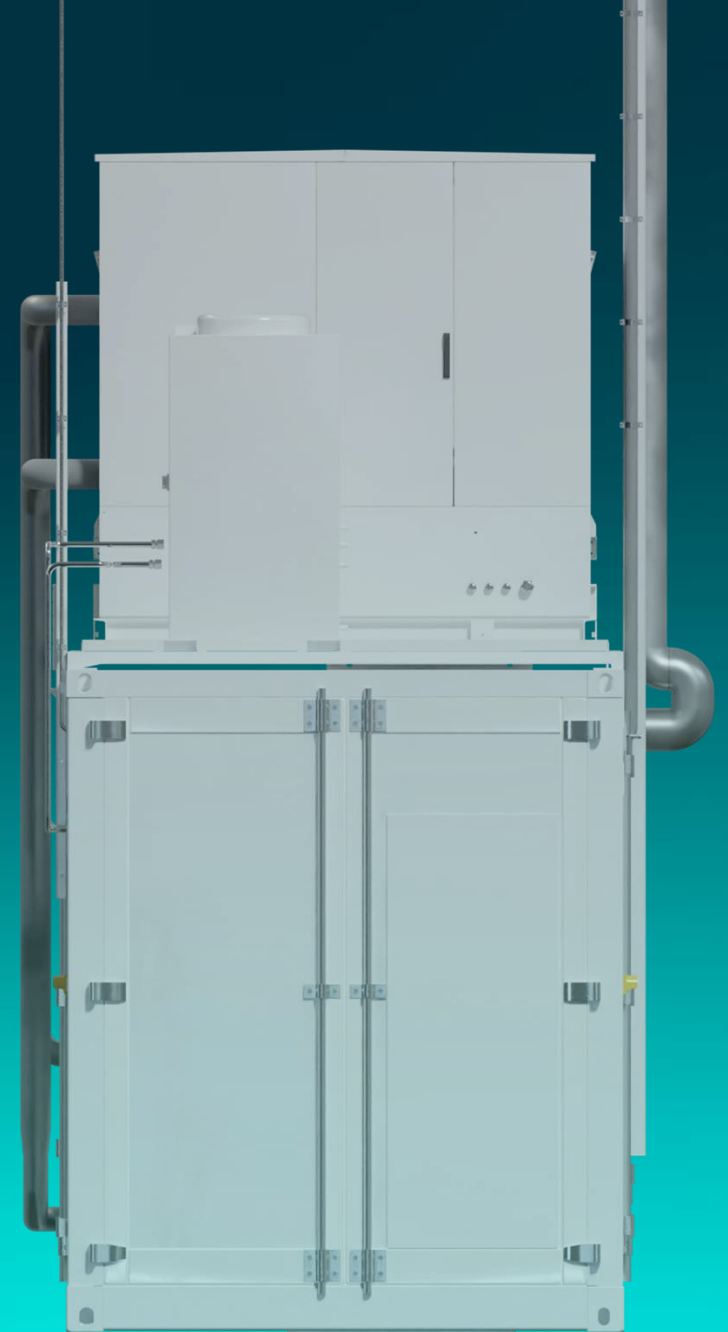
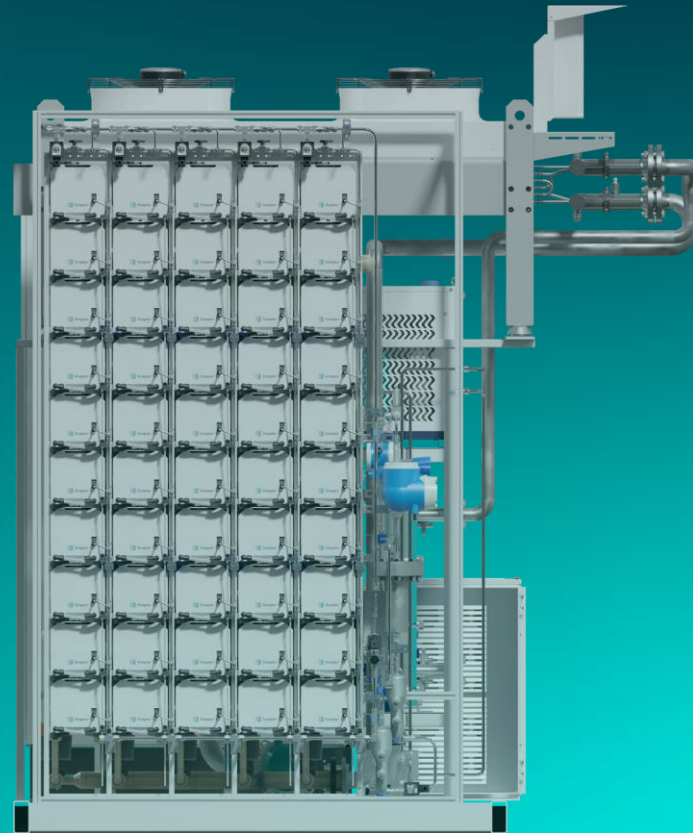
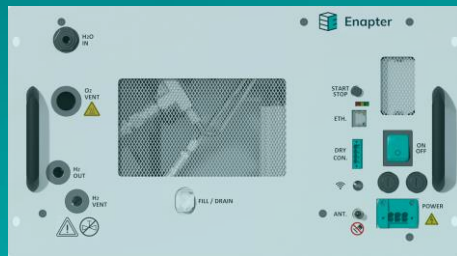
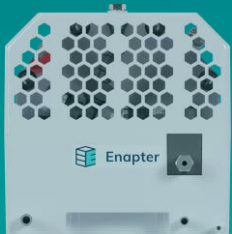


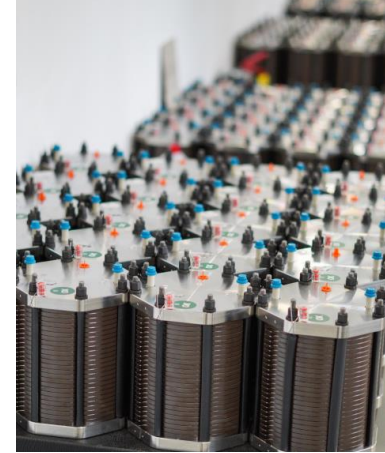
AEM Electrolyzers

Smart. Simple. Scalable

Enapter
Technical Presentation



_Enapter at a glance



15-year track record in AEM technology



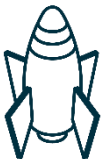
Commercial leader in patented AEM electrolysis



Industrialized **high-volume production** with quality focus



Uniquely modular product approach



Product-driven innovation with AI software



1_15-year track record in technology R&D



Enapter

Technical Presentation, August 2025

_Our vision

To live in a world where fossil fuels are no longer used and **green hydrogen** fuels power the world via renewable energy sources

_Our mission

To make green hydrogen affordable and accessible to all, using **AEM electrolyzers**

_Our **AEM** electrolyzers

Smart. Simple. Scalable



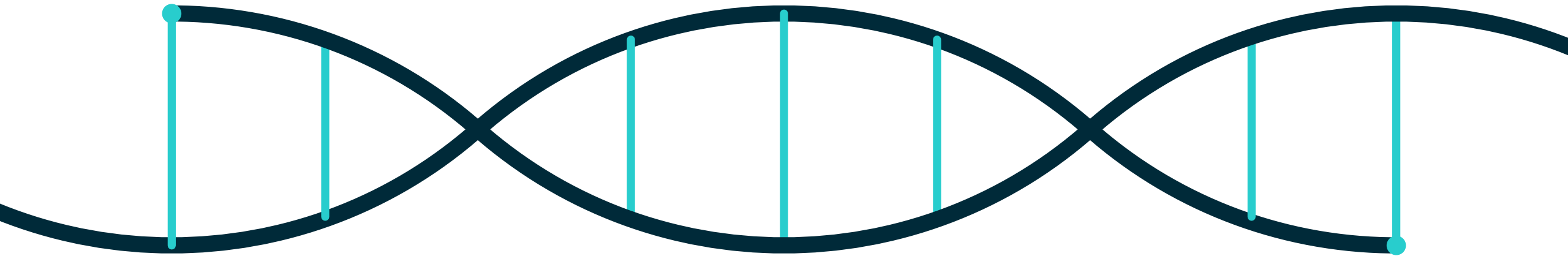
_15 years of AEM technology

Enapter's story is closely linked with AEM

2004-2009	2017	2021	2023	2024	2025
First prototype of the AEM Electrolyzer and patents of the dry cathode by Italian company ACTA	Sebastian-Justus Schmidt starts Enapter at Phi Suea House in Chiang Mai, Thailand	Enapter receives Earthshot Prize for its game-changing approach to scaling up AEM electrolysis	Enapter unveils the world's first MW AEM Electrolyzer, the AEM Nexus and expands its portfolio with the AEM Flex 120	Enapter starts a Joint Venture with Wolong Electric Group and launches Core Partner Program to scale even faster	Enapter launches the Stack T, building block for the AEM Nexus 2500 to participate in even larger projects

_Our foci: Technology, Innovation, CAPEX light

Smart. Simple. Scalable



World-class
R&D

System Design
& Engineering

Project
Support

Lighthouse
Manufacturing

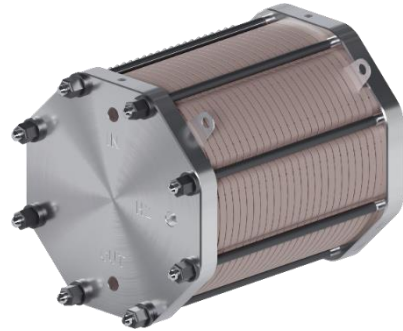
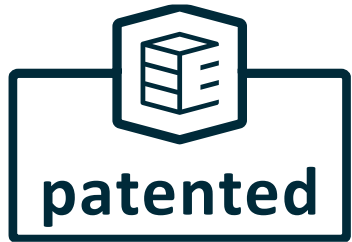
2_Commercial leader in AEM electrolysis



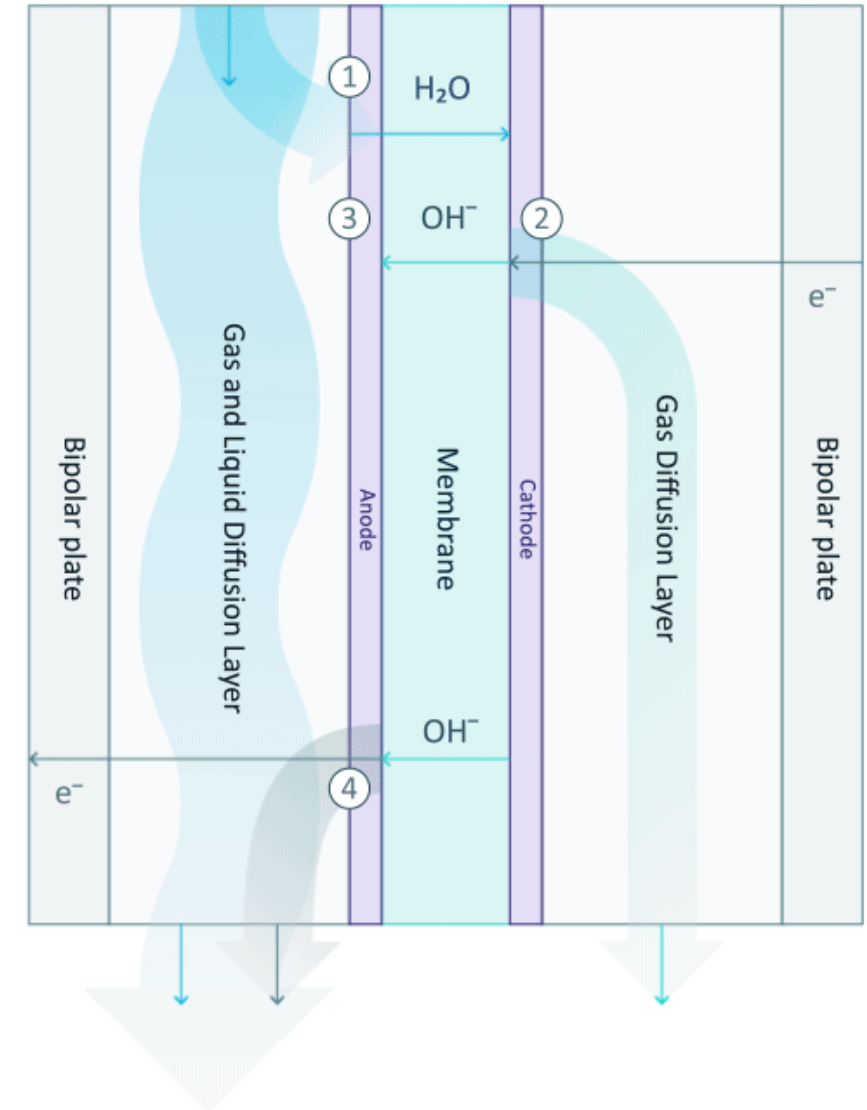
Enapter

Technical Presentation, August 2025

_How the AEM technology works



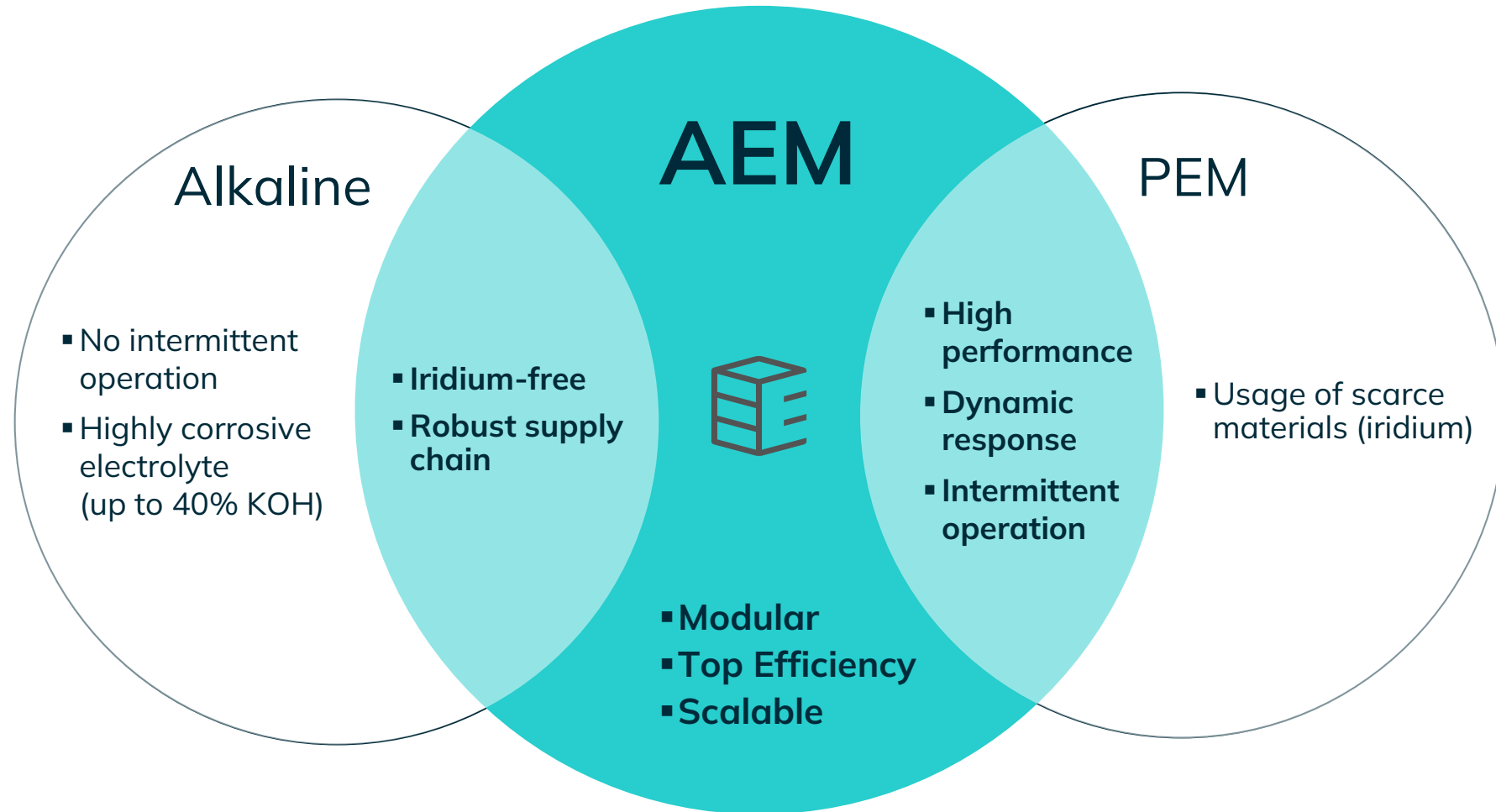
- Dynamic operation with renewable sources
- Strong patents
- Electrochemical compression to 35 bar
- Best-in-class efficiency
- Free from Iridium and PFAS



