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**Company Introduction**

VINSSSEN is a maritime technology company leading the charge in reducing greenhouse emissions through innovative and sustainable products, solutions.

VINSSSEN enables the use of hydrogen (and alternative fuels like ammonia and methanol) as cleaner and more efficient energy sources for the maritime industry. VINSSSEN offers differentiated performances via a proprietary Titanium Bipolar Plate Fuel Cell Technology, which results in better durability and weight profiles for maritime applications.

VINSSSEN is also positioned to support maritime electrification with battery solutions. When paired with batteries, fuel cells can benefit from increased efficiency and longer operational ranges.

With support from a dedicated team in Korea that has a deep affiliation with the shipbuilding industry, VINSSSEN is able to provide customized solutions for diversified use cases across a large spectrum of clients.



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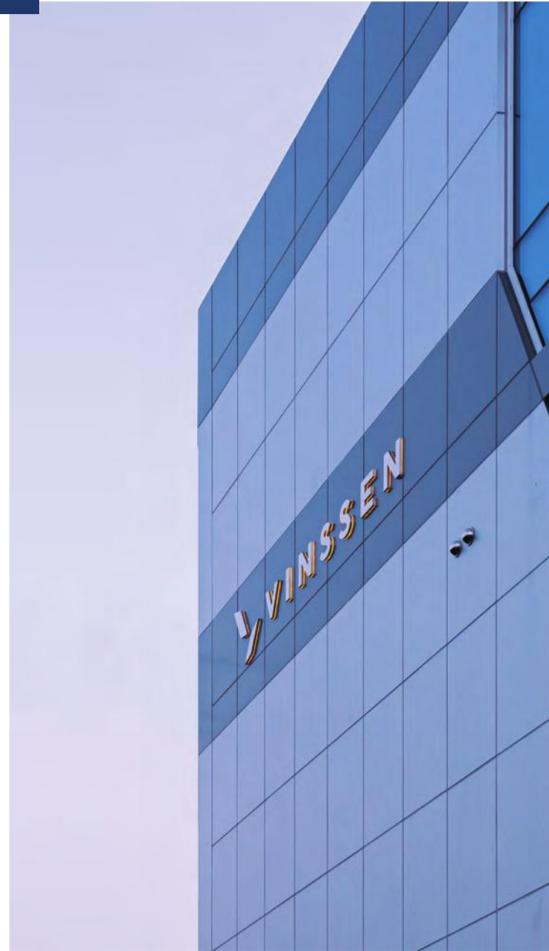
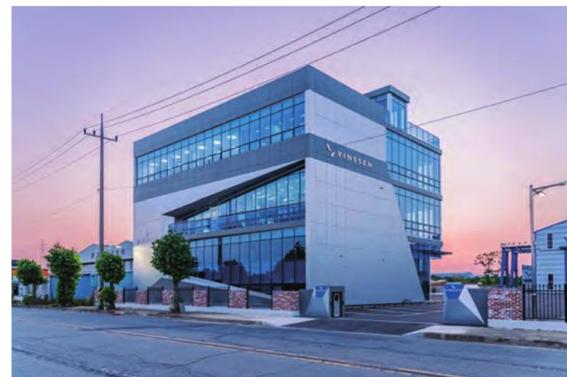
• **GERMANY AGENCY**

Amtsgericht Hamburg - HRB 130486, Hamburg, Germany

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**History**

- 2017** Founded VINSSSEN Co., Ltd.
- 2018** Established R&D Center  
Acquired ISO9001:2015
- 2019** Acquired the Hydrogen Industry Regulation Free Zone R&D titled "33ft H2 Electric-Powered Boat-Engineering, Manufacturing, Sea Trial"
- 2020** Signed agreement to construct and demonstrate hydrogen vessels with Jeolla Province Municipal Council
- 2021** Established VINSSSEN INTERNATIONAL PTE. LTD. in Singapore  
Presented Hydrogenia to President Moon Jae-in in Ulsan City
- 2022** Acquired AIP Certificate from the Korean Register for the 120kW maritime Fuel-Cell System
- 2023** Delivered Hydrogen Fuel Cell System for Industry Project in Shell Singapore  
Acquired AIP Certificate from the Korean Register 100kW Fuel Cell Module for Marine Application  
Contracted 14M Class Passenger Ferry for Suncheonman International Garden Expo 2023
- 2024** Acquired AIP Certificate from the Korean Register 250kW Fuel Cell Module for Marine Application  
Obtained Class Approval from Bureau Veritas (BV) for the Hydrogen Fuel Cell System for Commercial maritime Use.

