

# AEM powered

Smart. Simple. Scalable.

Enapter

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1. Introduction
2. AEM Technology
3. Products
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5. Applications
6. Financials
7. ESG and Honors
8. Selected Customer Projects






# Introduction

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# Enapter at a glance



Started in Nov 2017



**Pioneer and commercial leader** in patented AEM electrolysis and advanced energy management software



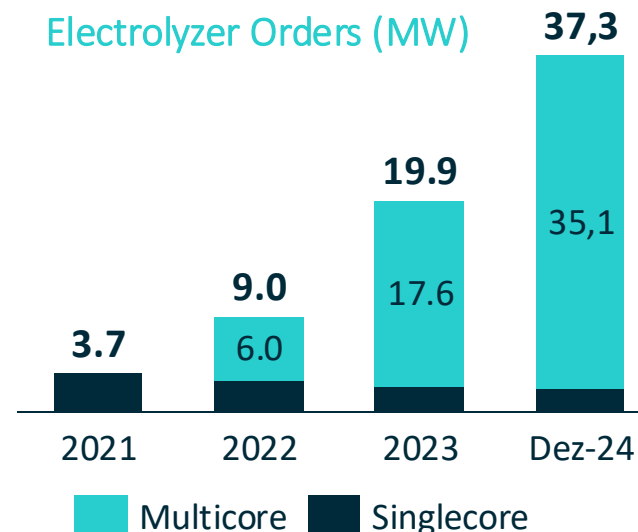
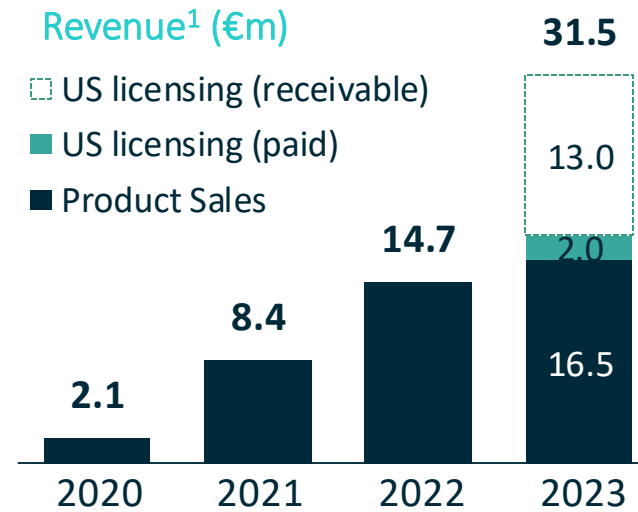
More than **15,000 electrolyzer cores** ordered by **>375 customers** across **>50 countries**



**Attracting world-class partners:** Partnership and €20m equity investment by Johnson Matthey (market Cap: €3.2bn) in 2022 and JV with Wolong (market Cap: €2.7bn) in 2024



**Rapidly shifting to MW Systems.** >95% of enquiries are for Megawatt systems.



## Enapter

Registered office: Düsseldorf

Stock exchange: Frankfurt / Hamburg  
Regulated Market

Bloomberg ticker: H2O GR

Shares outstanding<sup>2</sup>: 29.1m

Market cap<sup>2</sup>: €112m

Current FTE<sup>2</sup>: >200

### Major Shareholders:

Blugreen Company Ltd.<sup>3</sup> 47.60%

Svelland Global Trading Fund 15.27%

CVI Investments 4.54%

Morgan Stanley 5.04%

Sergei Storozhenko 4.41%

Johnson Matthey 3.62%

Other shareholders 26.33%



# Vision

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



# Mission

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

# Values

**Customer – Quality – Passion.**



# Experienced executive team



**Dr. Jürgen Laakmann**  
CEO (Chairman of the board)

- 20+ years of management experience in strategy consulting, automotive and tech
- Extensive experience in Private Equity and M&A
- Previously CEO at Formel D Gruppe where he was responsible for opening 20+ international offices and daughter companies



**Gerrit Kaufhold**  
CFO (Board member)

- Part of Enapter's growth since the reverse-merger in 2020
- Previously tax advisor and auditor for a Big-Four accounting company and managing partner of an auditing company for many years



**Ivan Gruber**  
CTO (Board member)

- Responsible for Operations, Engineering and R&D
- 15+ years of management experience in hydrogen, automotive, tech and strategy consulting
- Extensive experience in managing multi-site engineering teams & operations
- Previously Vice President Advanced Engineering for a Hydrogen System integrator and Electrolyzer component manufacturer



**Michael Söhner**  
MD Operations


- Responsible for Operations and Quality
- Over 25 years of experience in implementing and optimizing business processes and digitalization
- Extensive experience in leading strategic projects in various business areas of the manufacturing industry and in the implementation of technology transfer projects
- Former Head of Digital Channel Management at a top-tier wireless communication company in Munich (Germany)



