Genevos
EFFICIENT INNOVATIONS

HYDROGEN POWER SOLUTIONS

ENABLING ZERO EMISSION VESSELS

About Genevos

Marine hydrogen power solutions

MISSION

Pioneering plug & play marine hydrogen power solutions to enable clean and resilient mobility on our oceans.

HERITAGE

Genevos was founded in 2018 as a spin-off company from 'OceansLab – Cleantech Accelerator', a record-breaking zero-emission offshore sailing project that innovates and demonstrates low-carbon technologies in the maritime sector.

ACTIVITY

Genevos engineers, certifies and produces plug-and-play Hydrogen Power Modules (HPM) offering scalable power solutions up to multi-MW scale.

Genevos goes further to support the energy transition for clients through the provision of engineering services and energy optimisation through an advanced power management system.

Hydrogen Power Module ‘HPM’

The plug & play power solution for marine

Decarbonising vessels through auxiliary, primary or hybrid integration

This scalable solution can be applied across the maritime sector from small to large vessels including yachts, ferries, service vessels, inland transport and shipping. In addition to offshore platforms for onboard power generation.

FEATURES

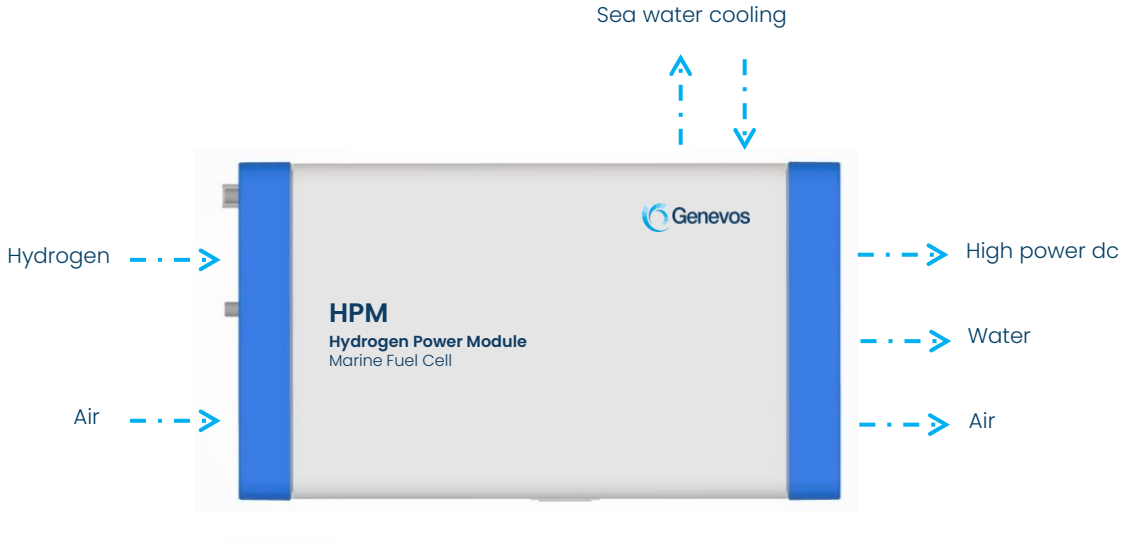
- **Zero emissions** no vibration and low noise
- **Practical** compact and low weight
- **Stackable** to high power
- **Modular** enabling high redundancy
- **Marinised** protection against humidity & salinity
- **Durable** resistant graphite plate technology
- **Certified** for use on commercial vessels
- **Plug & play** fully integrated balance of plant
- **Efficiency** through adaptive power management

