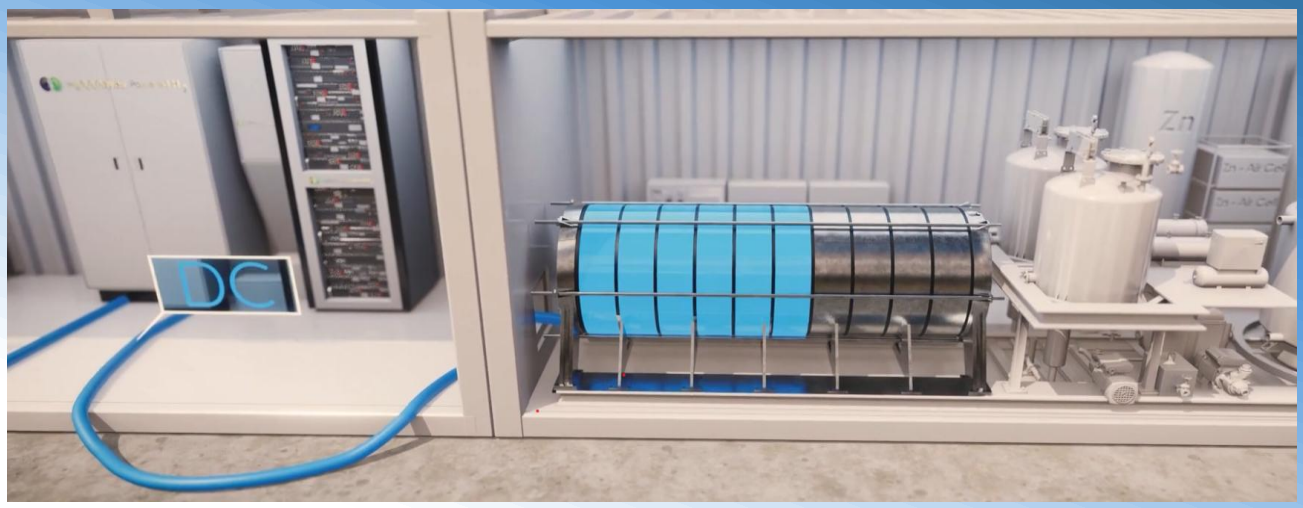
HyWaves | Empowering Green Hydrogen

HyWaves H2Top™ Power Management & Control Architecture



The **HyWaves H2Top™** is an advanced DC based power management and control solution designed to maximise hydrogen yield from solar-to-electrolyser systems. By directly coupling variable solar PV to electrolysers by varying the cell numbers in a stack, without the need for AC grid-based conversion, H2Top enables **up to 99.5% energy transfer efficiency**, minimising losses and costs.

Key Features

Ultra-High Efficiency

DC-based coupling achieves up to **99.5% PV-to-H2 energy conversion**, compared to typical 93–95% in conventional systems.

Dynamic Cell Engagement

Adjusts electric input per electrolyser cell in real-time to **optimise production.**

Reduced CapEx

Eliminates costly inverters, grid interfaces and complex P&I resulting in **significant capital savings** across PV and H2 systems.

All-Weather Scalability

Supports both **off-grid and hybrid grid-connected** deployments from kilowatt to **>10 MW** scale.

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Use Cases

- Decentralized Solar-to-H2 Plants
- Industrial H2 Generation at MW Scale
- Ammonia/Hydrogen Production Sites
- Emerging Markets with High Solar Irradiance
- Ramp up and down for any chemistry

H2Top Technical Specifications

System Feature	Specification
Energy Transfer Efficiency	Up to 99.5%
Input Type	Direct DC from Solar PV with custom string voltage
Output	Optimised DC output to Electrolysers for maximum H2 production
Control Type	Software-defined, AI-enabled switching logic
Scalable Power Range	kW-scale to >10 MW
Operating Modes	Off-grid / Hybrid
System Architecture	Software + light-touch electrical components with high current switching system
Electrolyser Compatibility	PEM, Alkaline, AEM, Membrane Free

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