AEM: The best of both worlds



The strength of our technology



_AEM is the future: Technology review

AEM's Competitive Advantage

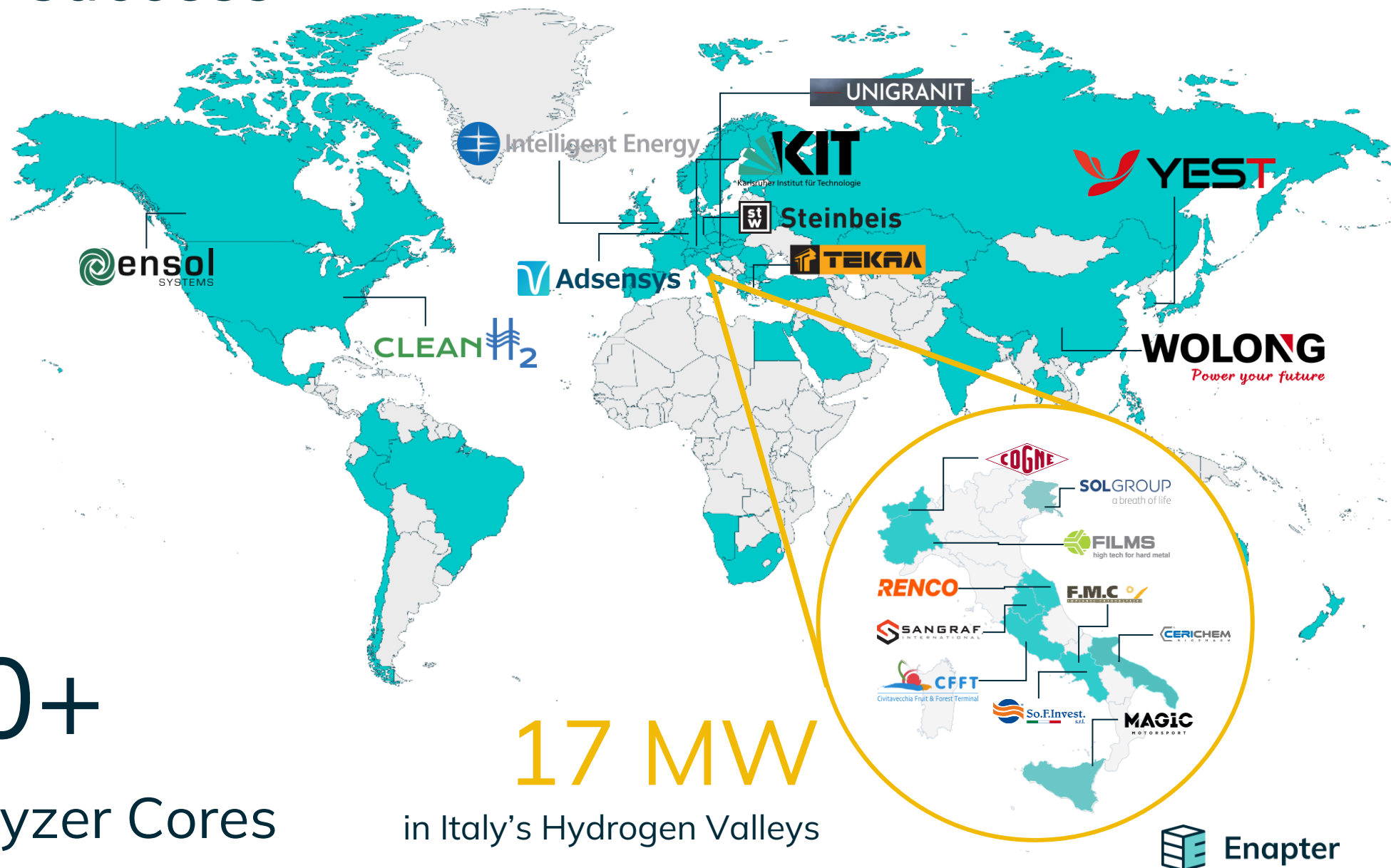
	PEM	Alkaline	 AEM
Supports intermittent renewables	✓	✗	✓
Iridium free	✗	✓	✓
Titanium free	✗	✓	✓
PFAS regulation ready	✗	✗	✓
Compact design	✓	✗	✓
High current density	✓	✗	✓
Electrochemical compression	✓	✗	✓
Safe-to-handle electrolyte	✓	✗	✓

_Enapter's success

375+
customers

55+
countries

12,000+
AEM Electrolyzer Cores



We optimize our electrolyzers with real-life data from our customers

2.700.000

Total operational hours



3_Industrialized production with strong quality focus



Enapter

Technical Presentation, August 2025

Industrial Mass Production



100% of our stacks are tested multiple times before leaving our factory



Electrode
Manufacturing
& Coating



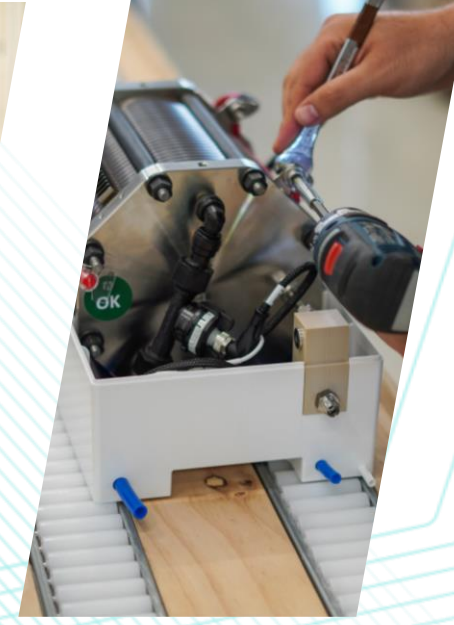
Stack
Assembly
Lines



First
Performance
Test



Pressurized
Leak
Test

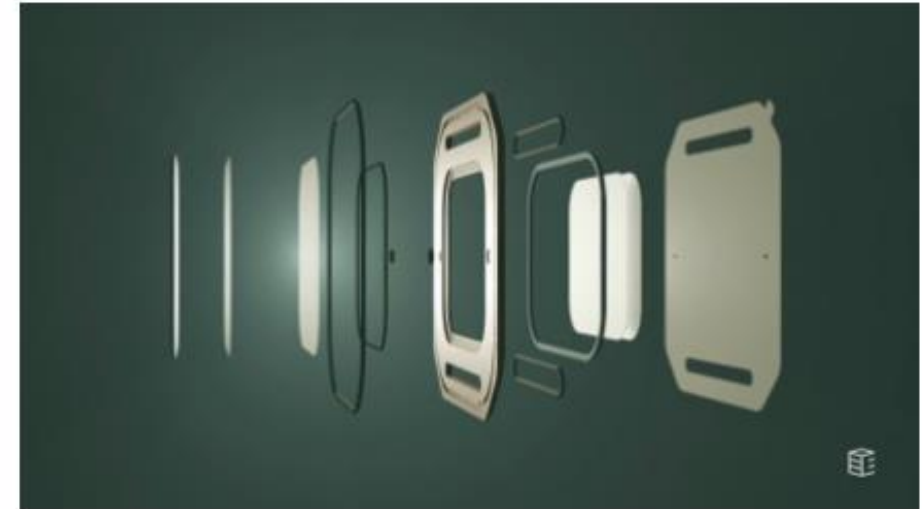
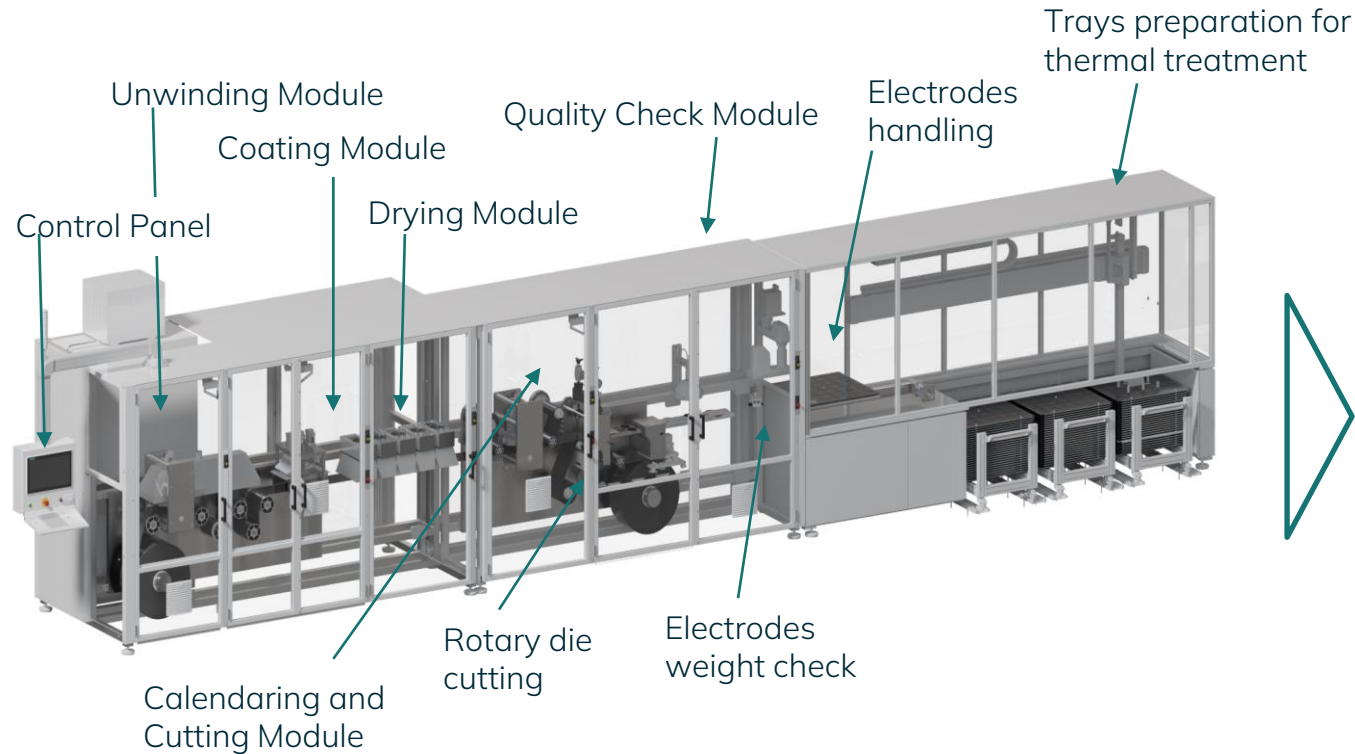


System
Assembly



Final
Acceptance
Test (FAT)