# AEM Technology

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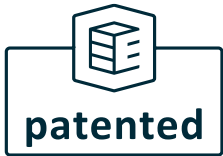
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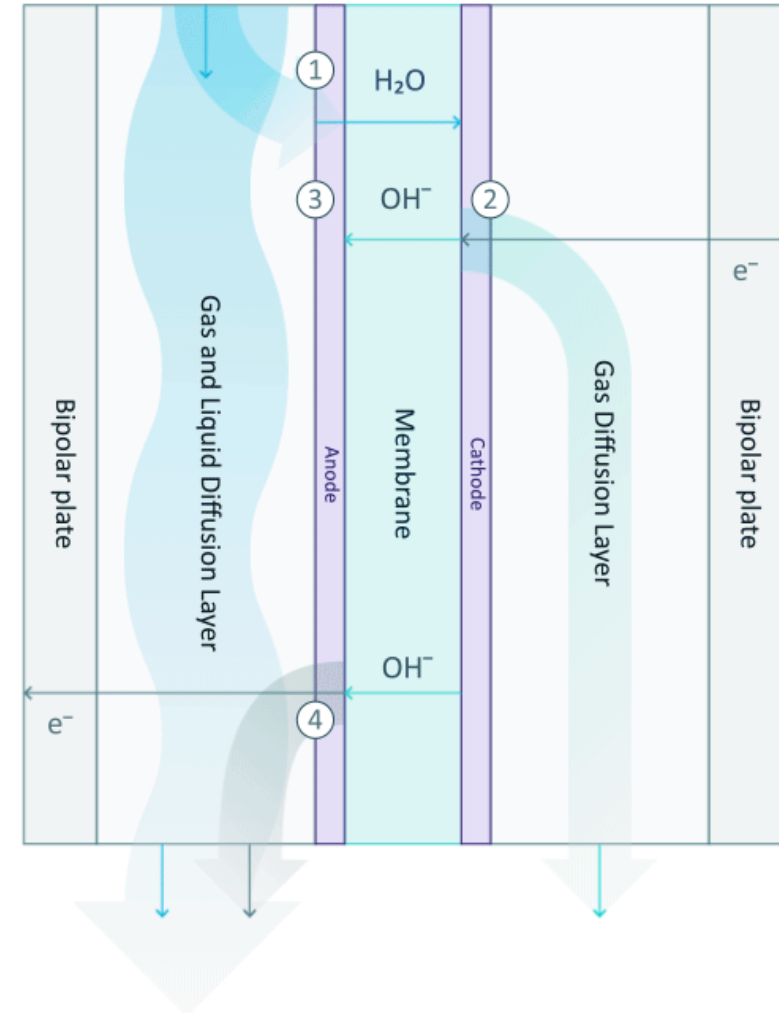


AEM's competitive advantage

# Patented AEM technology




- Combining the best of Alkaline and PEM technology
- Iridium and titanium free
- Simple and scalable Balance of Plant
- Top efficiency
- Leading H<sub>2</sub> pressure and purity
- Strong patents granted



# Our secret sauce

AEM's competitive advantage

## AEM is the future

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

# Technology review

AEM's competitive advantage

# Modular systems scale faster



Computing in the past



Multi-core solution today



Electrolyzer in the past



Multi-core solution today




# Products


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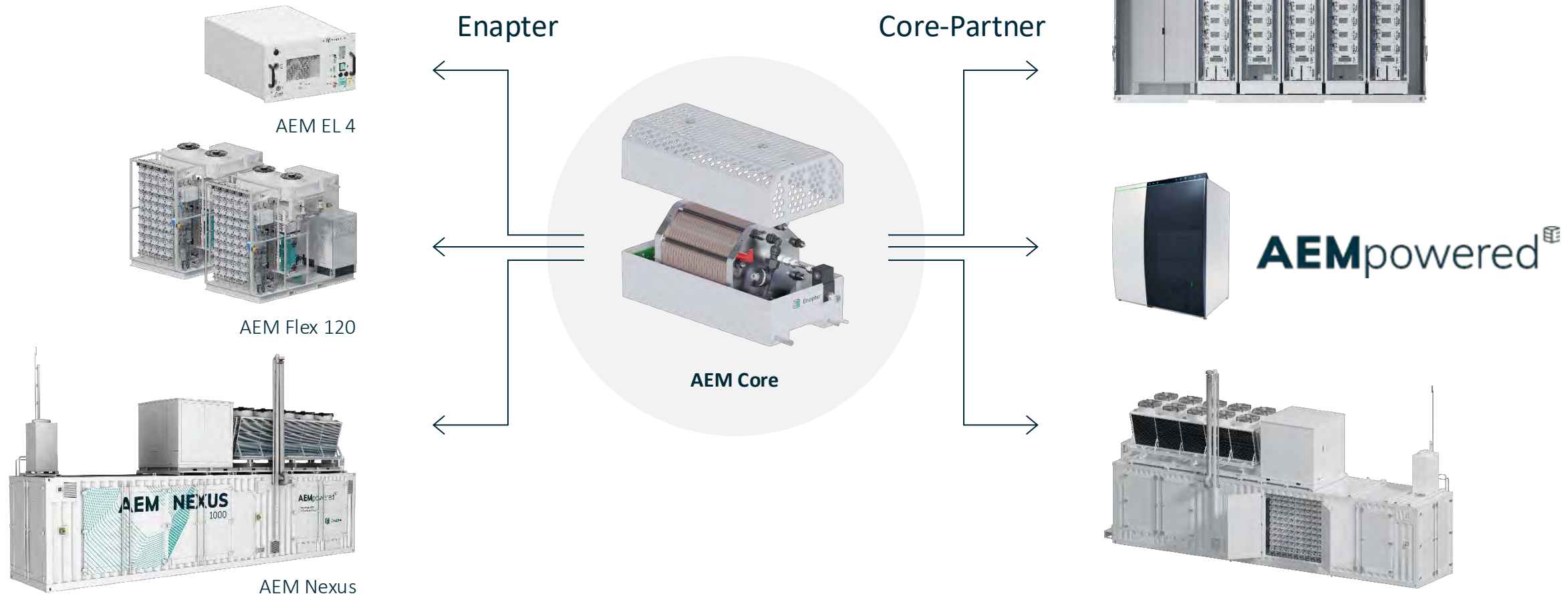
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# Modular system as the basis for all product classes