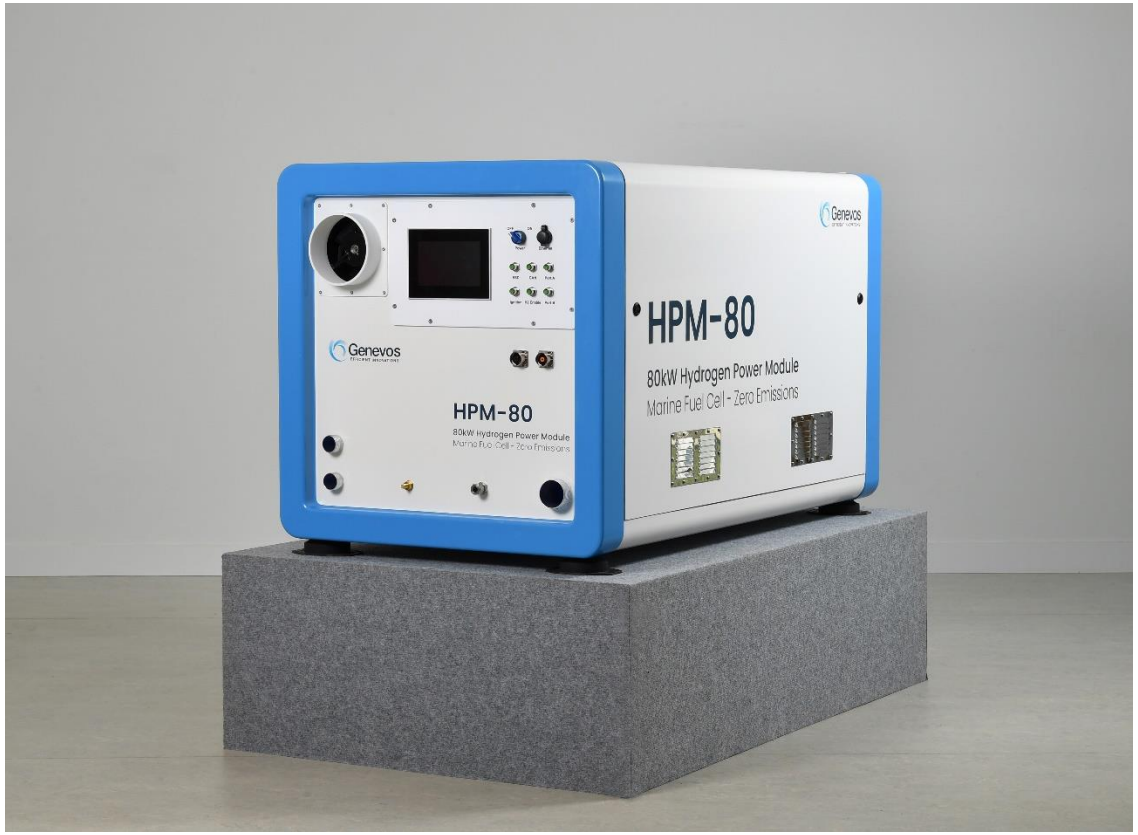
Drop-in Fuel Cell Solution

Genevos' plug & play marine power solution

COMPONENTS/SYSTEMS INTEGRATED

- Durable graphite PEM fuel cell stack
- Air filtration and compression
- Cooling system with heat exchanger
- DC-DC converter
- Energy Management System
- Safety monitoring system
- User interface & data logger





HPM Benefits

Accelerating the clean power transition

ADVANCED

- Marine resistant and proven graphite stack technology
- Marinised - resistant to saline environment

ENVIRONMENTAL

- Zero emissions: No CO_2, NO_x or SO_x
- No vibration, low noise
- High recyclability (>90%)

EFFICIENT

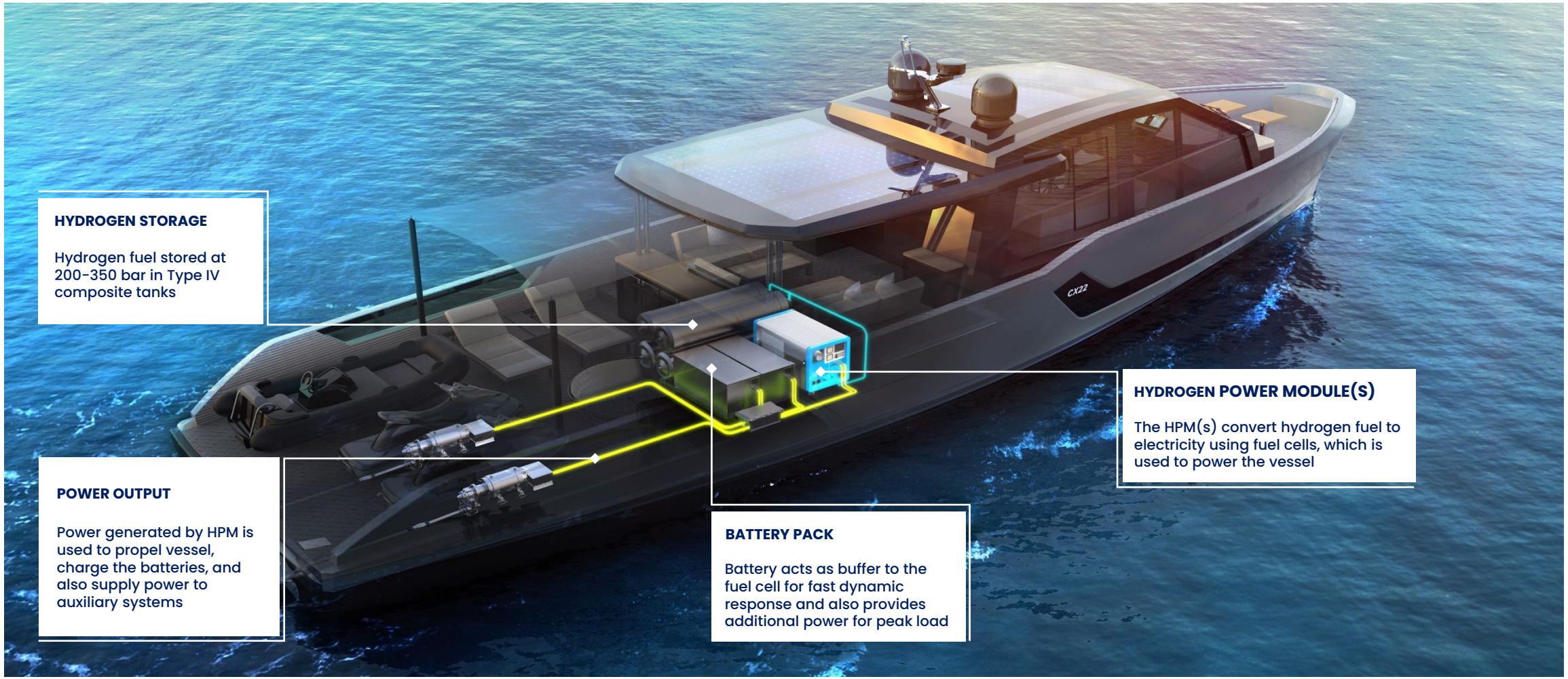
- Up to 55% net fuel efficiency - twice that of a diesel genset
- Advanced energy management optimising fuel efficiency
- 4 – 6 times lighter than batteries