We are automating our manufacturing processes with a Lead Factory concept



Automated anode coating
Capacity: 300 stacks v4.1 per day

150MW Lead Factory concept
Replicable globally

_Enapter HQ Pisa

- 100% renewable energies
- Industrialized high-volume production



Wolong Enapter Hydrogen Technologies Co., Ltd

- BoP Manufacturing
- Shaoxing, Zhejiang, China



4_ Uniquely modular product portfolio



Enapter

Technical Presentation, August 2025

Modular systems scale faster



Computing in the past



Multi-core solution today



Electrolyzer in the past



Multi-core solution today

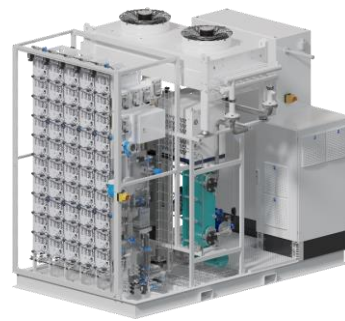
Our Hardware Products



Stack 4
2.4 kW



EL 4
2.4 kW



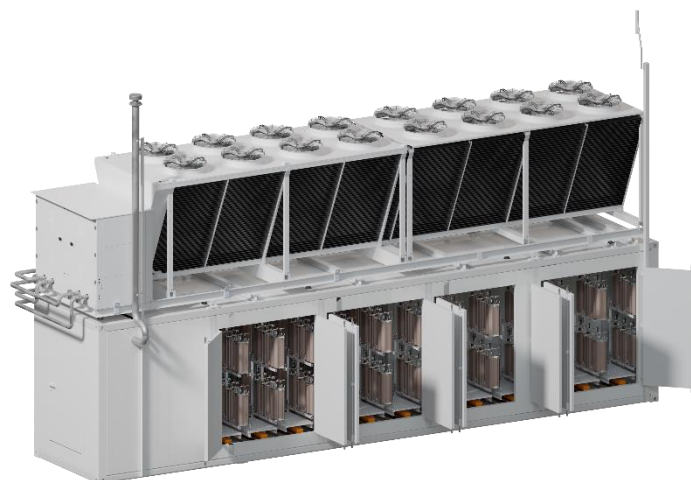
AEM Flex 120
120 kW



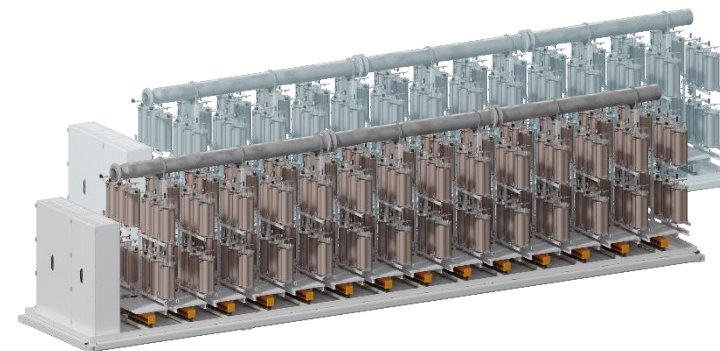
AEM Nexus 1000
1 MW



Stack T
25 kW



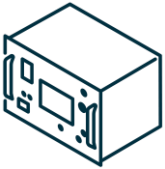
AEM Nexus 2500
2.5 MW



Skid AEM solutions
Up to 100 MW

_Single-core: The AEM EL 4

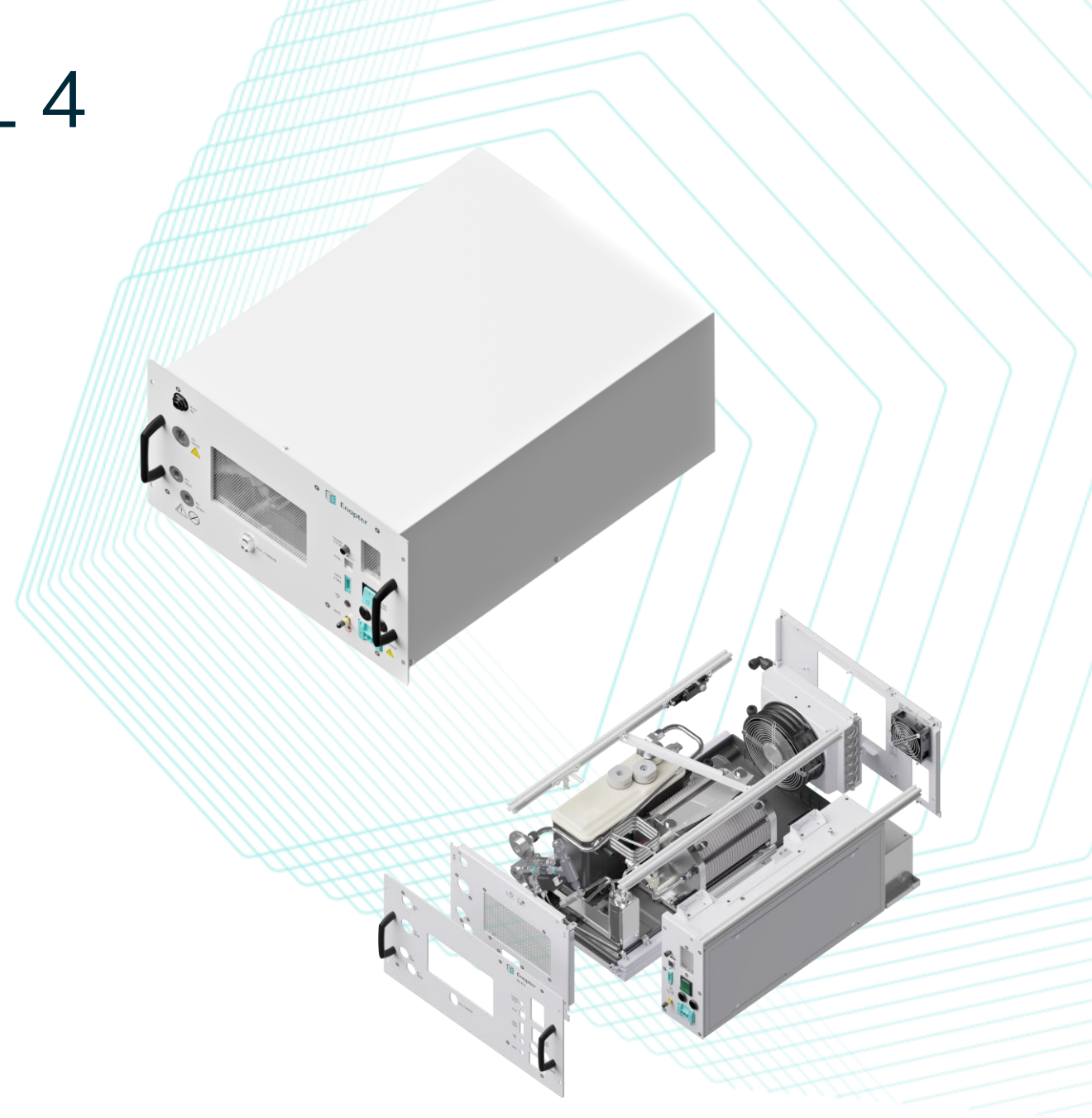
Enapter Electrolyzers



- **Production rate: 0.5 Nm³/hr**
- Power consumption: 2.4 kW
- Efficiency: 4.8 kWh/Nm³ - **53.3 kWh/kg**
- 99.9% or 99.999% purity at 35 barg
- Fully automatic operation, **AI-optimized**
- Modular and scalable

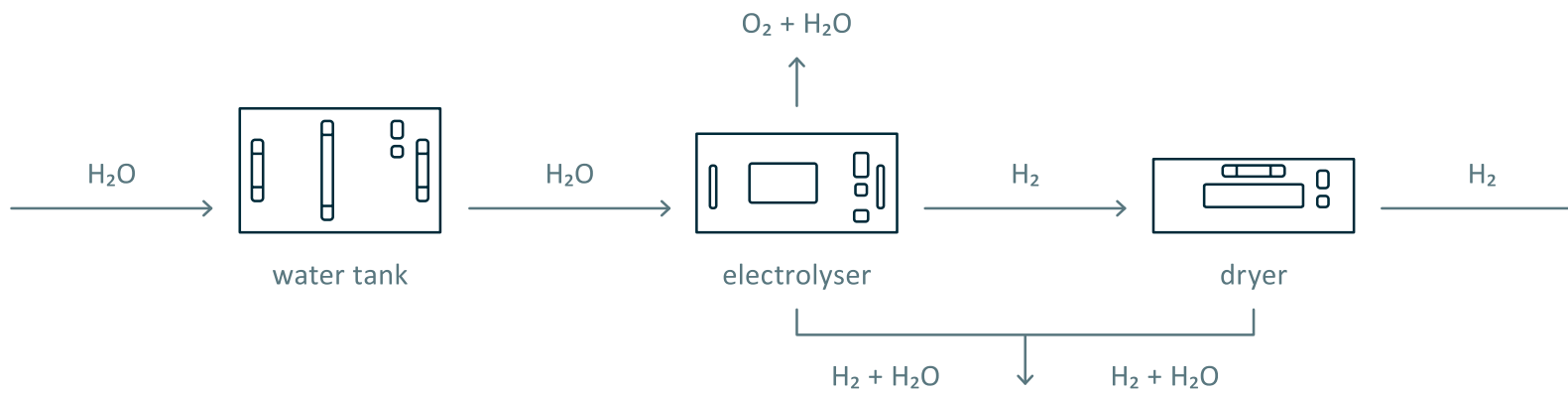
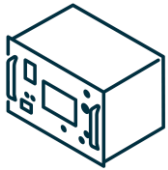
Datasheets:

EL 4 AC ([Air cooled](#) / [Liquid cooled](#))



_Single-core: The AEM EL 4

Enapter Electrolyzers



Datasheets:

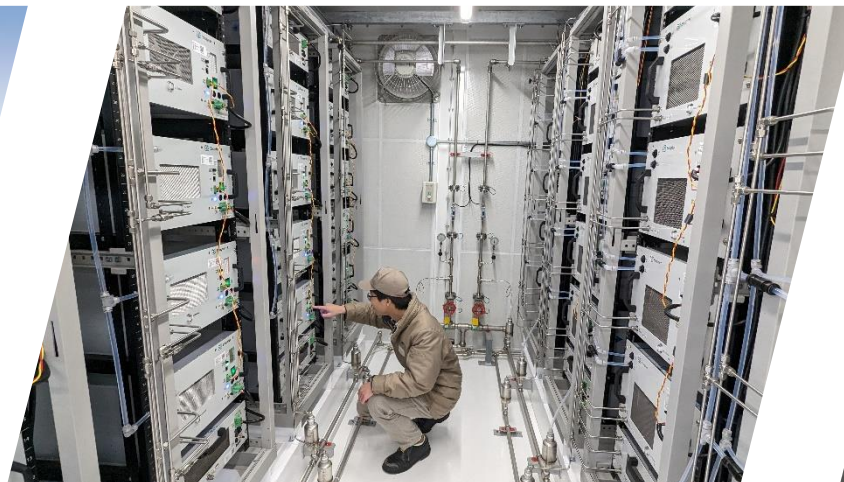
≡ [Dryer DRY 2.1](#)

≡ [Water Tank WT 2.1](#)



_Single-core applications

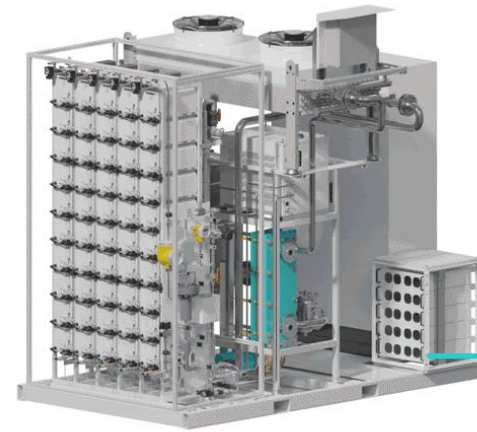
Enapter's AEM single-core electrolyzers



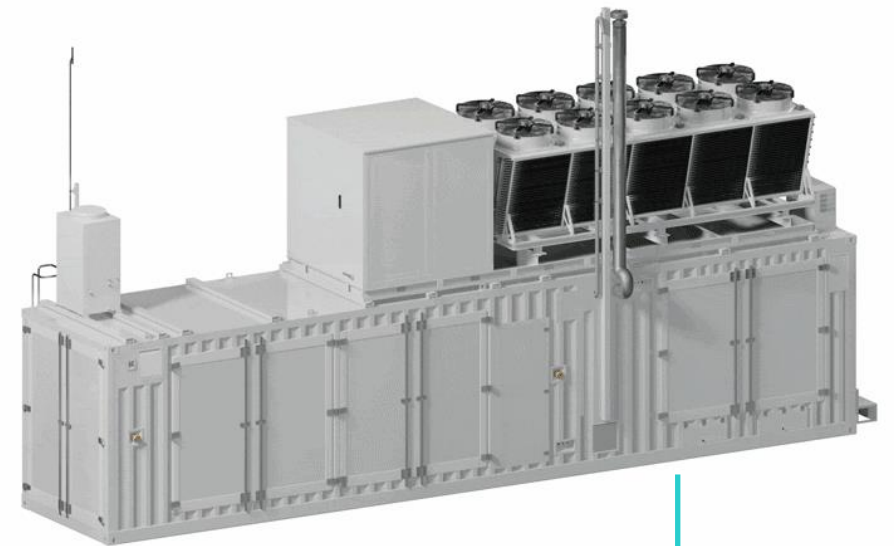
_Multi-core solutions

Enapter's AEM multi-core electrolyzers

- Top-class efficiency
- Modularity
- Built-in redundancy
- Rapid reaction to intermittent renewables
- Fully automatic operation, AI optimized