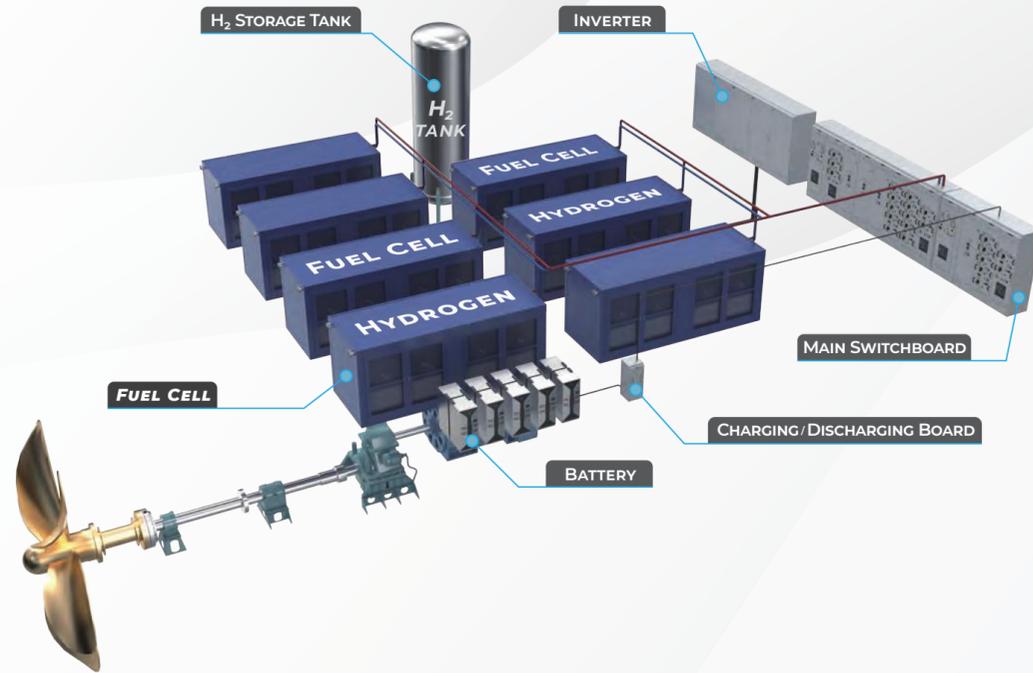


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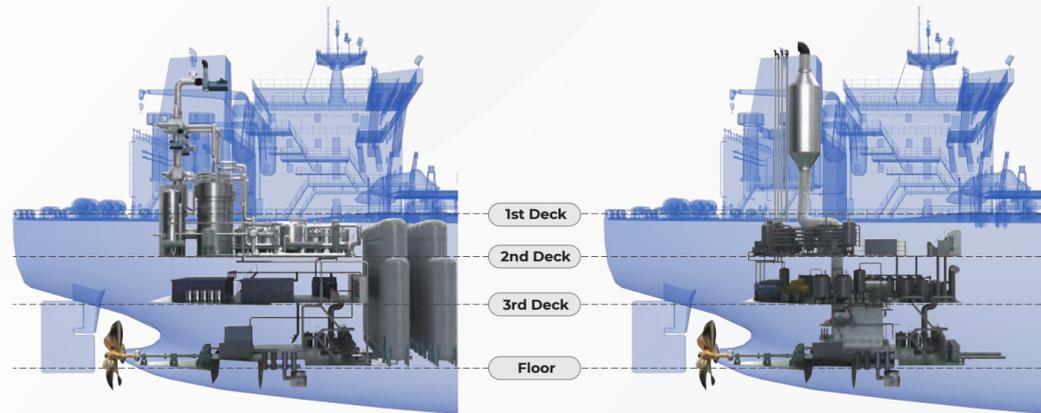


## Applications

### Ammonia Cracking & Fuel Cell Power System



### Comparison Between Internal Combustion Engine & Fuel Cell Power System



AMMONIA CRACKING & FUEL CELL POWER SYSTEM

DIESEL PROPULSION SYSTEM

## Flagship Product

### Fuel Cell Power System

The Fuel Cell Module is a device that generates and supplies electricity, consisting of an integrated fuel cell module that includes a stack, BOP(Balance of Plant), DC-DC Converter, and monitoring panel.