PRACTICAL 'PLUG-AND-PLAY'

- Rapid refuelling
- Low maintenance
- Modular - multiple units to attain required power
- Fully integrated system for practical installation

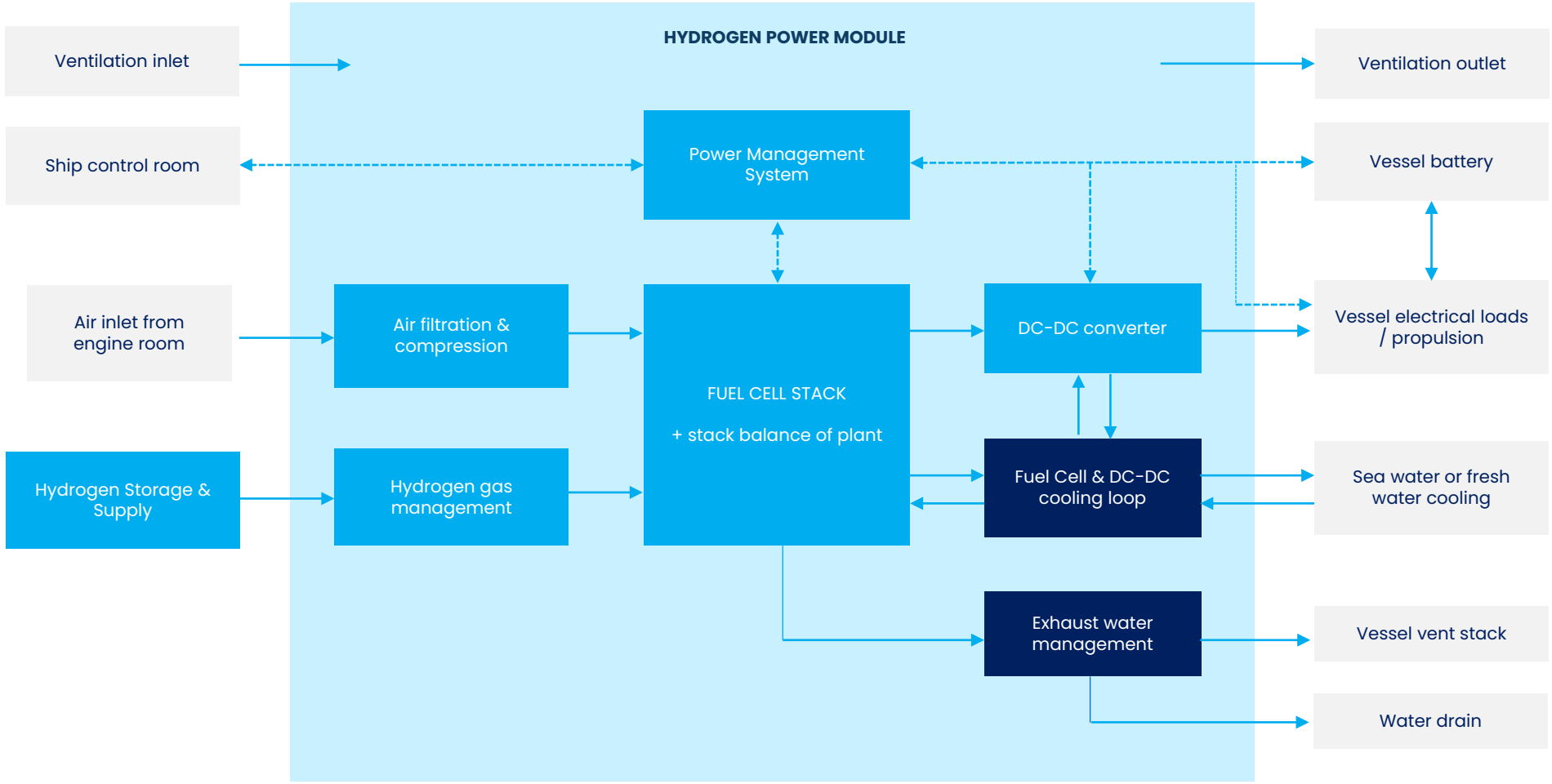
Hydrogen-Electric System

Providing a low weight, zero emission propulsion solution for vessels



HPM – Scope of Supply

The drop-in solution



Scalable Power Solutions

Modularity to enable tailored power systems

HPM FAMILY

Genevos offer a broad solution that can be applied across the maritime sector based on three scalable modules with EOL rated powers of 40 kW, 80 kW and 250 kW.

This modularity meets customised power requirements for a wide range of vessels and stationary applications, whilst benefiting from increased energy security.

