetime of machines and naturally also further reducing harmful emissions.«



» Our software combined with the Bachmann hardware produces an unbeatable system for shipping. «

Rudolf van Heek,  
Product manager at HyPS