AEM Flex 120
50 cores | 120 kW

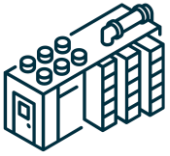


AEM Nexus 1000
420 cores | 1 MW

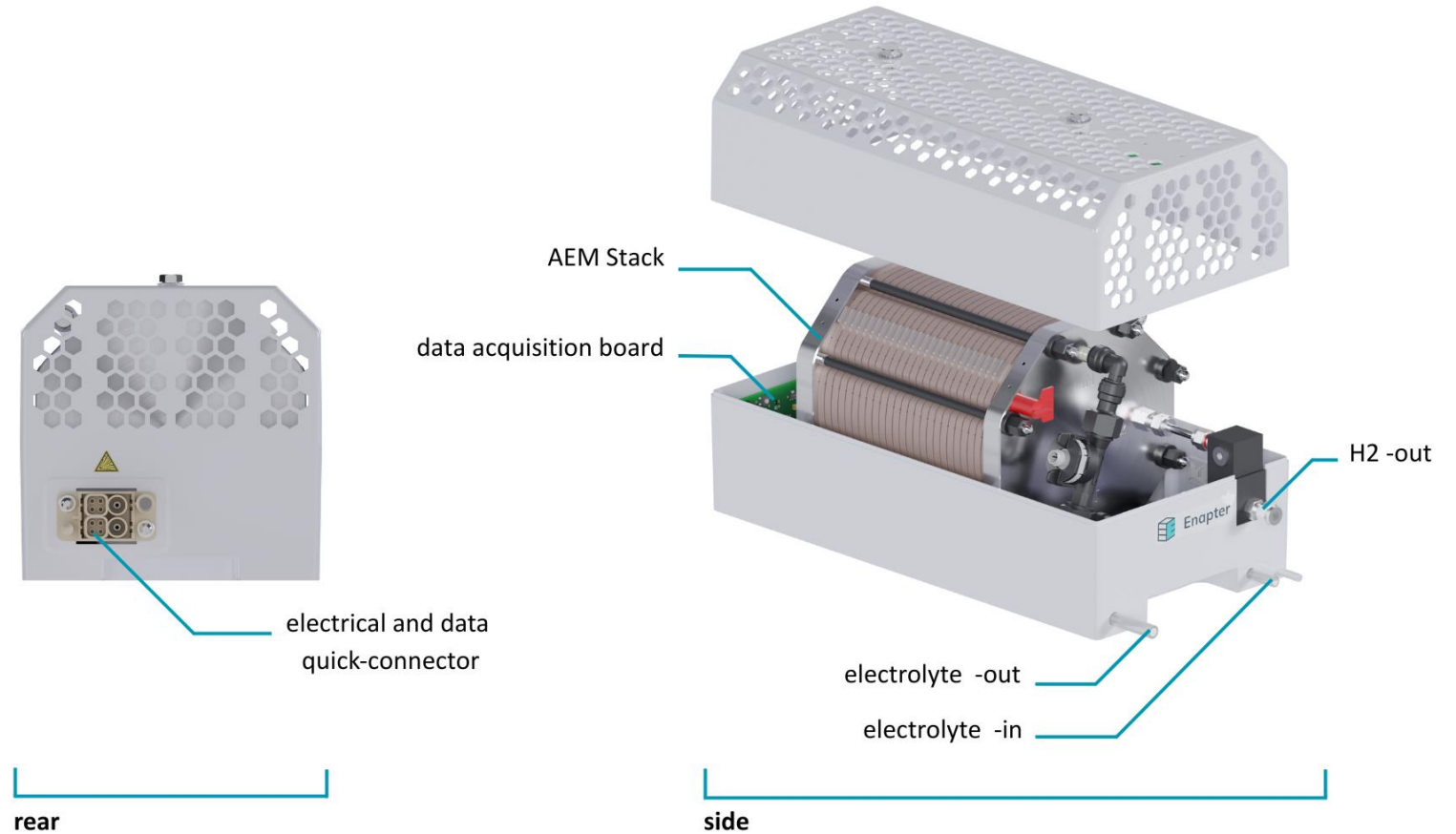
Multiple stacks, One Balance-of-Plant

_Multi-core: The Stack Module

Enapter Electrolyzers

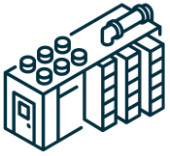


- Modular
- Standardized
- 20 kg
- Quick interfaces

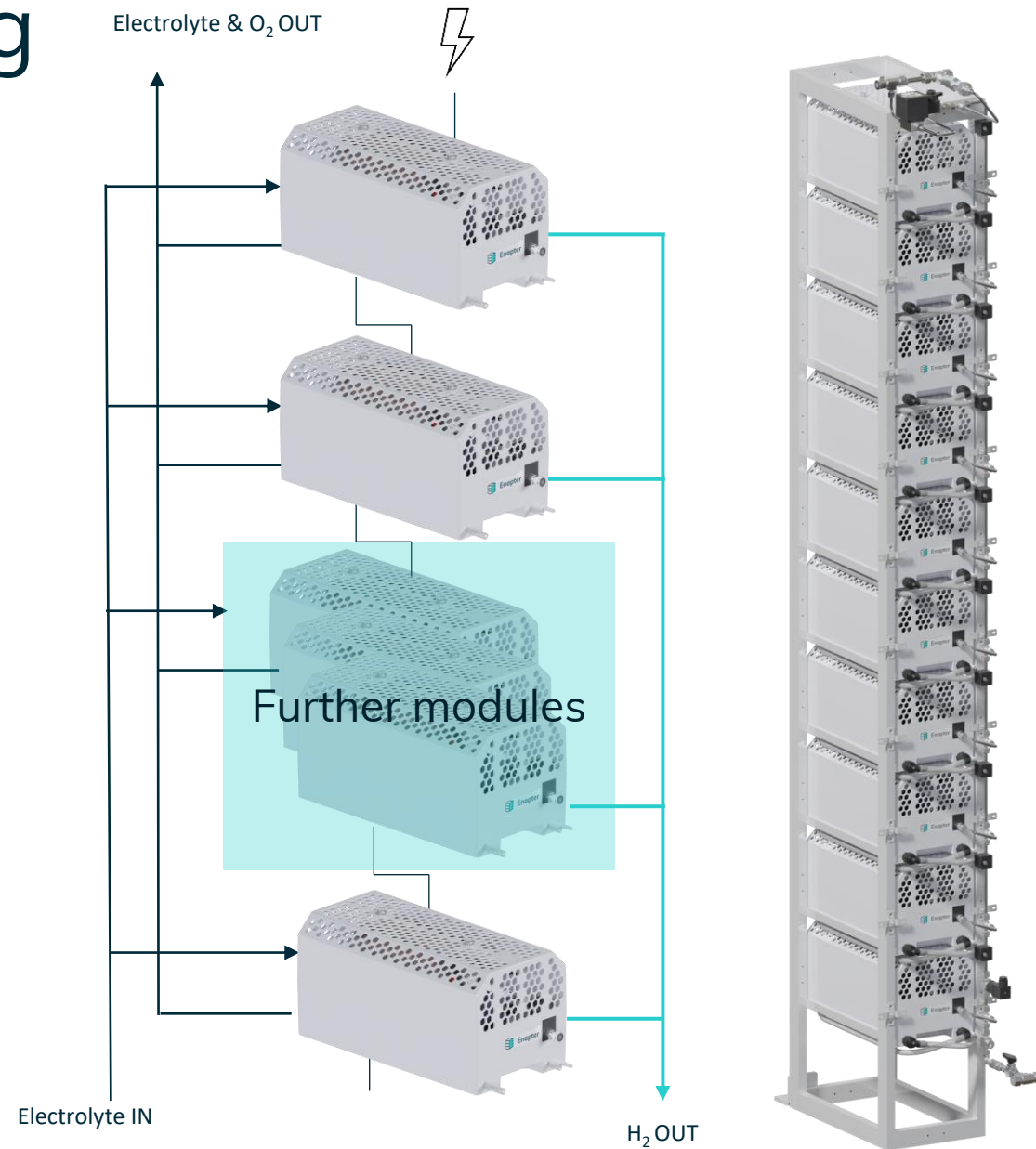


_Multi-core: The String

Enapter Electrolyzers

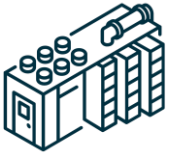


- 10x Stack Modules in series
- Dedicated PSU
- Controlled individually
- Produces 5 Nm³/h

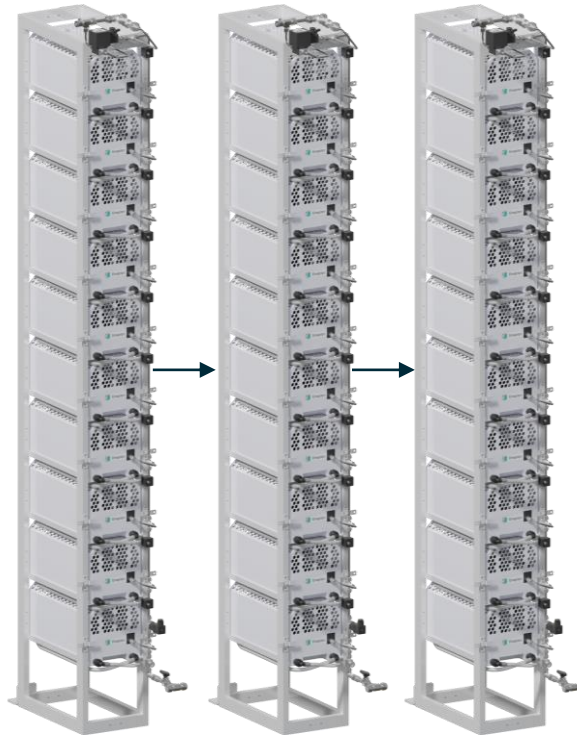


_Multi-core: The String

Enapter Electrolyzers



- Several strings in parallel
- Centralized components:
 - Electrolyte tank
 - Electrolyte cooling
 - Electrolyte pumps



AEM Nexus 1000

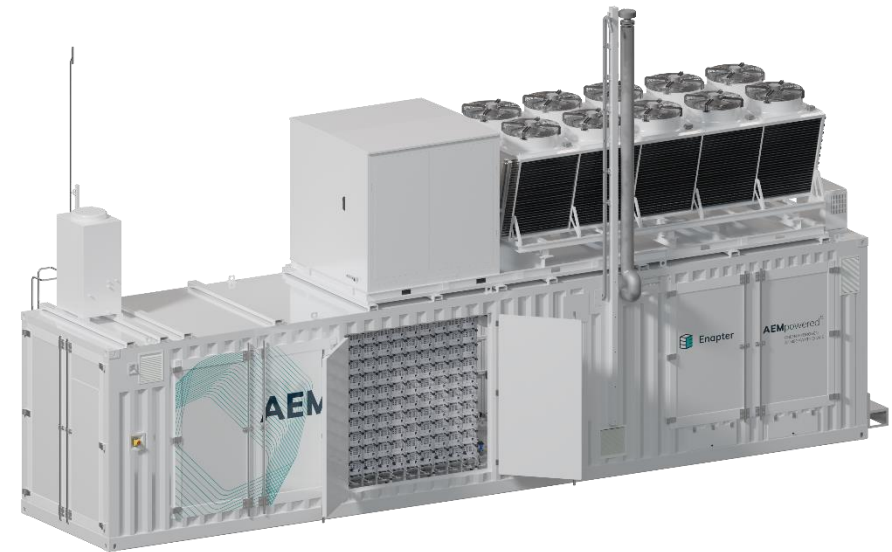
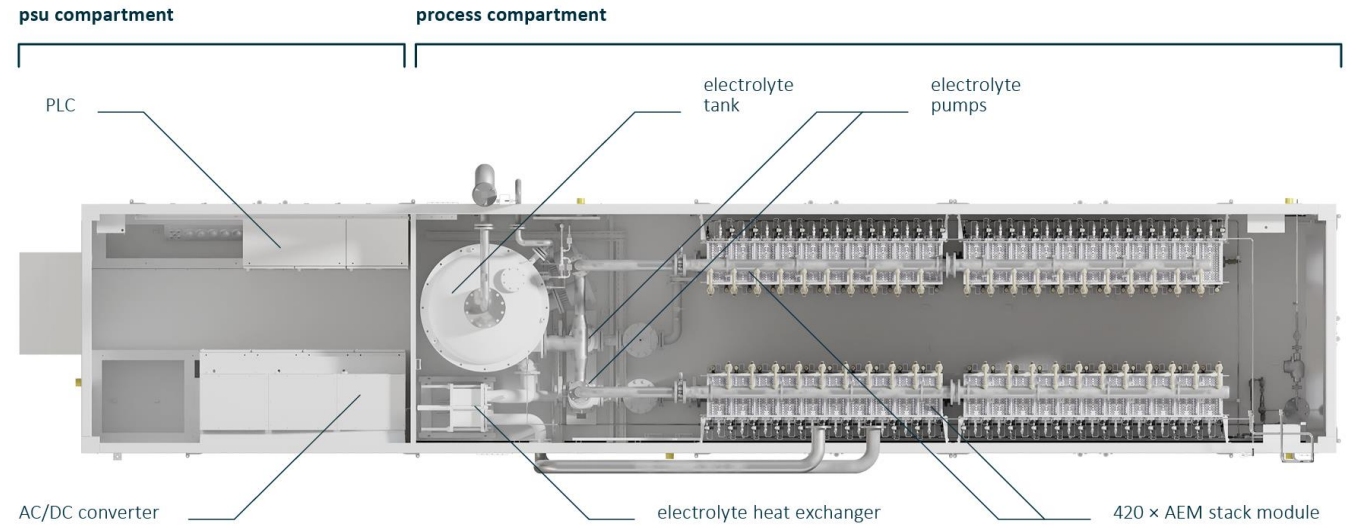
- Best-in-class efficiency
- Modular & redundant



_Multi-core: AEM Nexus 1000

Enapter Electrolyzers

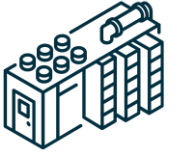
- 210 Nm³/h or 453 kg/d
- Efficiency: **51.3 kWh/kg**
- 99.9% or 99.999% purity
- Operational flexibility: **1-100%**
- Real-time reaction to renewables
- Fully automatic operation, **AI-optimized**
- Modular & scalable



Datasheet:

[AEM Nexus](#)

Nexus applications



Enapter's AEM multi-core electrolyzers



- Industrial applications
- Refueling solutions
- Grid balancing & energy storage



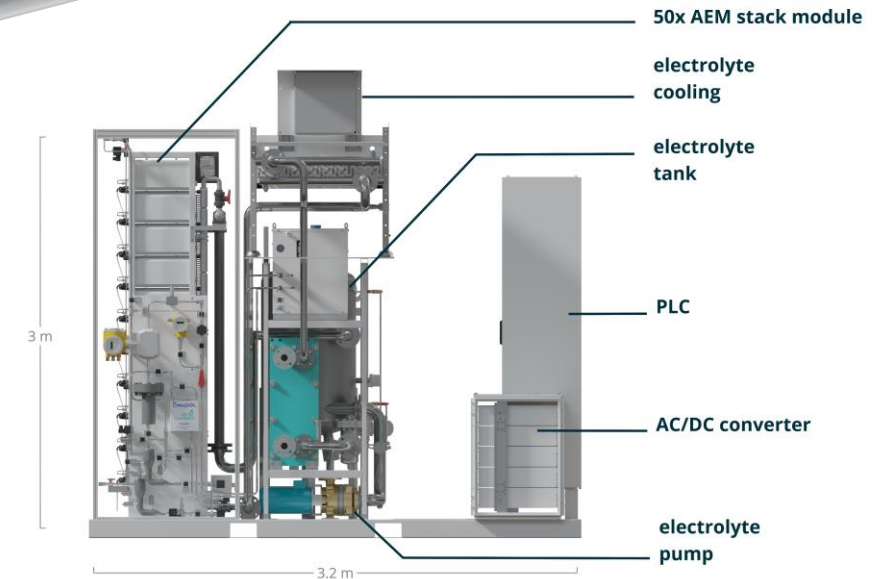
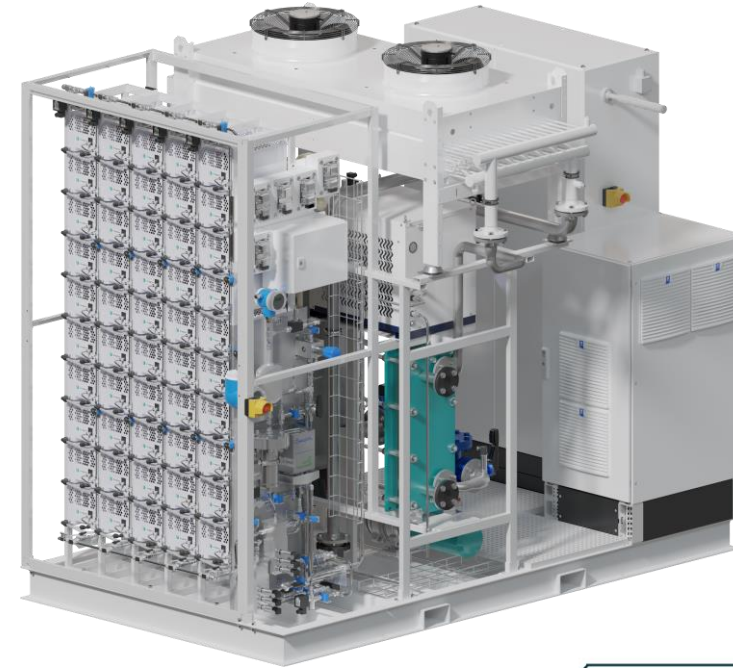
_Multi-core: AEM Flex 120

Enapter Electrolyzers

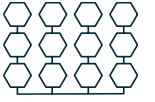
- 25 Nm³/h or 53.9 kg/d
- Efficiency: **53.3 kWh/kg**
- 99.9% or 99.999% purity
- Operational flexibility: **12-100%**
- Real-time reaction to renewables
- Fully automatic operation, **AI optimized**
- Modular & scalable

Datasheet:

[AEM Flex 120](#)