The marinised modules can be installed in an engine room or containerized for deck installation.

HIGH POWER SYSTEMS

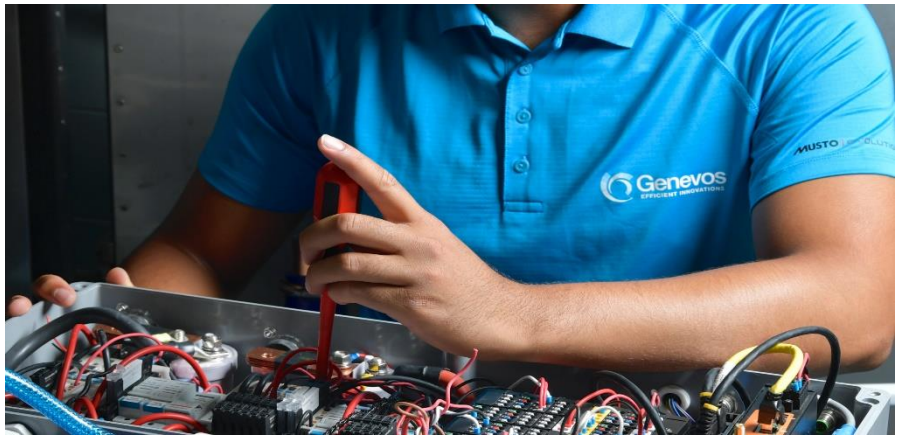
The 250 kW (launch date Q2 2024) provides a highly practical solution for achieving multi-MW power systems.

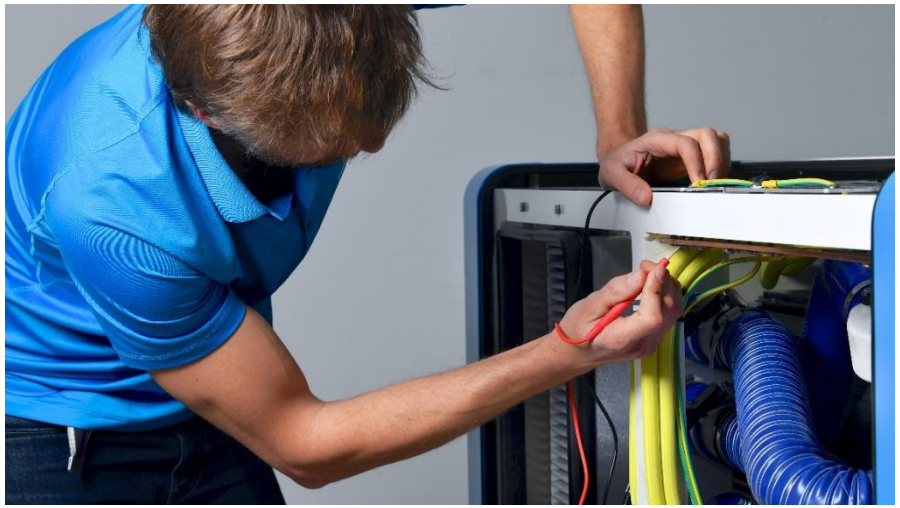
- Fully-integrated, independent modules for high redundancy
- Optimised durability, through advanced system control
- Optimised fuel cell efficiency, through advanced system control

HPM Technical Specifications

A compact and low weight solution designed for vessels

TECHNICAL DATA	HPM-40 Gen II	HPM-80 Gen II	HPM-250 Gen II
Continuous Peak Power (BOL)	50 kW	100 kW	280 kW
Rated Power (EOL)	35 kW	80 kW	240 kW
Output Voltage (Controllable)	300 - 950 V_{dc}	700 - 950 V_{dc}	700 - 950 V_{dc}
Weight	250 kg	450 kg	930 kg
Peak Efficiency	54 %	54 %	52 %
Dimensions (L x W x H)	140 x 80 x 55 cm	140 x 80 x 85 cm	160 x 120 x 150 cm
Communication	CAN bus		
FC Stack Estimated Lifetime	> 20,000 hrs		
Fuel	Gaseous Hydrogen ISO14687-2		
Ambient Air Temperature Operation	-25 to 45°C		
Environmental Rating	IP54 (56 option)		