# Business Model: Core Partner

Building on Enapter's blueprints and developing custom solutions with AEM Core's modularity



## Enapter

### AEM Core

Manufactured by Enapter



### Enapter Blueprints

Enapter provides Blueprint of its products.  
Cores are distributed by Enapter to Core Partner.  
Enapter also offers engineering services.



- Operating manual
- Technical specifications
- Product drawings
- Certification requirements
- Safety documents
- Etc.

## Core Partner

### AEM powered electrolyzer

International network of Core Partners produce and sell products under their own label with "AEMpowered"



Core Partner

## Advantages for Core Partner

- Fast and CAPEX friendly entry into the AEM electrolyzer market, one of the industry's fastest growing segments
- Becoming a supplier of electrolyzer with the most sustainable technology currently available
- Draw internal synergies from existing engineering expertise and product areas
- Ongoing support from Enapter in the realization of blueprints or the development of own electrolyzer products

First Core Partner



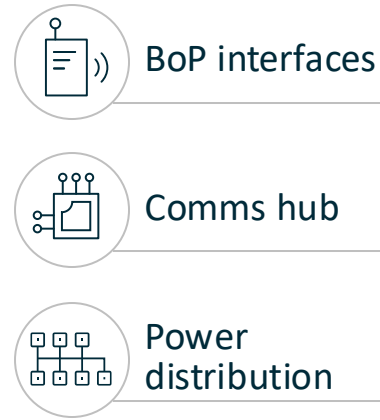
- Adsensys becomes first Core Partner in Oct 2024
- Adsensys receives Cores from Enapter and builds own electrolyzer
- Electrolyzer sold under Adsensys brand with the addition "AEMpowered" brand of Enapter
- Enapter licenses its EMS Software to Adsensys to manage electrolyzers

# A combination of excellence

Core Partnership

# Empowering Core Partners

- One-stop solution
- Ease of integration
- Scalable, ability to add more blocks
- Fast deployment and commissioning
- No major iterations of the design required



# AEM Building Blocks

The ease of modularity






# Enapter's USPs

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Comparing electrolyser technologies

## That's why Enapter's AEM is the ideal fit



**Iridium-free:** This means we can guarantee stability of prices and supply and lower supply chain risk.



**Dynamic response:** AEM provides a rapid start capability responsive to intermittent renewables.



**Efficient and cost effective:** AEM is the most cost-effective technology for H<sub>2</sub> production. Enapter's system efficiency is higher than that of competitors.



**Flexible output range:** Our inherent modularity provides a wide H<sub>2</sub> output range (3-100%).

# Our strengths

PEM's competitive handicap



- On our planet **Iridium** only makes up  $\sim 0.001$  parts per million. It's actually about 40x rarer than gold.
- It's one of the **most expensive metals** with the current price of  $\sim 5,000$  USD per ounce (146,326 € per kg).
- It's produced commercially along with the other noble metals as a **by-product** of nickel or copper production. Currently, the total yearly production is only 8-9 tons.
- It's an important component in the anode catalysts of **PEM electrolyzers**. Experts estimate that the demand for iridium by the PEM industry will exceed global supply many times over.

# Iridium

## Identifying the Problem.

AEM's competitive advantage



Enapter's AEM technology avoids the use of Iridium-based catalysts. This enables Enapter to achieve

- greater **price stability**
- lower **supply chain** vulnerability,
- without **performance** restrictions.