Flex applications



Enapter's AEM multi-core electrolyzers



Refuelling: road, maritime, air



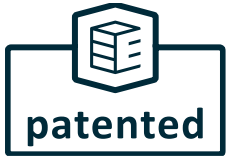
Industrial Use



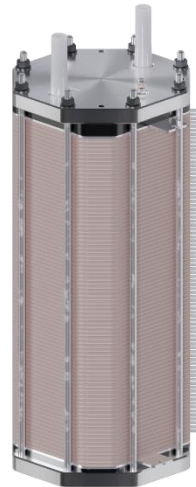
H2 pilot projects

_Next Generation AEM Stack

Enapter's consolidated AEM Technology



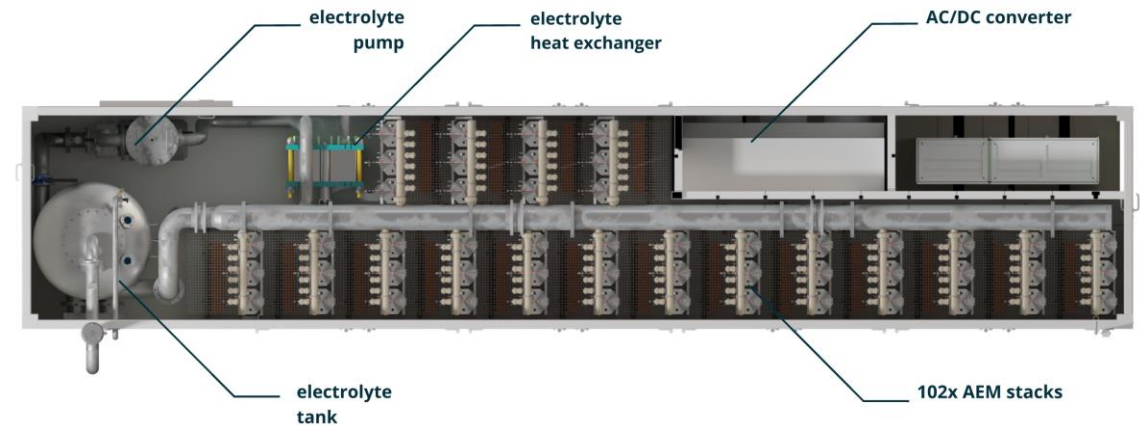
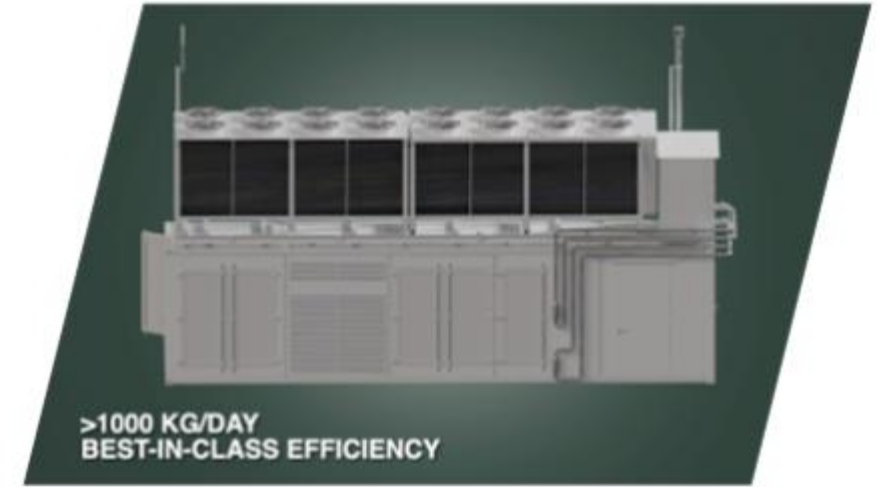
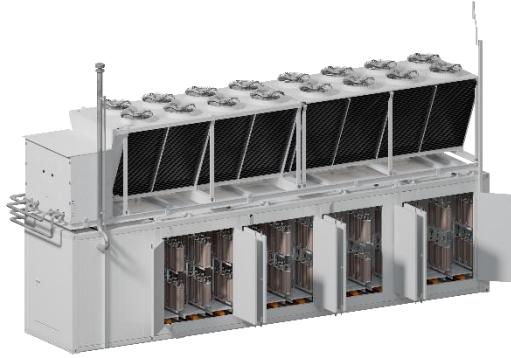
- >10x production rate
- Optimized current distribution
- Improved new Fluid Dynamics
- State of the Art Materials
- Designed for **automation**



_Multi-core: AEM Nexus 2500

Enapter Electrolyzers

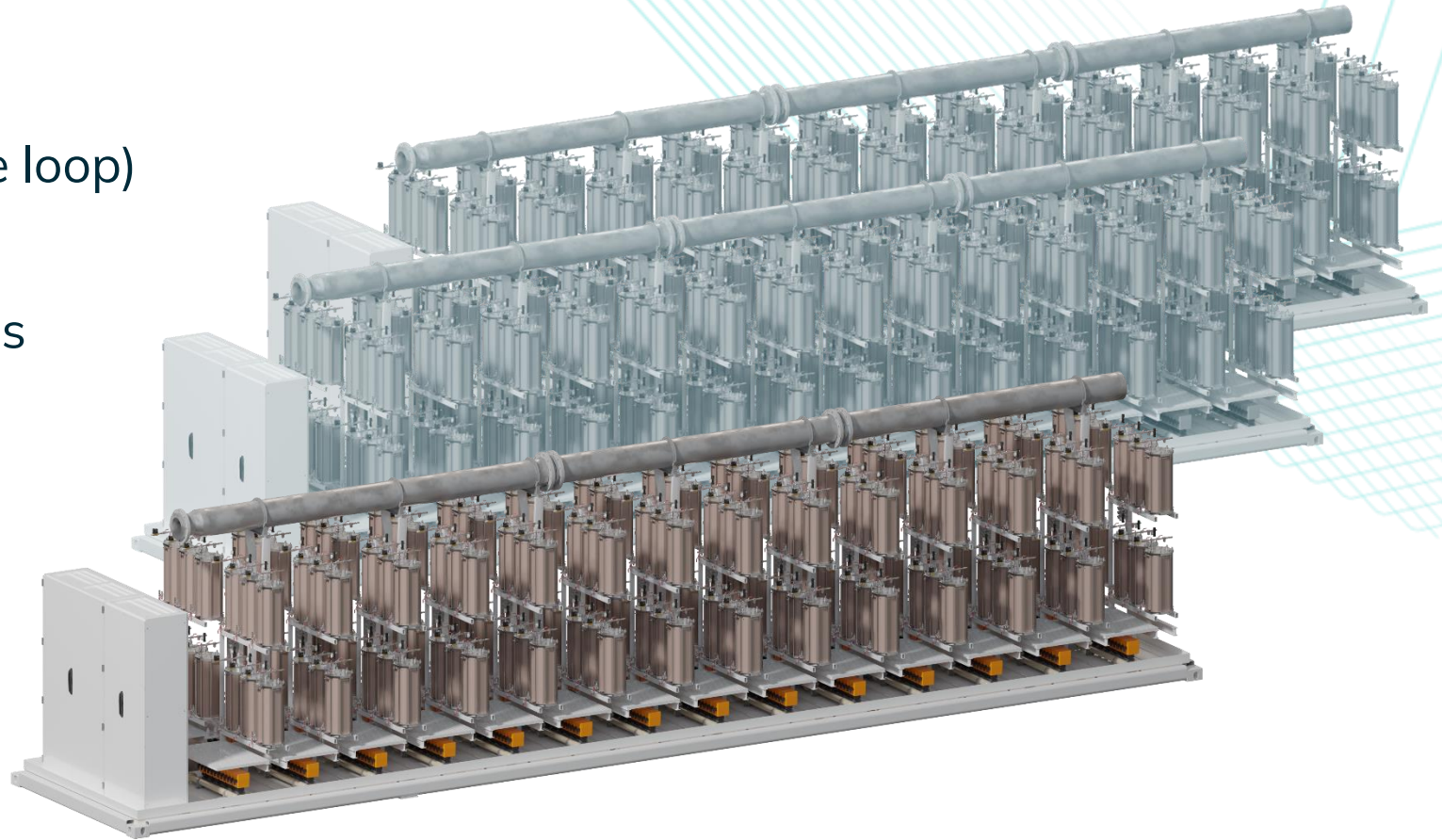
- 500 Nm³/h
- Efficiency: **51.3 kWh/kg**
- 99.9% or 99.999% purity
- Operational flexibility: **1-100%**
- Real-time reaction to renewables
- Fully automatic operation, **AI-optimized**
- Modular & scalable



_Multi-core: AEM skid systems

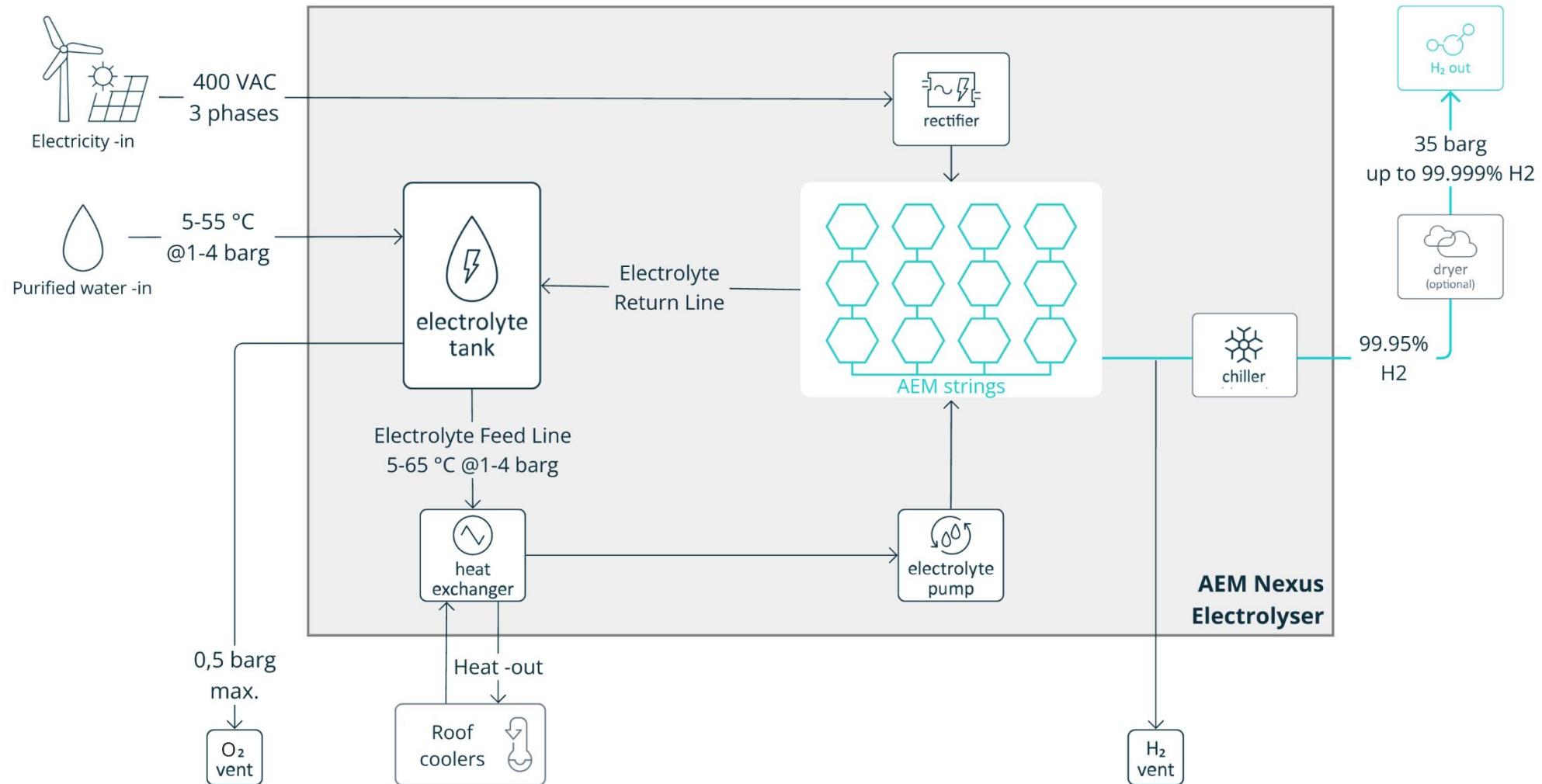
Enapter Electrolyzers

- Custom **skid-based** solutions
- Core BoP (centralized electrolyte loop)
- **100 MW** projects range
- Real-time reaction to renewables
- Modular & scalable