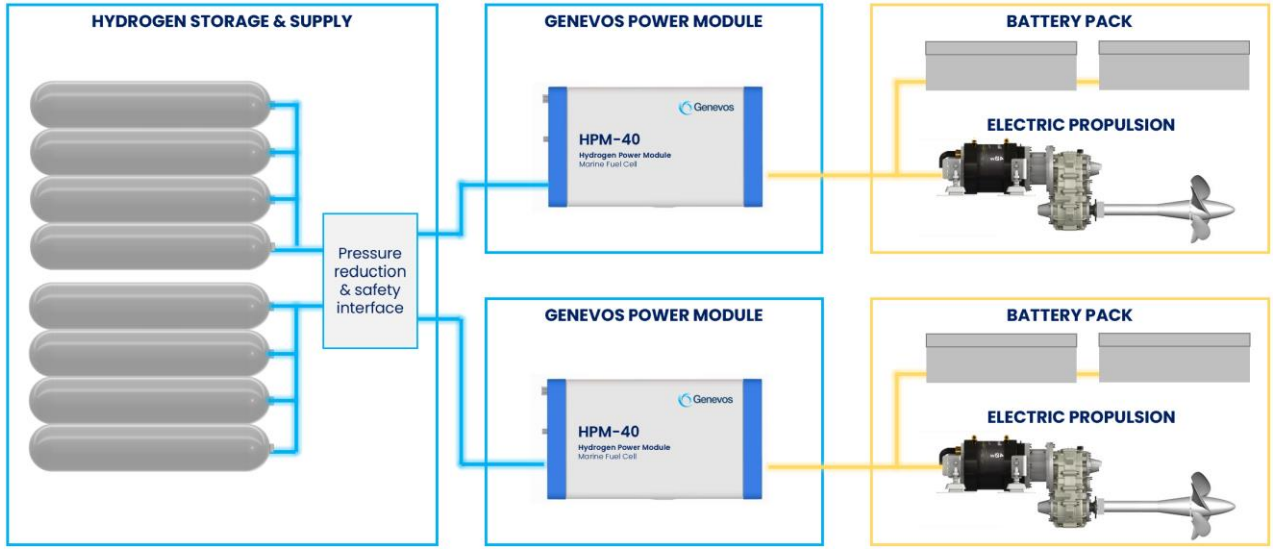
Low – Medium Power Applications

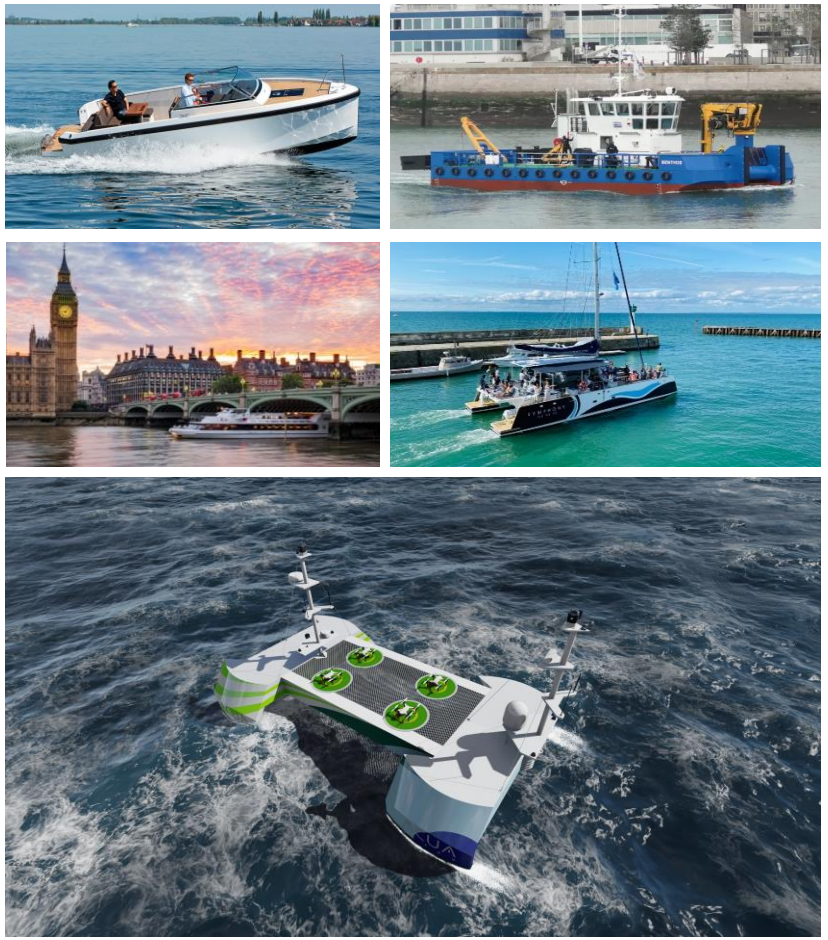
Small-medium power commercial and pleasure craft: 40 kW & 80 kW modules