Enapter avoids the use of any PFAs and titanium-based plates and porous transport layers. This leads to

- **cost reduction** compared to PEM-based stacks,
- a lower **carbon footprint** and enhanced sustainability.

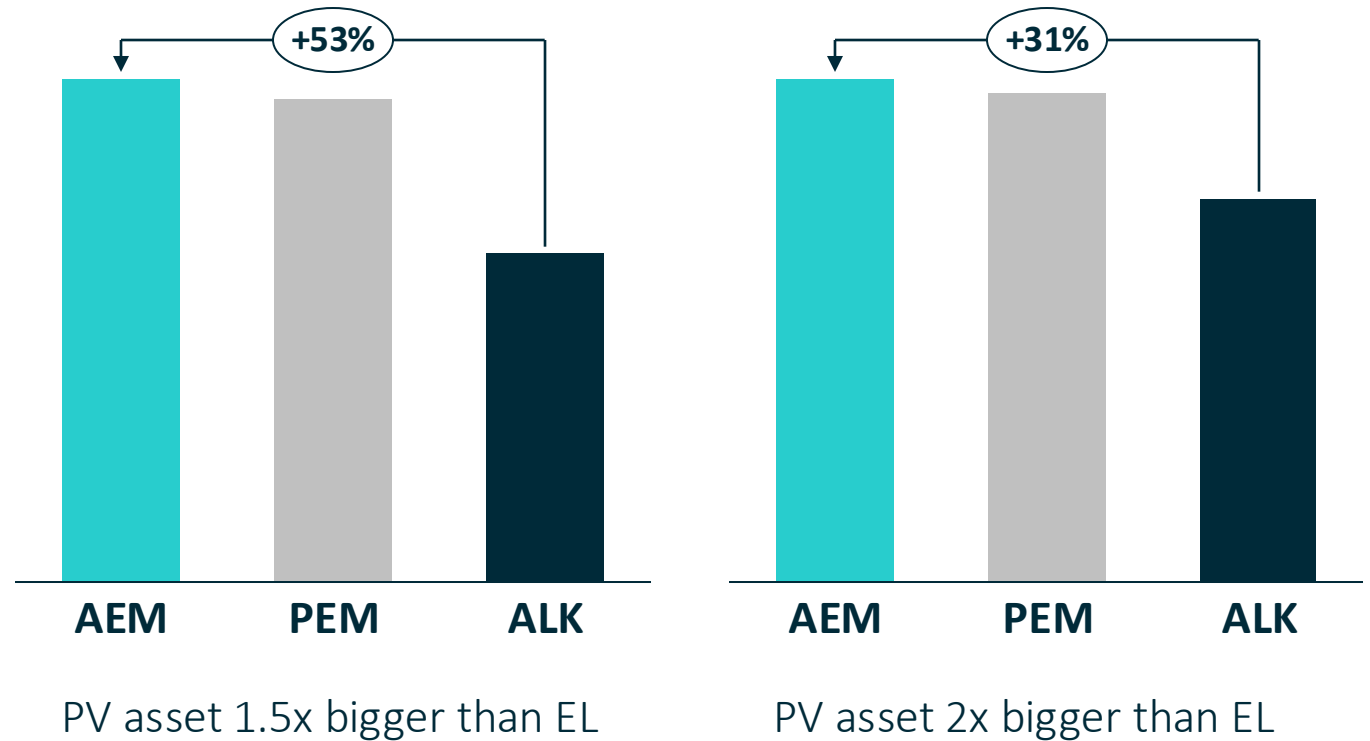
# Iridium-free

## Our unique selling proposition.

## Flexibility

# The most flexible MW systems in the market

- ✓ Operational flexibility of 3-100% due to modularity of our multicore electrolyzers
- ✓ Up to 53% increase<sup>1</sup> in annual hydrogen production for 1 MW system compared to competitors



<sup>1</sup> 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%.

Software

# Energy Monitoring and Management

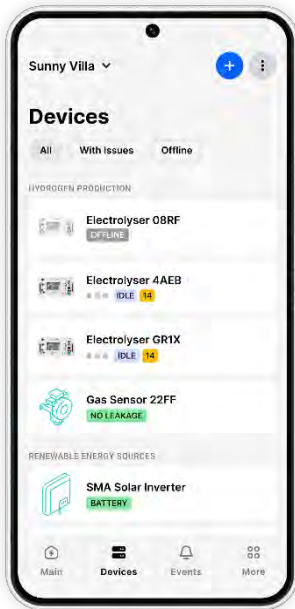
- ✓ Real Time Monitoring and Control
- ✓ Predictive Maintenance
- ✓ Integration with third party systems
- ✓ Integrated AI for optimal efficiency
- ✓ Access via App (Android and iOS) and Browser