- The MEGA FC 2.0 is a container-type product designed for easy installation and control of fuel cell modules on large ships.
- It houses eight 250kW fuel cell modules, providing a total rated output of 2.0MW.
- Additionally, there are models available for smaller vessels with 100kW as well as medium to large vessels 250kW.

#### MEGA FC 2.0



#### Specification

Type	PEM Fuel Cell
Rated Power(Continuous)	2.0 MW
Size(WxDxH)	6.0 x 2.5 x 2.5 M
Weight(Estimate)	14,000 kg
H <sub>2</sub> Inlet Pressure	5 barg

#### FCM 100/250



#### Specification

Specification	FCM 100	FCM 250
Target Application	Boat	Vessel
Installation Type	Horizontal	Vertical
H <sub>2</sub> Inlet Pressure(barg)	12	5
Rated Power(Continuous, kW)	100	250
Ambient Temperature(°C)	5 ~ 45	5 ~ 45
Ambient Humidity(%)	0 ~ 95	0 ~ 95
Cooling Type	Water-Cooled	Water-Cooled
Ingress Protection	IP 44	IP 44
System Size(WxDxH, mm)	1,900x700x1,000	1,200x800x2,000

### Battery System

This is a battery for marine applications, designed to supply electric power to the propulsion system and store energy generated by the electric generation system. It includes battery cells, a Battery Management System (BMS), and a protection system.



#### Specification

Specification	92kWh*	100kWh
Cell Type	NCA	Li-FePO <sub>4</sub>
Nominal Voltage(VDC)	480	672
Max Capacity(kWh)	92	100
Charge Voltage(V)	540	756
Discharge Voltage(V)	396	567
Ingress Protection	IP 44	IP 44
Weight(kg)	755	1,500
Size(WxDxH, mm)	1,450x855x625	1,000x1,076x1,977
Communication	CAN 2.0A	CAN 2.0A

\*Approval for the 92 kWh battery system for power storage systems has been received from KOMSA and KR.

## Eco-Friendly Pleasure Craft

### 5.6M Leisure Boat Electric Battery Propulsion



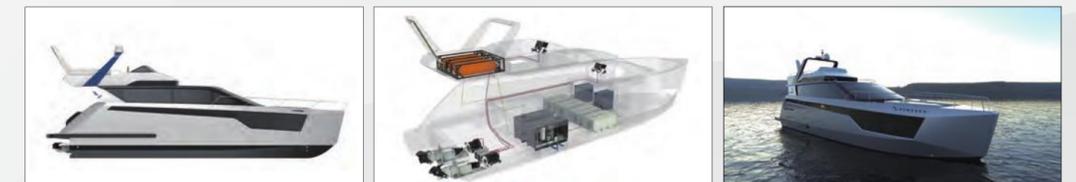
#### Hull

Length Overall	5.58 m (19.0 ft)
Beam Overall	2.05 m (6.73 ft)
Depth	0.8 m (2.6 ft)
Draft	0.5 m (1.6 ft)
Max Person	4 Pax
Light Weight	2,720 kg (6,000Lbs)

#### Electric Propulsion

Propulsion Type	Water-Jet
Cruising Speed	12.0 knots
Max Speed	17.0 knots
Battery	92 kWh x 1
Propulsion Motor	105 kW x 1
Hull material	FRP

### 17M Leisure Boat Hydrogen-Battery Propulsion



#### Hull

Length Overall	17.4 m (57.0 ft)
Beam Overall	4.93 m (16.2 ft)
Depth	1.9 m (6.2 ft)
Draft	0.7 m (2.3 ft)
Max Person	10 Pax
Light Weight	24,000 kg (52,910Lbs)
Hull material	Aluminum

#### Electric Propulsion

Propulsion Type	Water-Jet
Cruising Speed	12.0 knots
Max Speed	20.0 knots
Fuel-cell	100 kW x 2
Battery	92 kWh x 4
Propulsion Motor	259 kW x 2
Hydrogen Tank	185L x 4, Type 4