HPM-40

HPM-80

LOW POWER SYSTEM





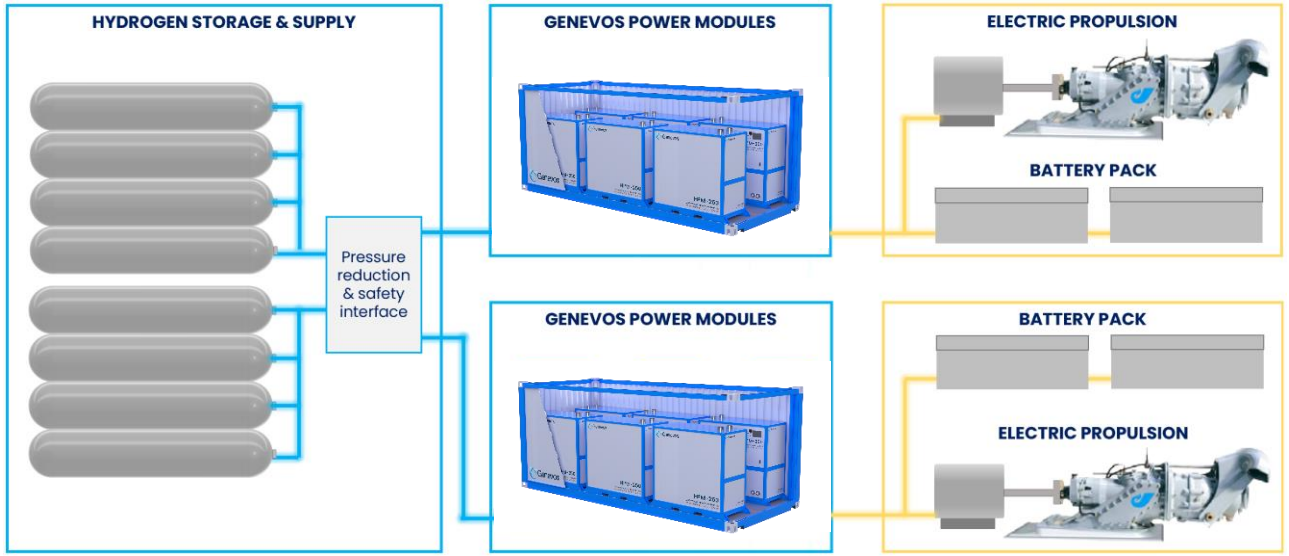
VESSEL EXAMPLES

High Power Applications

Large commercial marine applications: 250 kW – multi MW

HPM-250

HIGH POWER SYSTEM



VESSEL EXAMPLES

Compatibility with Future E-Fuels

Modularity enables compatibility with liquid e-fuels for future retrofits or new vessels

COMPRESSED HYDROGEN

HYDROGEN E-FUELS

FUELS

- Green hydrogen
- Blue hydrogen

FUTURE FUELS

- Methanol
- Liquid hydrogen
- LOHC
- Ammonia

Technology Comparison

A scalable cost-effective zero-emissions solution for marine

Comparison of different powertrain technologies, based on a 30 kW marine propulsion system with a 12 hour range.

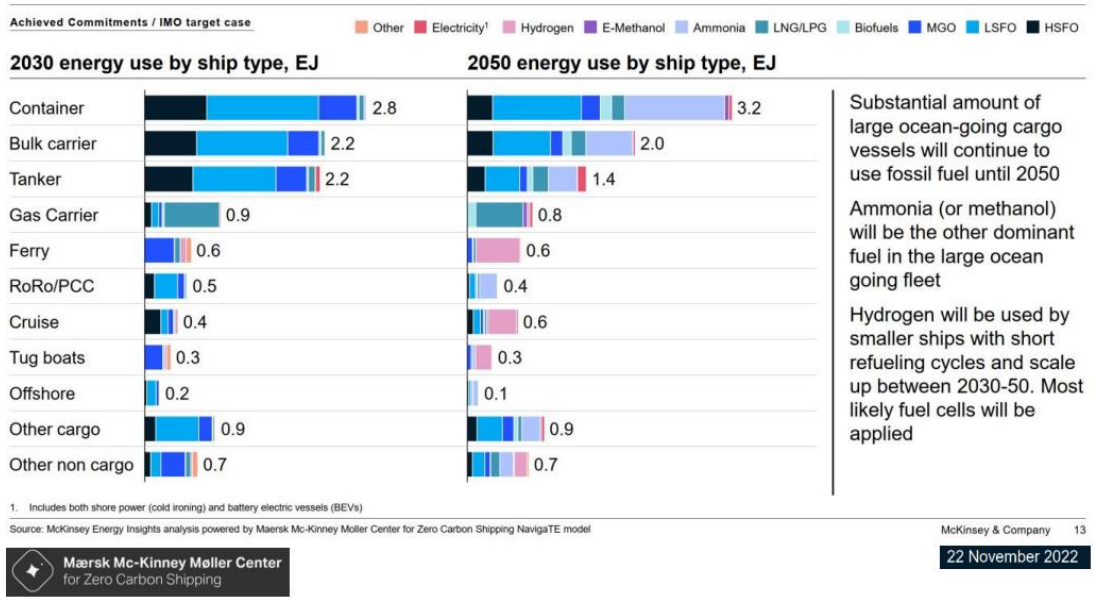
	LIFETIME (YRS.)	EFFICIENCY	REFUELLING TIME	WEIGHT (GENERATOR + FUEL)	EQUIPMENT COST	COST OF OWNERSHIP (5 YRS.)	TOTAL VOLUME
HYDROGEN	15 - 20	■■	15 mins	■	■■	■■	■■
BATTERY	5 - 10	■■	5 - 10 hrs	■■	■■	■■	■■
DIESEL	15 - 20	■	15 mins	■	■	■■	■