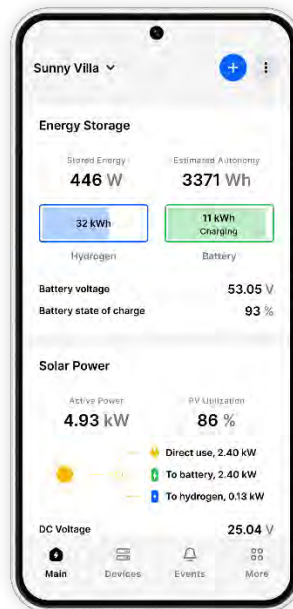
Enapter's competitive advantage: IIoT Software Solution

# Our customers can monitor and control their entire energy system with our software

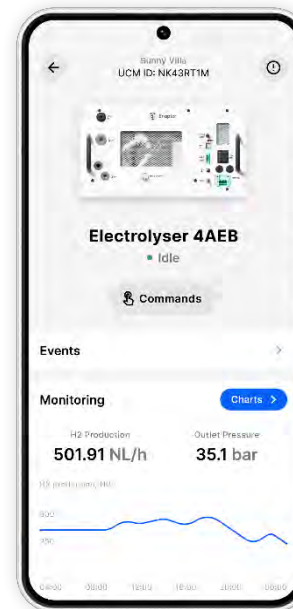
Integrate any energy device



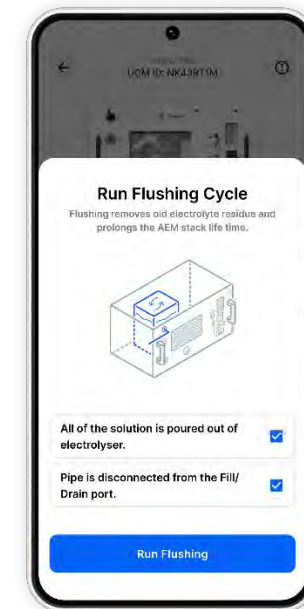
Oversee key metrics



Control devices remotely



In-App Maintenance Instructions






