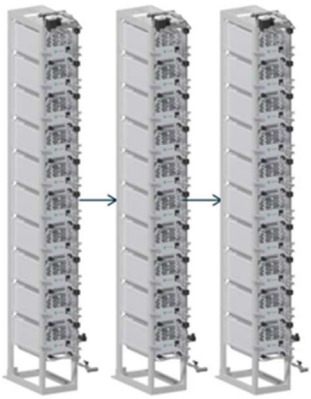
Hy-Pro® Nexus1000

The AEM string based Electrolyser meeting your needs

The many electrolyser cores of the AEM Nexus ensure optimum reliability and reactivity to fluctuating renewable energy at any load. Make up to 210 Nm3/h of green hydrogen an hour (450 kg/24 hours) with our 1 MW AEM Electrolyser – or start halfway with our 500 kW version. Both with 99.999% hydrogen purity.

This containerised electrolyser offers you quick and straightforward setup so you can focus on making and using your green gas. Software control as well as simplified servicing with easily swappable electrolyser stacks streamline your operations.

AEM Stack electrolyser cores are the heart of our green hydrogen generators. Our AEM Nexus has hundreds, mounted in strings of 10. Each string ramps up or down separately to get the most out of your renewable energy at any load, delivering exceptional operational flexibility of 3-100%.

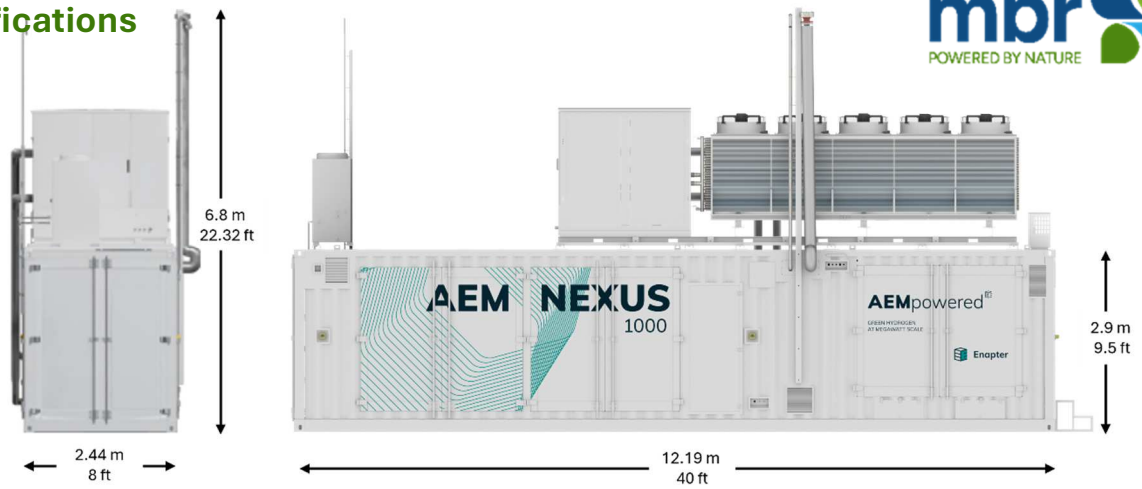


Resilience you can rely on: The modular design removes bottlenecks and single points of failure, all the way from AEM stacks to balance of plant. Enjoy maximum uptime, even when servicing: Work on affected strings of AEM Stacks while others still produce green hydrogen.

- ✓ World's first megawatt-class AEM Electrolyser
- ✓ Operational flexibility of 3-100%
- ✓ High degree of redundancy
- ✓ Rapid reaction times to variable renewables

Production rate	210 Nm^3/h | 450 kg/24h
Hydrogen purity	99.95% (or 99.999% with optional Dryer)
Outlet pressure	up to 35 barg
Power Consumption	~1 MW
Dimensions	2.19 m × 2.44 m × 2.90 m (L x W x H)

Specifications



H_2 nominal flow	210 Nm^3/h, 453 kg/24h	Net volume flow rate
H_2 outlet pressure	Up to 35 barg (507.63 psig)	
H_2 purity	99.95% in molar fraction	Impure H_2O < 500 ppm, O_2 < 5 ppm
H_2 purity with optional dryer	99.999% in molar fraction	Impure H_2O < 5 ppm, O_2 < 5 ppm
H_2 outlet temperature	5 – 55 °C (41 – 131 °F)	
O_2 nominal flow	12.5 Nm^3/h	Vented at atmospheric pressure
Nominal power consumption	1,008 kW	Beginning of life (BOL)
Voltage	3 × 400 VAC	±10 %
Frequency	50/60 Hz	±10 %; THD < 5%
H_2O nominal consumption	190 L/h (50.19 gal/h)	Purified water
H_2O inlet quality	ASTM D1193-06 Type IV or recommended Type II or Type III[1]	
Operational flexibility	3% – 100 %	Of nominal H_2 flowrate
Efficiency	4.8 kWh/Nm^3H_2 53.3 kWh/kg H_2	Incl. all utilities inside the battery limits of the AEM Flex (at BOL)
Hot startup time	0 – 100% in 100 seconds	Electrolyte is at min. 35 °C (95 °F)
Cold startup time	0 – 100% in 20 minutes	Assum 15 °C (59 °F) ambient temp
Process heat output	300 kW	BOL ≈ 50 °C (≈ 122 °F)
Dimensions	12.19 × 2.44 × 2.90 m	(L × W × H)

Nexus green hydrogen applications

Renewable energy storage for developers, utilities & communities. Get the most from fluctuating renewables with green H2 storage for grid balancing, microgrids, curtailed power and supply of green gas. Unlock power-to-X, power-to-gas, commercial supply, heating & cooling use cases..

Hydrogen refuelling stations for private FCEV fleets or commercial users. Our containerised systems for on-site green hydrogen production enable you to replace grey hydrogen supply, make the switch from conventional combustion engine vehicles or make your own synthetic fuels and e-fuels..

Industrial applications replacing grey H2 and natural gas. Use it for green ammonia production, process heat for bricks and tiles, as a carrier gas for semiconductors, in blast furnace injection for green steel, renewable methanol, biofuel/biogas production, as well as in glass annealing or as a chemical feedstock.

Energy self-sufficiency for businesses and institutions. Use green hydrogen to unlock back-up energy, replace polluting diesel generators, research H2 solutions and energy independence, become completely energy self-sufficient, as well as unlock both on-grid and decentralised micro-grids.