The Genevos HPM is 1/3 of the weight of a typical diesel generator

Hydrogen - A Vital Future Fuel for Marine

Incentivising global H2 infrastructure to access clean hydrogen

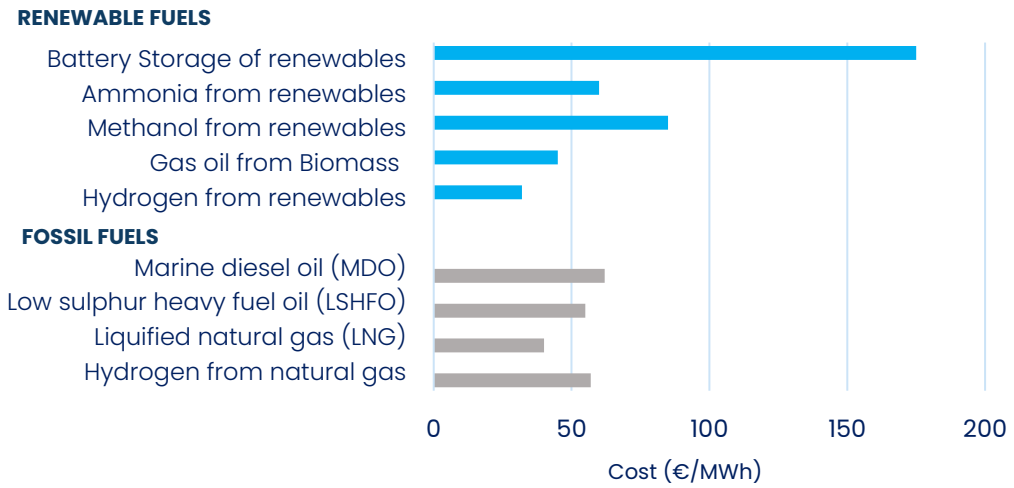
Detailed forecasts indicate that hydrogen will play a crucial role in decarbonising ferries, service vessels and cruise ships.



COMMERCIAL OPPORTUNITY

- Payback after 6 years with over 20% of savings after 10 years in operation relative to diesel system, based on TCO
- Cost of equipment is 50% less than all-lithium battery system for 24 hr system range
- Cost of green hydrogen forecast to halve before 2030 and will undercut all other forms of hydrogen and hydrogen e-fuels

Projected fuel costs – 2030 ^



^ Source: Zero-Emission Vessels - Transition Pathways 2019

Engineering for Efficiency

System sizing, installation design, power management

Genevos offers engineering services for clients exploring and applying HPM solutions through the provision of in-house simulation tools and expertise in management of power, control, and hydrogen gas.

Further supporting on installation and commissioning, Genevos additionally provides support services for efficiency and performance optimisation, along with an annual service package.

SERVICES

Offsite

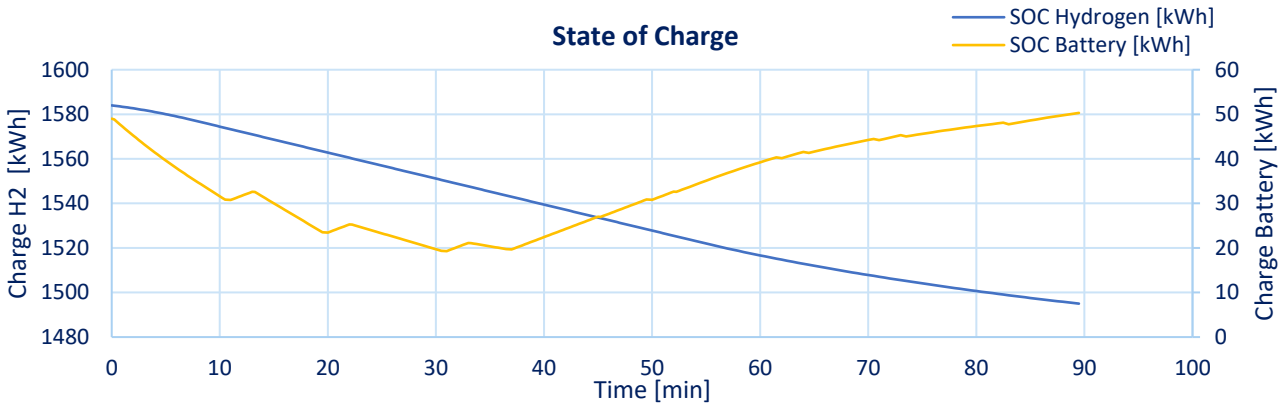
- Preliminary sizing studies based on vessel operational profile
- Hydrogen system integration design
- Safety & risk assessment

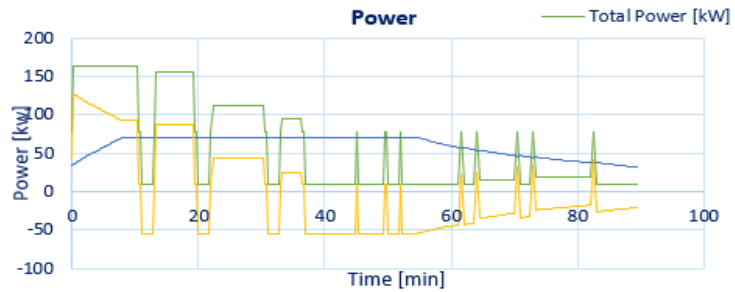
Onsite

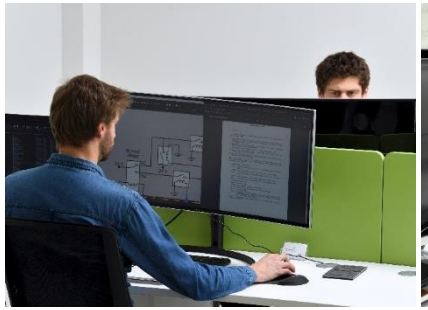
- Commissioning support
- System installation