# Applications

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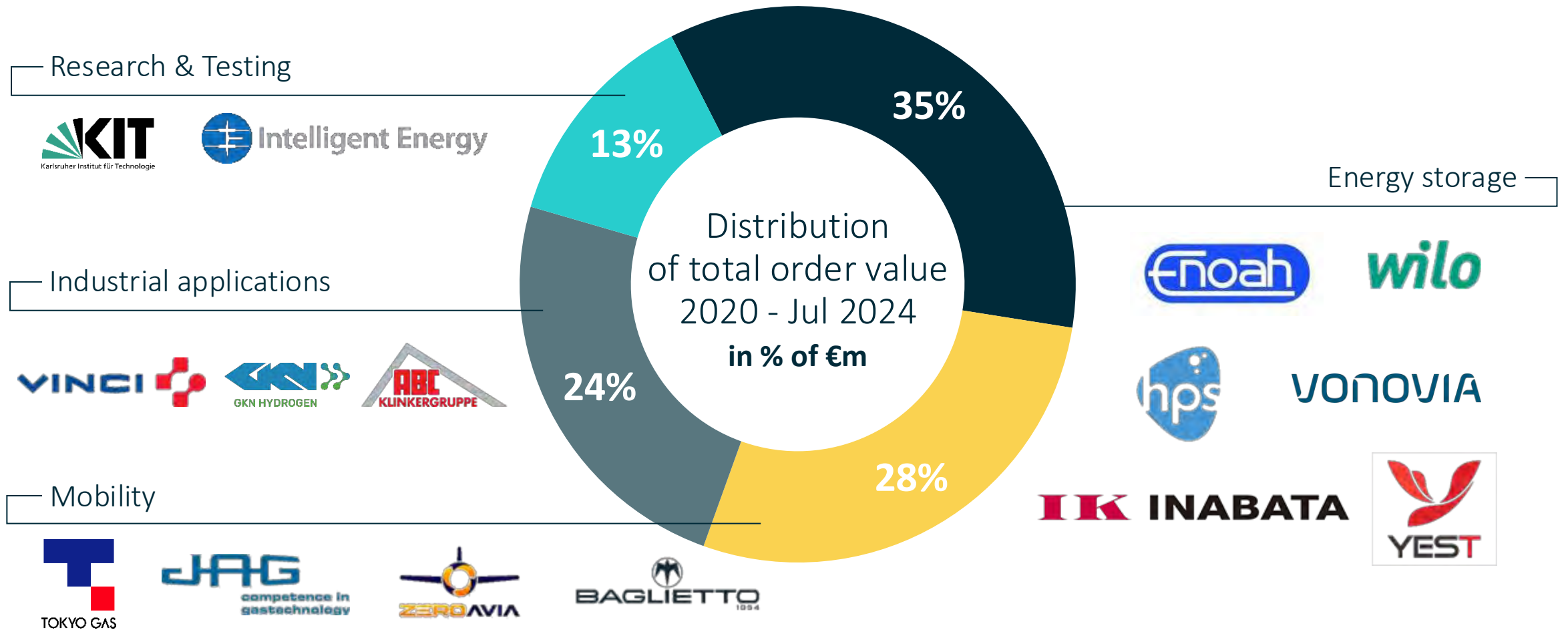
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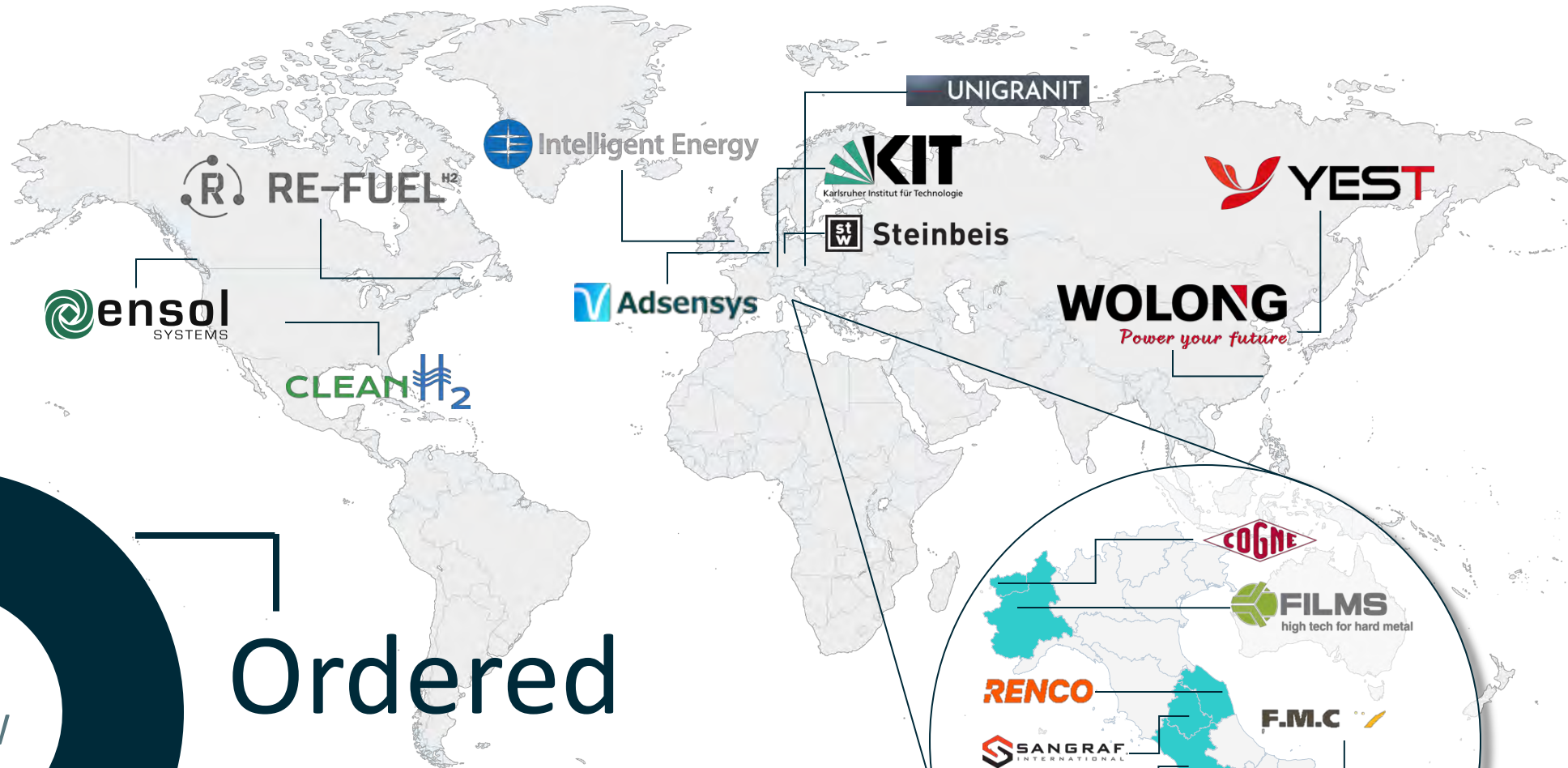
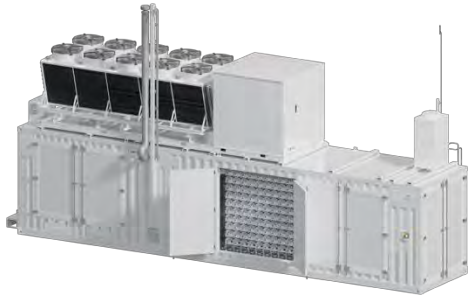
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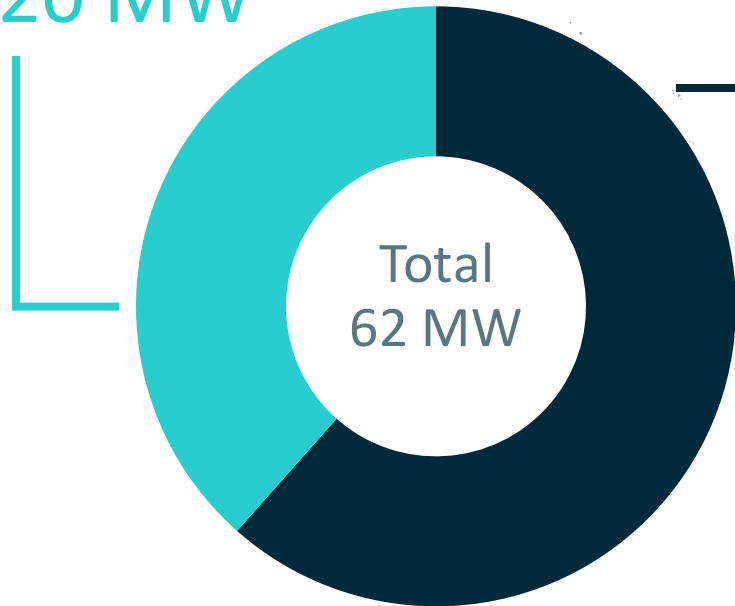
Customers by industry sectors