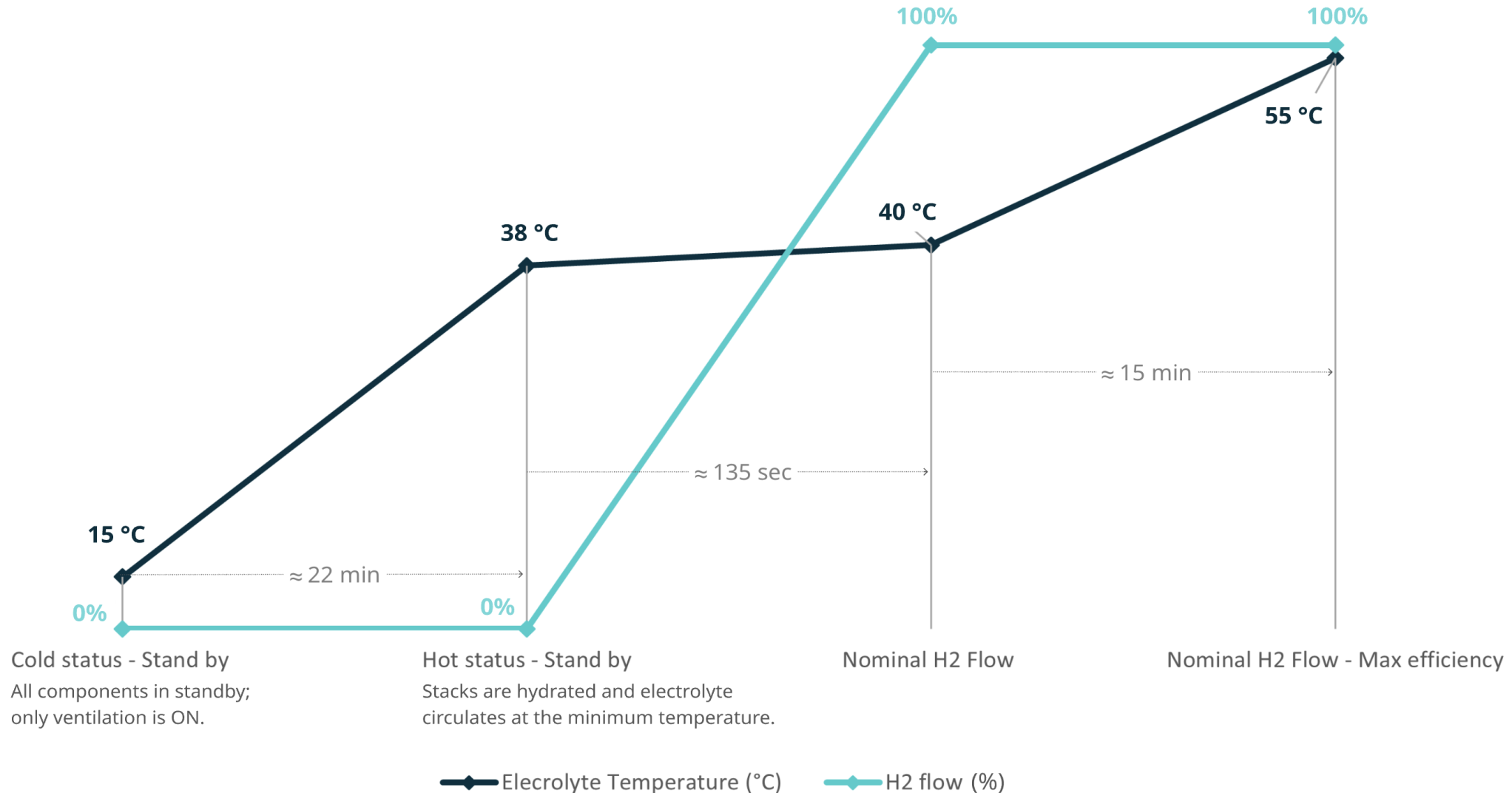
Simplified PFD

Enapter multi-core Electrolyzers



_Start-up sequence

Enapter multi-core Electrolyzers



_Minimal Downtime – Optimized OPEX

Modularity for maximum ROI



1 cell fails

Months of downtime - No H2 produced



Weeks of complex replacement

X00,000 EUR
for stack replacement
and site services



1 cell fails

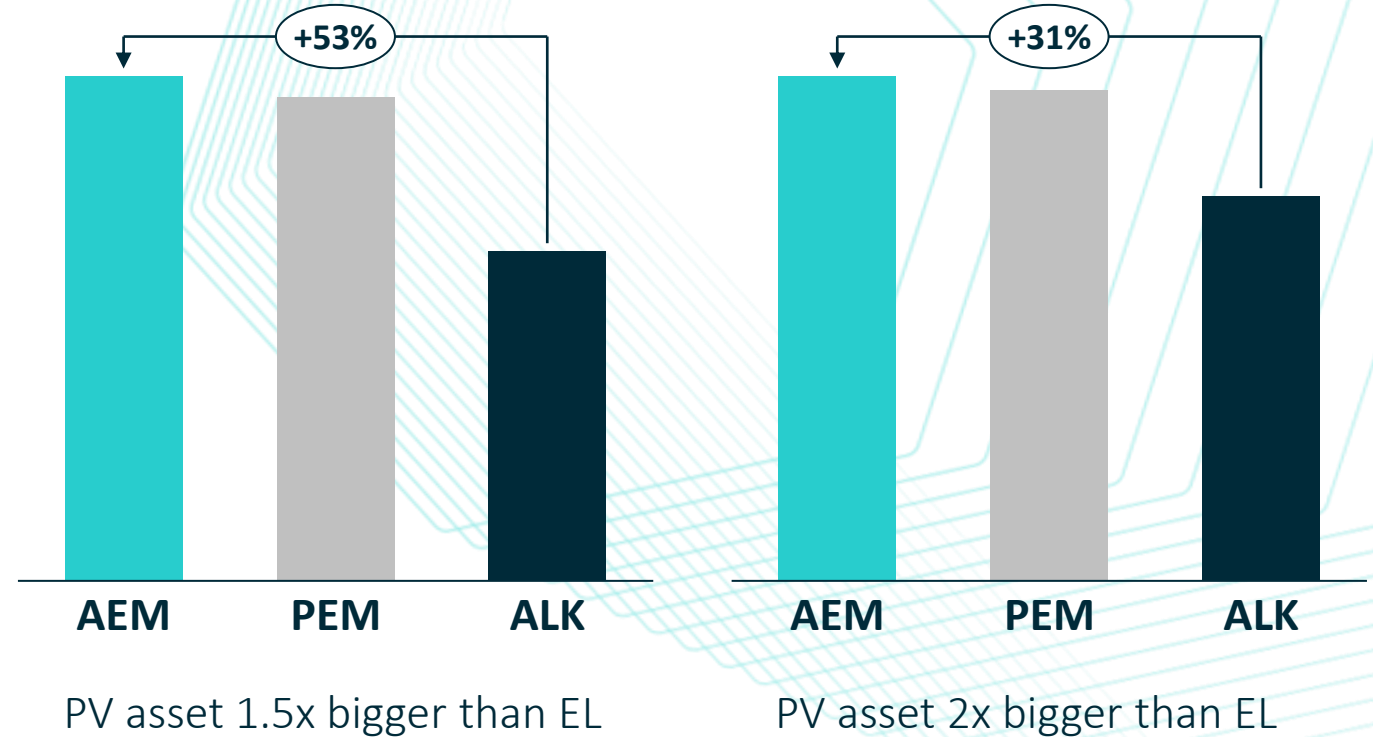
Plug & Play
replacement in **days**
at a fraction of the cost

99% production continues

_The most flexible MW systems in the market

Enapter's competitive advantage: Best flexibility

- ✓ Operational flexibility of 1-100% due to modularity of our multicore electrolyzers
- ✓ Up to 53% increase¹ in annual hydrogen production for 1 MW system compared to competitors



¹ Calculations based on a 1 MW electrolyser (for Enapter: AEM Nexus 1000) coupled with a 1,5 MW & 2 MW solar PV asset in Dusseldorf. Irradiation data from National Renewable Energy Lab (NREL). Operational flexibility of average PEM competitors assumed to be 10-100% and of average ALK competitors assumed to be 40-100%.

Enapter's electrolyzers in hydrogen projects of any size!

Decentralized hydrogen production systems



Scaling of industrial solutions



Large-scale production of hydrogen derivatives



Central production for global demand



Stack 4

10 MW



Stack T

100 MW

Hybrid applications

>1 GW

5_Product-driven innovation with AI software



Enapter

Technical Presentation, August 2025

_5 reasons for Enapter

- **Best-in-class efficiency** to maximize hydrogen output and minimize LCOH
- **Redundancy** as a key design principle to guarantee continuous operation
- **No Iridium or PFAS** for lower supply chain risk and conformity with future regulations
- **Highest flexibility** to perfectly capture every kWh of renewable energy
- **Powerful AI-optimized software** to manage all devices in your energy system

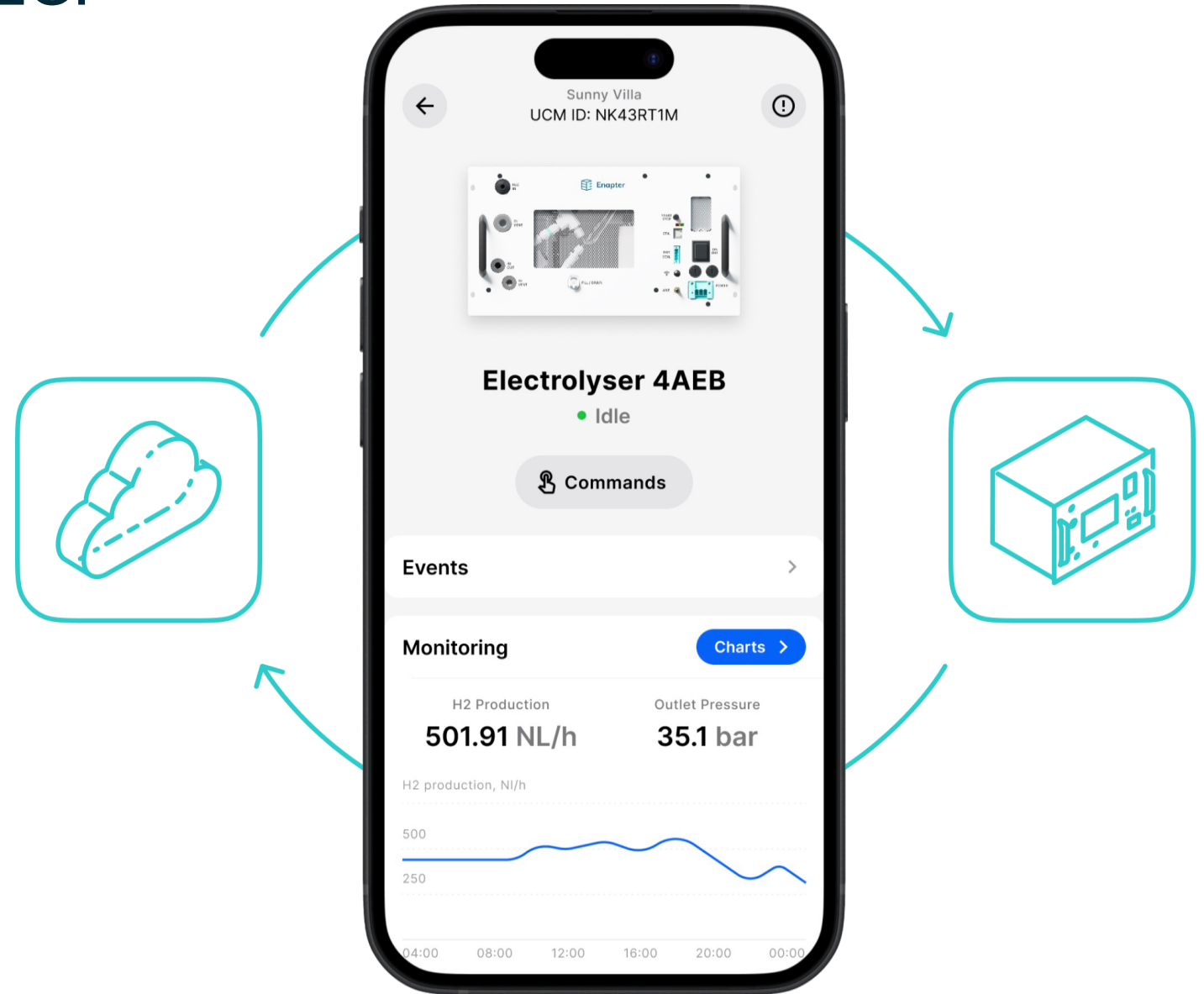


_Intelligent electrolyzer

Our foundation

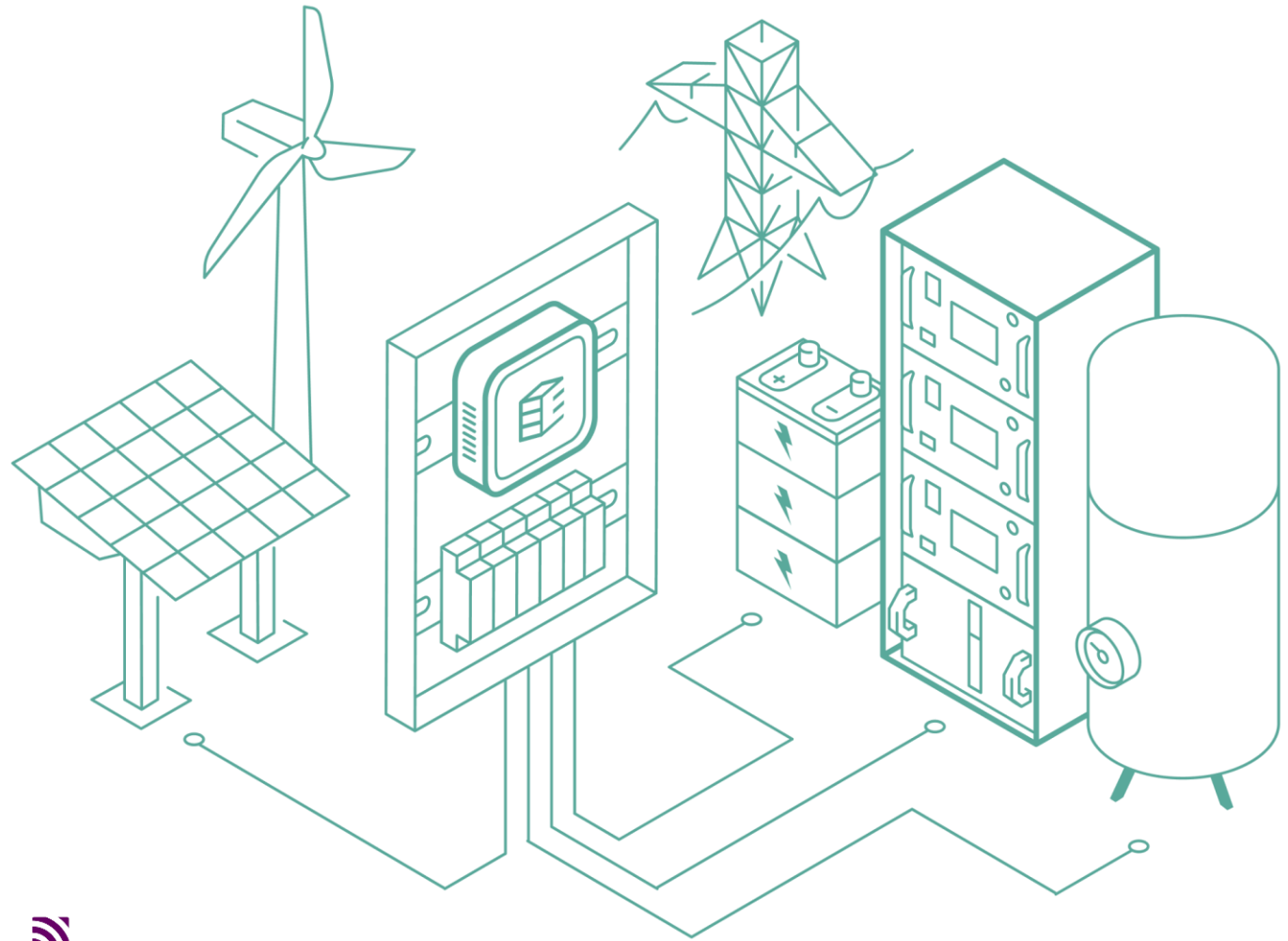
Our electrolyzers are equipped with hardware and software which makes them smart:

- Powerful Cloud Dashboards
- Android and iOS Apps
- Preventive Maintenance



_Product-driven innovation with AI software

- One Enapter Software for all devices in an energy system
- Production optimization with innovative AI software
- Based on 2.700.000 million total operating hours
- All Enapter units constantly learning from each other in various climate zones and environments



_Energy Monitoring

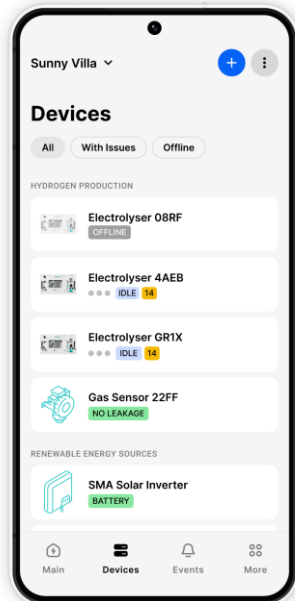
- Integrated AI for optimal efficiency
- Real Time Monitoring and Control
- Advanced Data Insights
- Predictive Maintenance
- Integration with third party systems
- Access via App and Browser



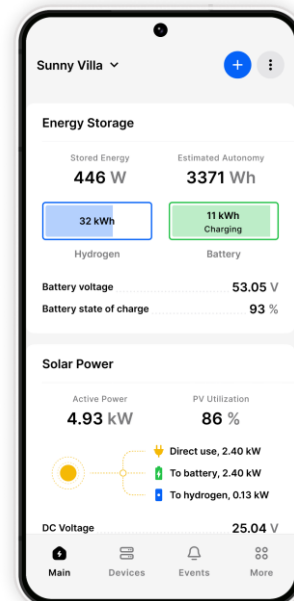
_Customers can control their complete system