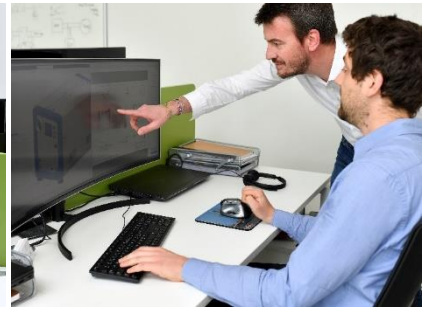
After-Sales

- Cloud connectivity & remote monitoring
- Power Management System (PMS) upgrades and performance optimisation
- Annual Service Package







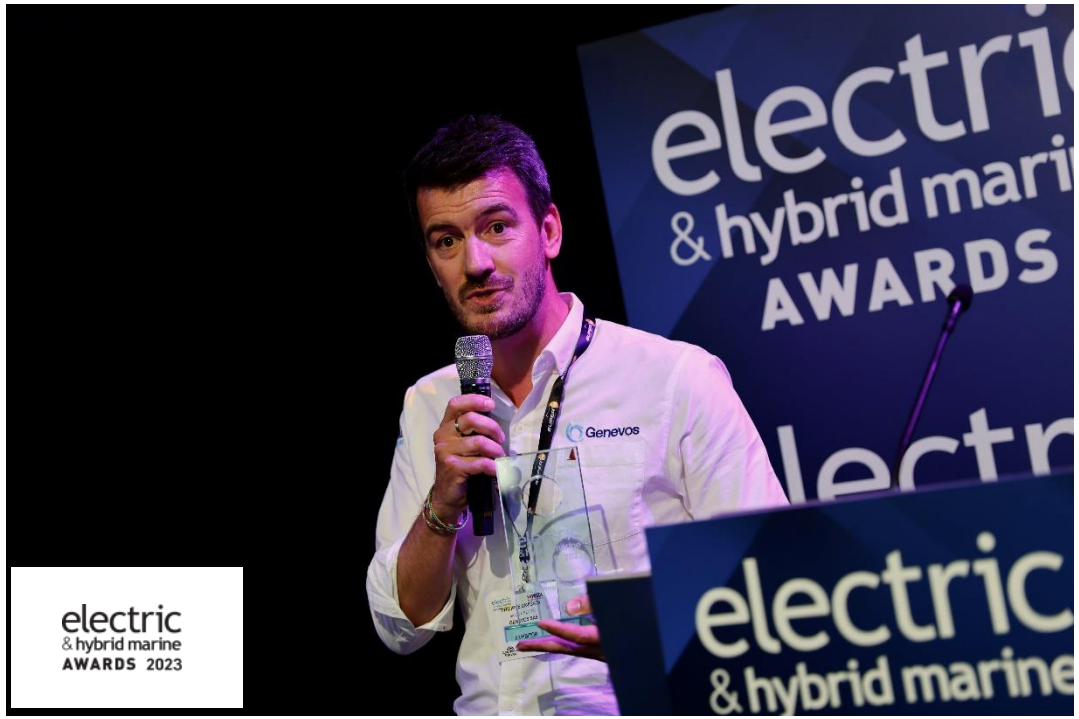


Recent Awards

Accelerating the clean hydrogen transition

Genevos' award-winning and drop-in marine fuel cell revolutionises maritime power by offering an environmentally friendly solution with high scalability and redundancy.

Hydrogen Breakthrough of the Year Award



Monaco Price for Innovation in Hydrogen & Transportation

Partners & Associations

Collaborating for the clean transition

Genevos
EFFICIENT INNOVATIONS

GREEN HYDROGEN

Pôle Atlan Tech La Rochelle

Lhyfe

CERTIFICATION

LR

Bureau Veritas 1828

PROJECT

Région Nouvelle-Aquitaine

bpifrance

NETWORKS

European Clean Hydrogen Alliance

Cluster Maritime Français
Cap sur la croissance bleue

DeepWind
North of Scotland Offshore Wind Cluster

France Hydrogène
Engagée pour la transition écologique

AFBE
Association Française pour le Bateau Électrique

ZESTAs.

R&D

Imperial College London

EIGSI École d'Ingénieurs
La Rochelle • Casablanca

cea tech

AWARDS

electric & hybrid marine AWARDS 2023

electric & hybrid marine AWARDS 2022

Monaco Hydrogen Alliance

SolarImpulse Label Efficient Solution

Innovation Nautisme Sud Ouest

Monaco Hydrogen Alliance

Le Coq Vert

GICAN

Lhyfe Heroes

Atlantic Cluster

Scottish Hydrogen & Fuel Cell Association

Contact Us

Find out more about how to decarbonise your vessel or fleet

Philippe DAVIGNON
Sales Director
philippe.davignon@genevos.com
+33 7 72 14 92 46

Phil SHARP
CTO | Co-Founder
phil@genevos.com
+44 7973 378997
+33 623 906 702

Innovating zero emission power solutions to enable clean and resilient mobility on our oceans

www.genevos.com