Enapter's competitive advantage: IIoT* Software Solution

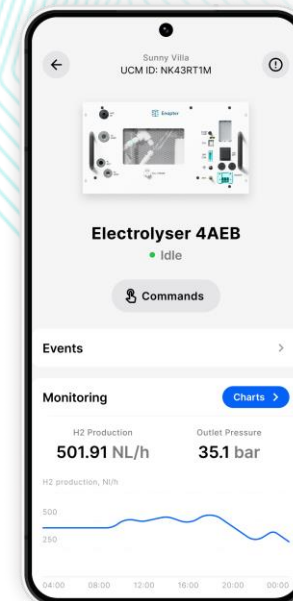
Integrate any energy device



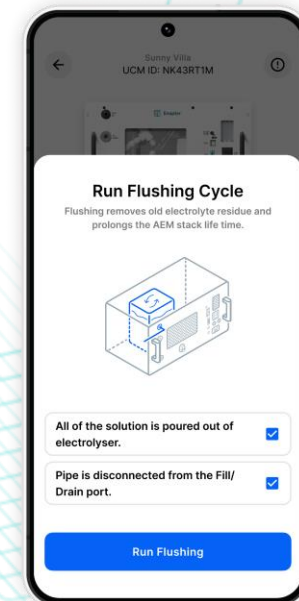
Oversee key metrics



Control devices remotely



In-App Maintenance Instructions



Open-source Blueprints Marketplace

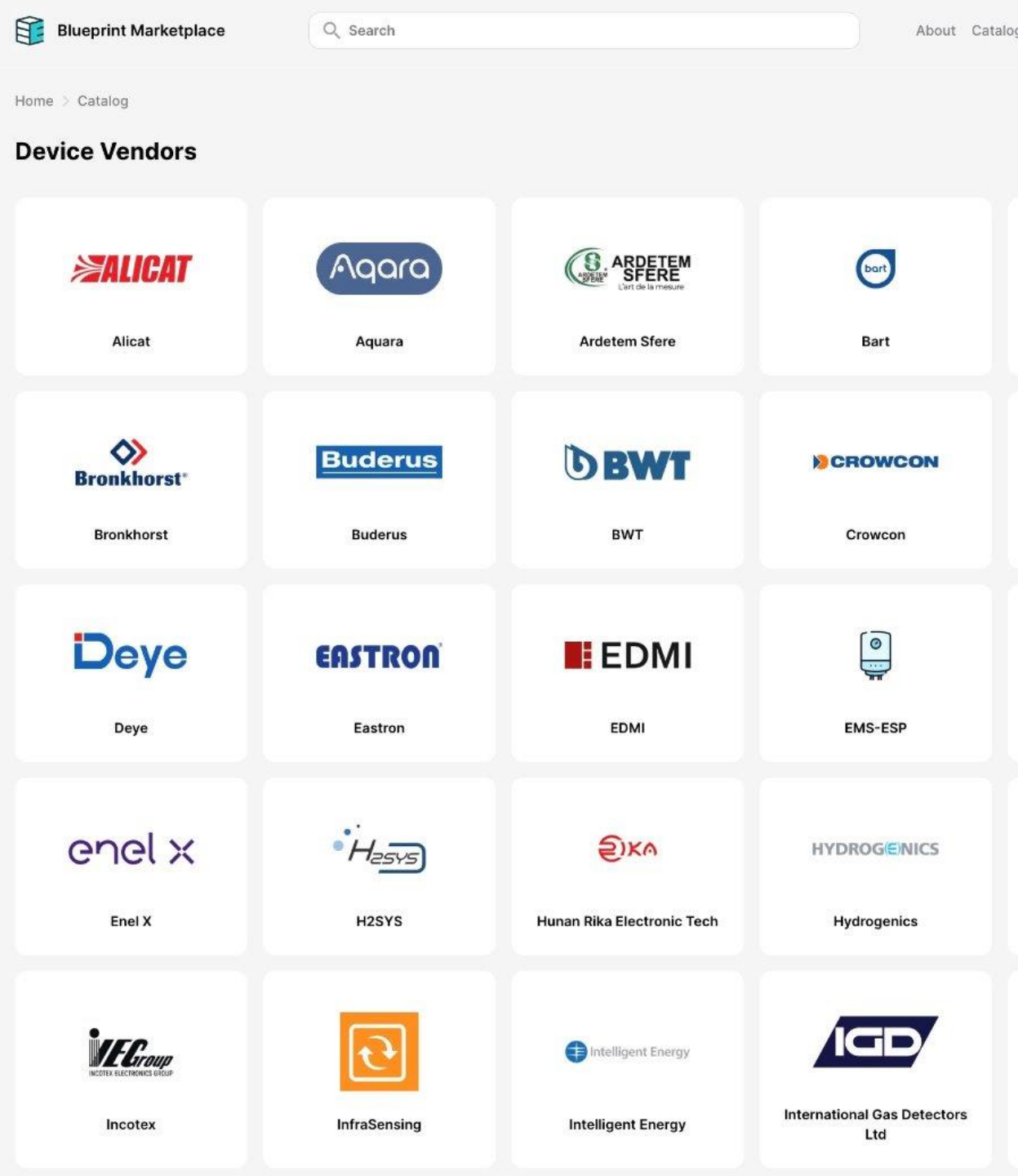
What makes us different?

Open-source collection of energy devices integrations. This helps our partner with rapid development of energy management systems.

<https://marketplace.enapter.com>

<https://github.com/enapter/marketplace>

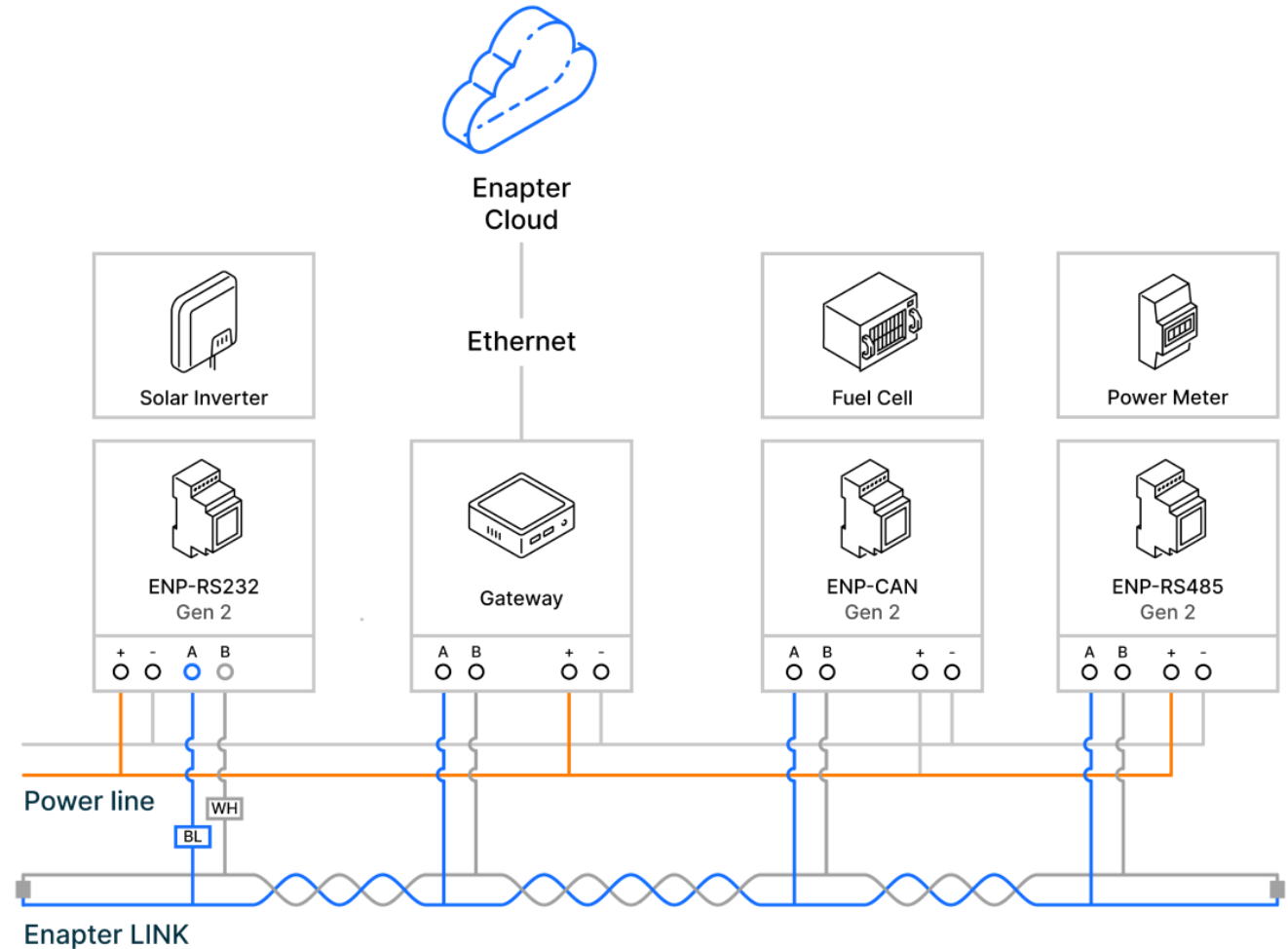
50+ Vendors



_Meet the new EMS Toolkit 3.0

What's new?

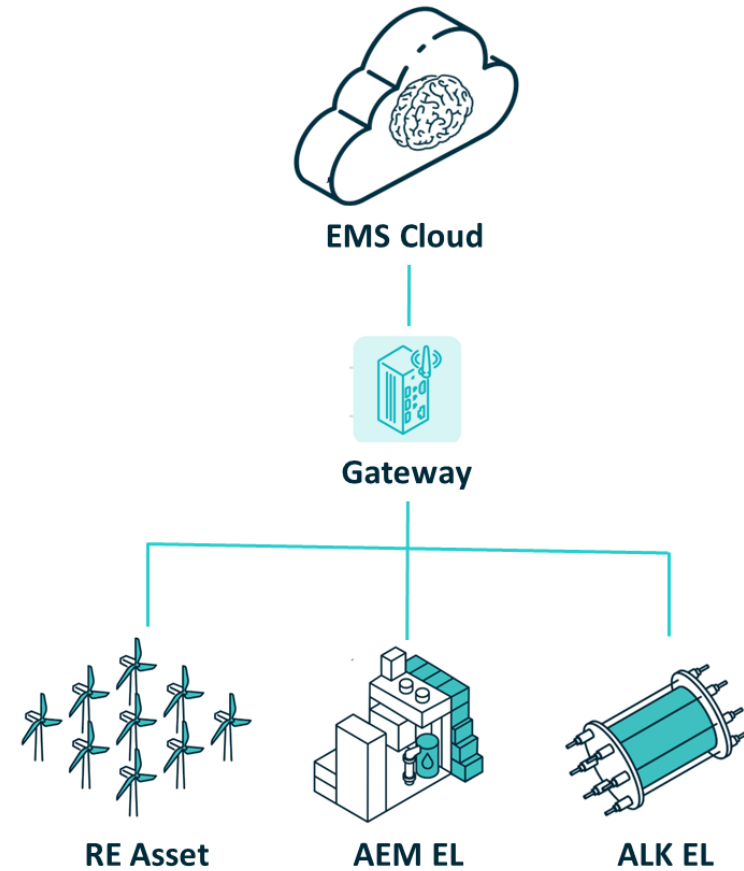
- **Industrial-ready**
Enapter LINK wired communication via UCM M2, industrial hardware and protocols support: OPC UA and MQTT
- **Cybersecurity Compliance**
The system complies with the EU Cyber Resilience Act
- **Local-first Architecture**
Secure and reliable energy management system based on open-source Enapter Industrial Linux



_Our AI software in action: Integrated battery energy storage and hybrid electrolysis systems



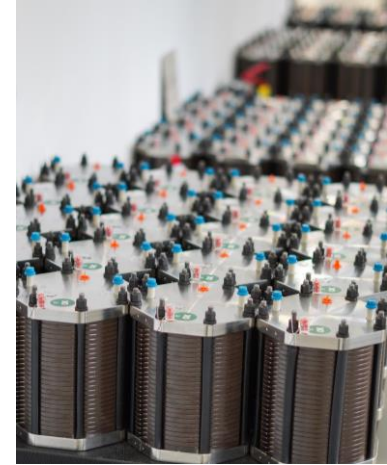
Enapter EL + Battery
Energy Storage System



Enapter EL + Alkaline EL

Key Takeaway

Enapter – a reliable partner



Commercial leader in AEM technology



Design Principles: **modularity and redundancy**



Thousands delivered, millions of operational data



An **AI software** for all devices in your energy system



Stack T and AEM Nexus 2500 – our next generation



Enapter can participate in **hydrogen projects of any size**



Smart.
Simple.
Scalable.

 @enapter
 youtube.com/enapter
 www.enapter.com



Industrial solution | ABC Klinker, Germany



Decarbonizing brick production

- 1 × AEM Flex 120 (multicore)
- 50 kg/24 h of green hydrogen



Mobility | Steinbeis Innovation Center, Germany



Clean mobility research hub at megawatt scale

- 1 x AEM Nexus 1000 (multicore)
- 453 kg/24 h of green hydrogen

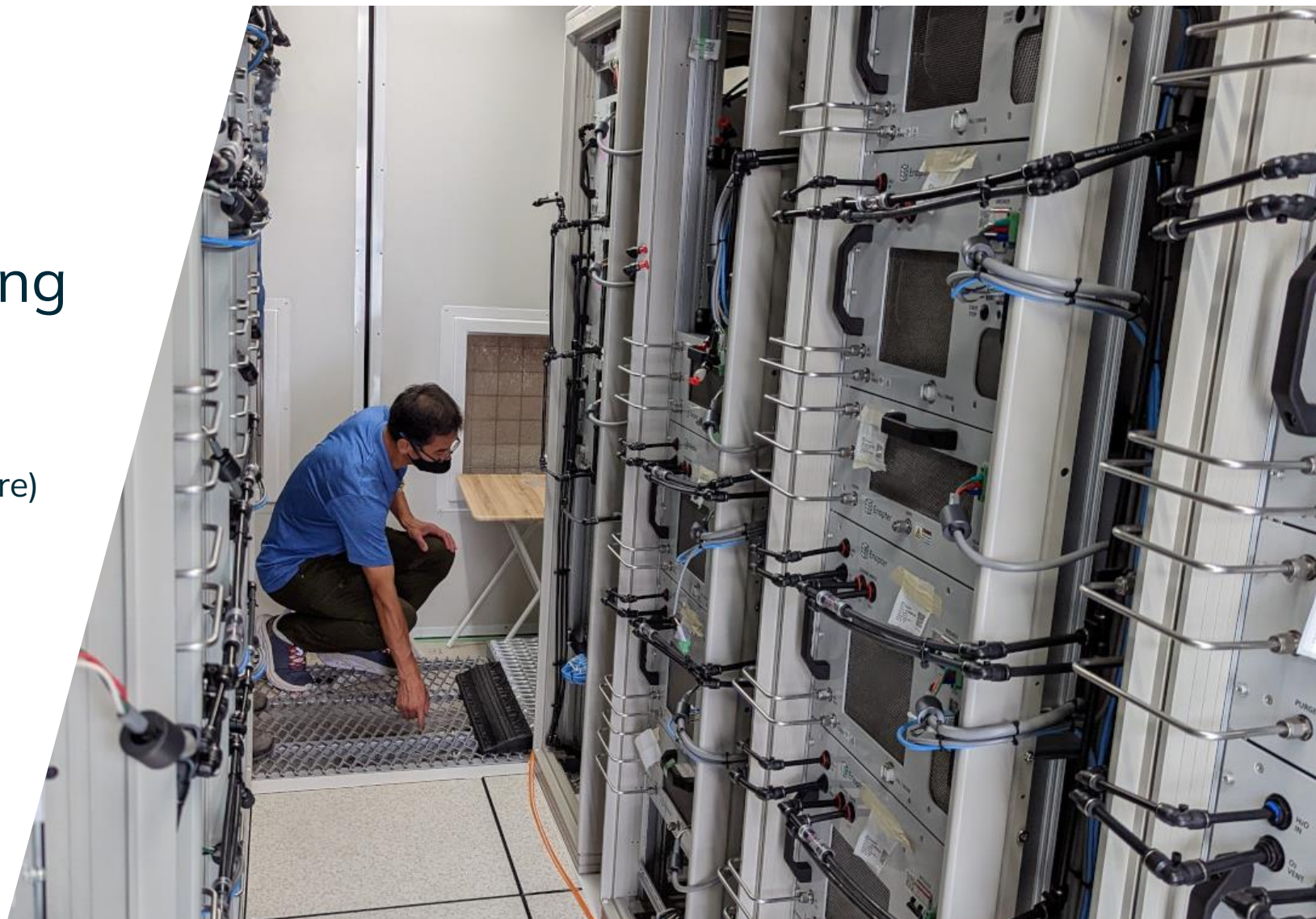


Mobility | Tokyo Gas, Japan



Commercial H2 refuelling station in Tokyo

- 30 × electrolyzer AEM EL 2.1 (singlecore)
- 30 kg/24 h of green hydrogen





Mobile refuelling for hydrogen aircrafts

- 10 × electrolyzer AEM EL 2.1 (singlecore)
- 10 kg/24 h of green hydrogen



Electricity storage | Wilo, Germany



H2 for backup energy and self-sufficiency

- 95 × electrolyzer AEM EL 2.1 (single-core)
- 95 kg/24 h of green hydrogen

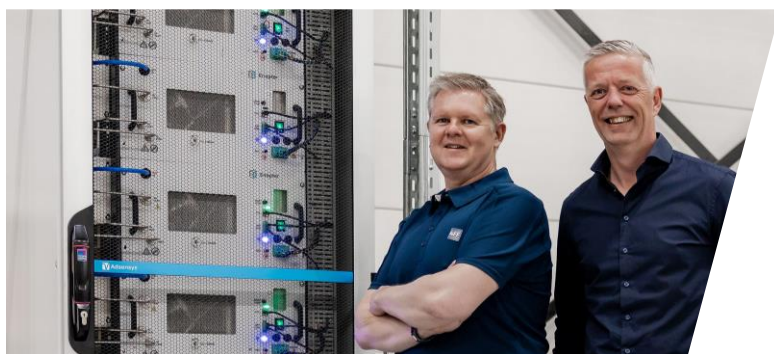


Industrial solution | Roto-Art, Netherlands



Replacement of natural gas in industrial ovens

- 7 × Electrolyzer AEM EL 4.0 (single-core)
- 7 kg/24 h of green hydrogen



Industrial solution | Yanmar, Japan



Industrial H₂ pilots at Yanmar Clean Energy Site

- 14 × Electrolyzer AEM EL 2.1 (single-core)
- 14 × Electrolyzer AEM EL 4.0 (single-core)
- 28 kg/24 h of green hydrogen



Mobility | Baglietto, Italy



Green hydrogen production for the naval sector

- 10 × Electrolyzer AEM EL 4.0 (single-core)
- 10 kg/24 h of green hydrogen



Electricity storage | Hylife Innovations, Netherlands



District-wide energy storage on a Dutch island

- 30 × Electrolyzer AEM EL 2.1 (single-core)
- 30 kg/24 h of green hydrogen



Electricity storage | Creo, UK



Autonomous energy management

- 2 × Electrolyzer AEM EL 2.1 (single-core)
- 2 kg/24 h of green hydrogen



Electricity storage | Obayashi, Japan



Green hydrogen generation for Japanese construction sector

- 2 × Electrolyzer AEM EL 4.0 (single-core)
- 2 kg/24 h of green hydrogen



Power-to-heat | DNVGL, Netherlands



Residential heating with hydrogen

- 8 × Electrolyzer AEM EL 2.1 (single-core)
- 8 kg/24 h of green hydrogen



Research | Deep Branch, Netherlands



Protein creation with gas fermentation

- 1 × Electrolyzer AEM EL 2.1 (single-core)
- 1 kg/24 h of green hydrogen

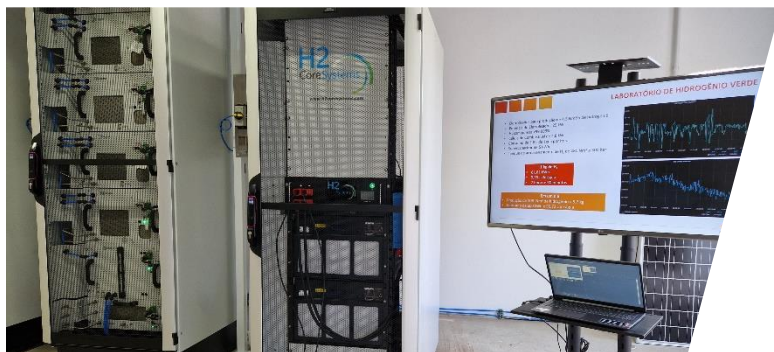


Research | University of Santa Catarina (UFSC), Brazil



Green H₂ production for diverse uses in Florianópolis

- 9 × Electrolyzer AEM EL 2.1 (single-core)
- 9 kg/24 h of green hydrogen



Research | Czech Technical University, Czech Republic



H2 mobility R&D at CTU Prague

- 4 × Electrolyzer AEM EL 2.1 (single-core)
- 4 kg/24 h of green hydrogen

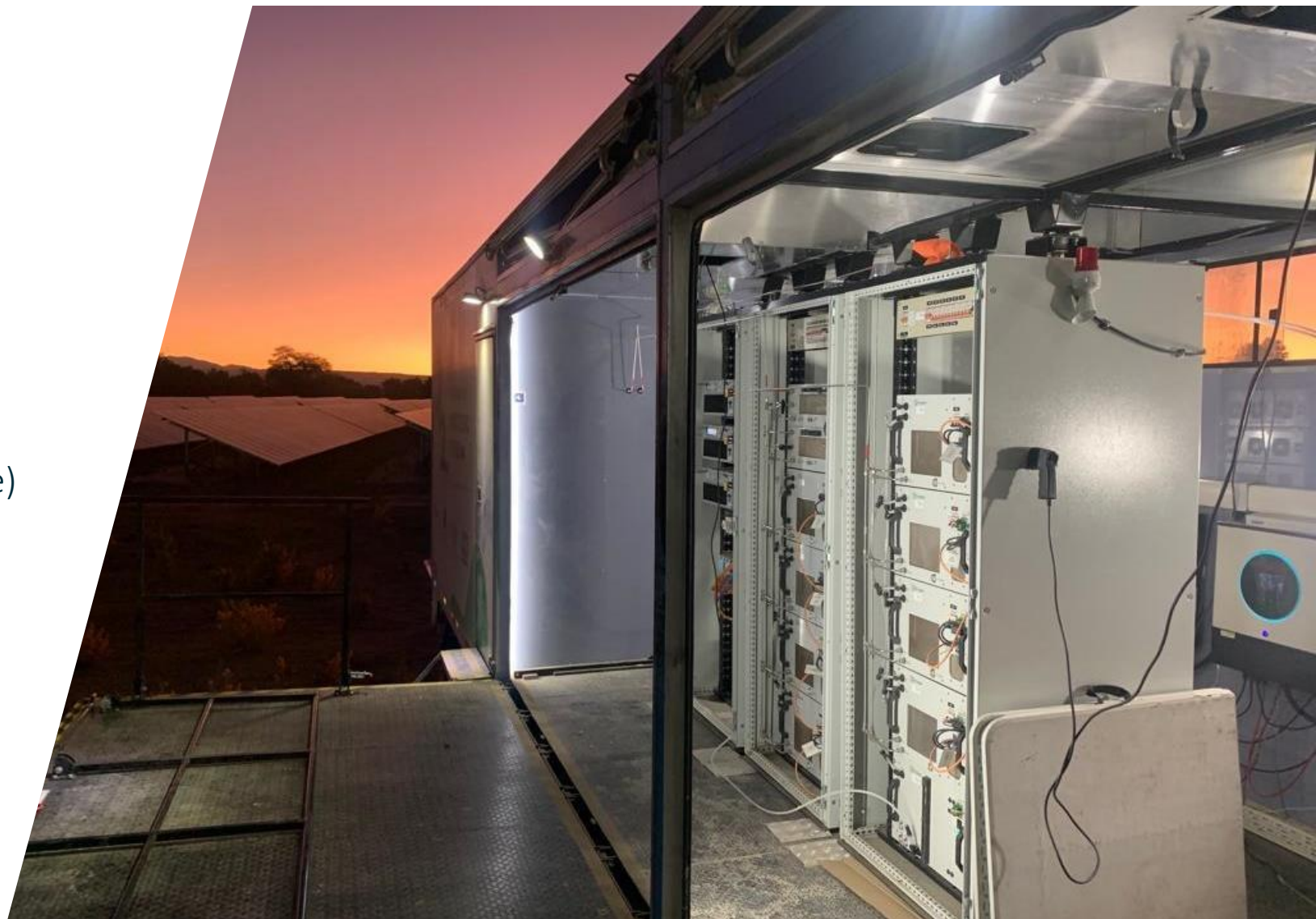


Research | CICITEM, Chile



Mobile green hydrogen plant for research

- 8 × Electrolyzer AEM EL 2.1 (single-core)
- 8 kg/24 h of green hydrogen

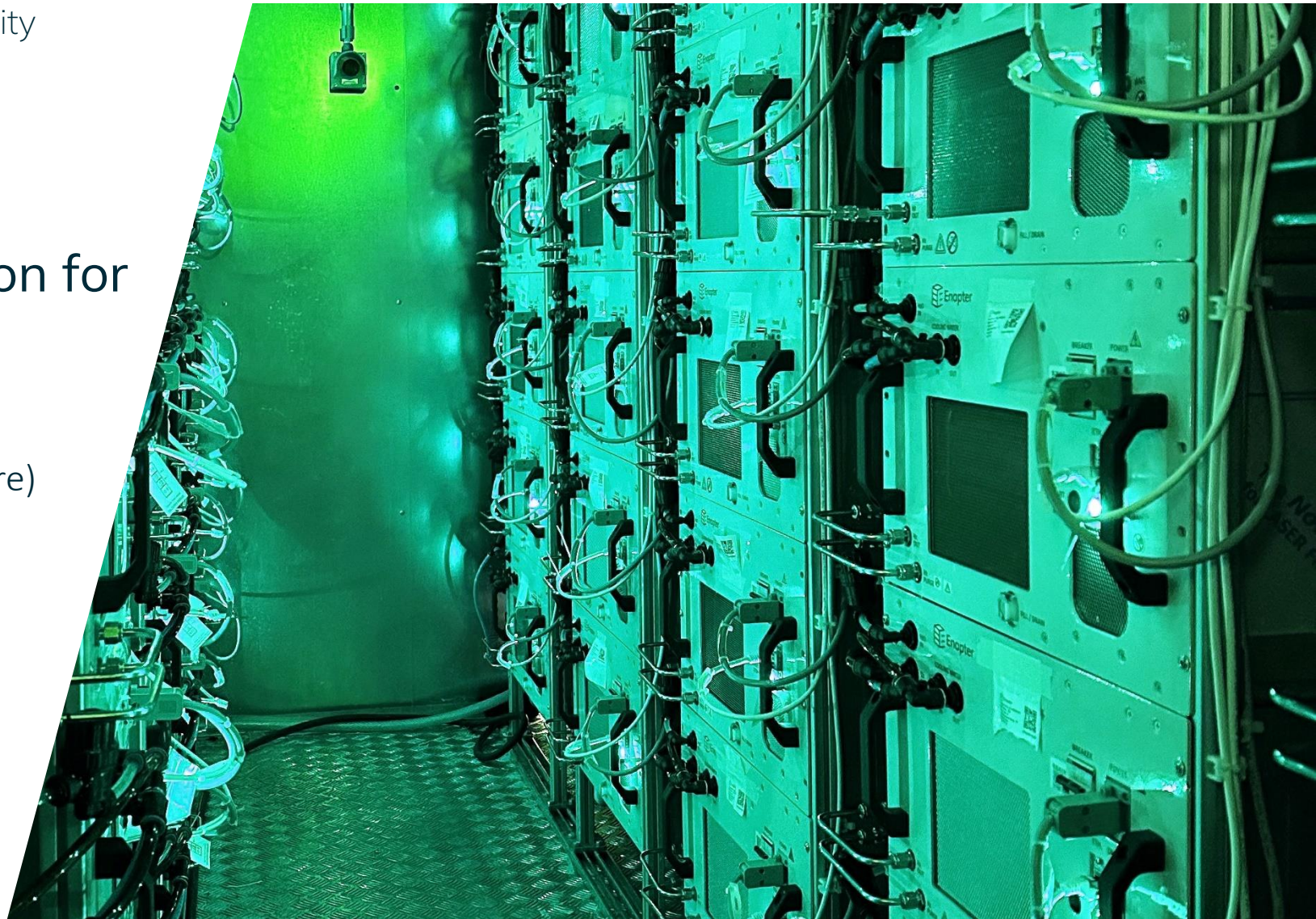


Research | HyLab of MORE Munich Mobility
Research Campus, Germany



Decentralized H₂ production for mobility research

- 48 × Electrolyzer AEM EL 2.1 (single-core)
- 48 kg/24 h of green hydrogen



Research | Industrial Technology Research Institute,
Taiwan



H2 R&D for Taiwan's renewable energy goals

- 20 × Electrolyzer AEM EL 4 (single-core)
- 20 kg/24 h of green hydrogen



Electricity storage | PowiDian Energy, France



H2 seasonal storage in remote location

- 1 × Electrolyzer AEM EL 2.1 (single-core)
- 1 kg/24 h of green hydrogen



Electricity storage | Hybitat, Italy



Energy storage for buildings

- 1 × Electrolyzer AEM EL 4.0 (single-core)
- 1 kg/24 h of green hydrogen