# Selected customers

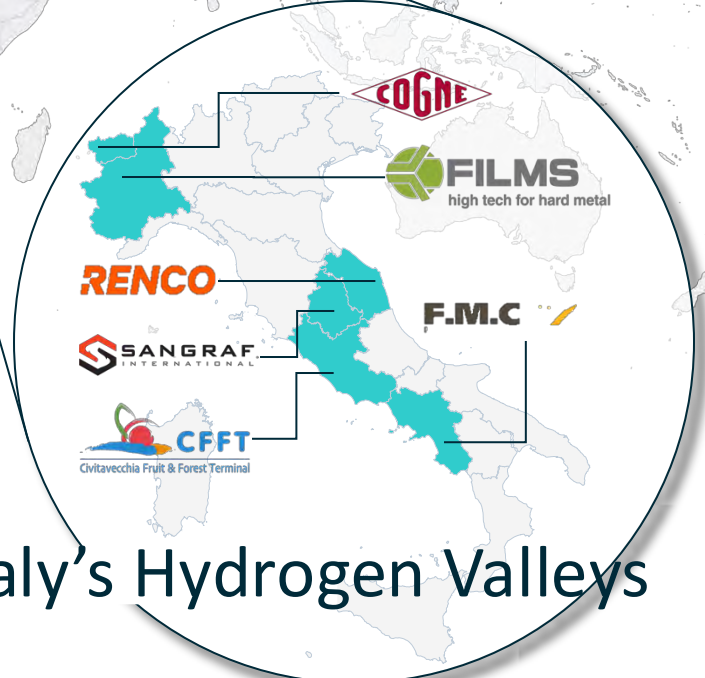




Delivered  
20 MW



Ordered  
42 MW






# Financials

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 Enapter

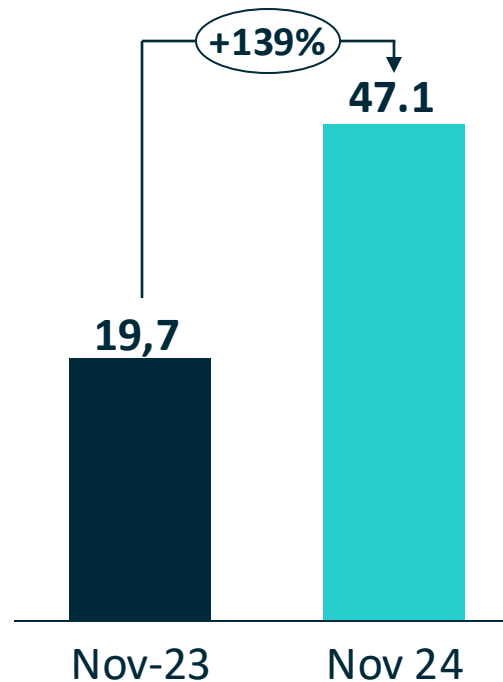
## Order intake and backlog

# Order intake doubled

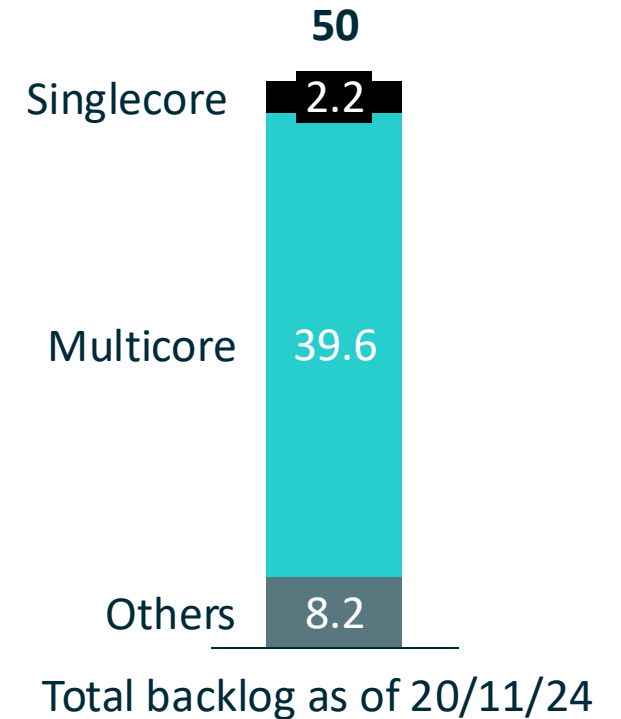
- ✓ Order intake has more than doubled compared to the previous year and reached EUR 47.1 M at the end of November 2024
- ✓ Order backlog (as of end November 2024) stands at EUR 50 M. 94% of product backlog are multicore electrolyzer

Note: Multicore electrolyzer are defined as electrolyzer products containing more than one Core (Stack).

Order intake (MEUR)




Order backlog (MEUR)



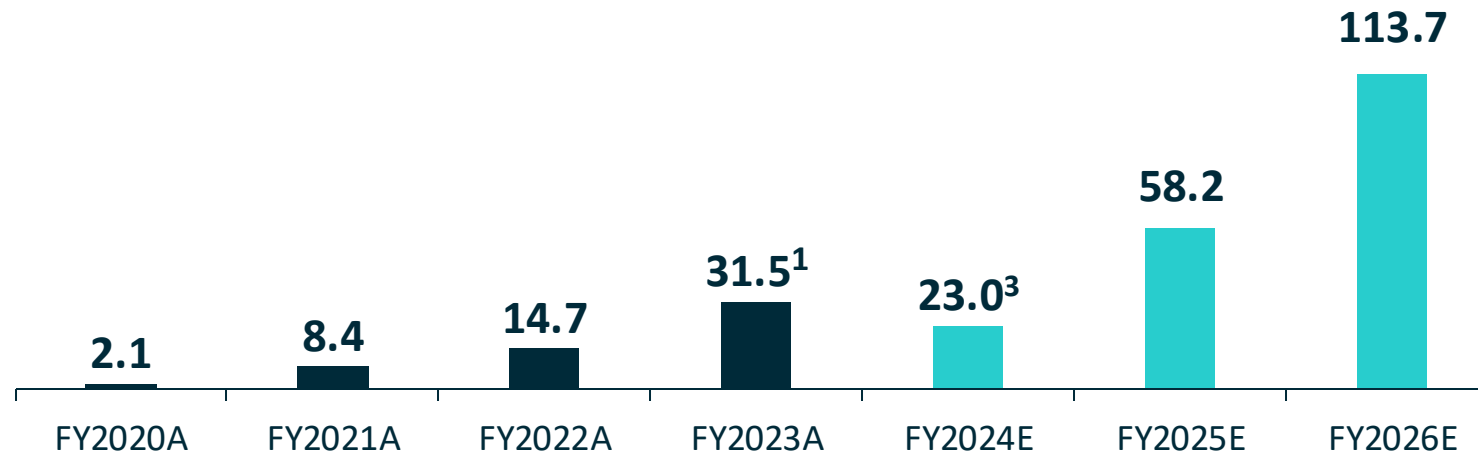
# Historical & projected revenue development

Revenue per FY (€m)

Broker research estimates<sup>2</sup>

|   | 2020 | 2021 | 2022 | 2023              | FY2024E                 | FY2025E     | FY2026E      |
|---|------|------|------|-------------------|-------------------------|-------------|--------------|
|  Enapter | 2.1  | 8.4  | 14.7 | 31.6 <sup>1</sup> | 22-24 <sup>3</sup>      |             |              |
| mwb Research  |      |      |      |                   |                         | 67.8        | 143.1        |
| Bryan, Garnier & Co   |      |      |      |                   |                         | 48.6        | n/a          |
| Pareto Securities   |      |      |      |                   |                         | 64.0        | 119.0        |
| First Berlin  |      |      |      |                   |                         | 52.3        | 79.2         |
|   |      |      |      |                   | <b>Broker Consensus</b> | <b>58.2</b> | <b>113.7</b> |

- ≡ FY2023A revenue was composed of EUR 16.5m product sales and EUR 15m recognized on US license agreement
- ≡ In FY 2023 Enapter shifted its focus to marketing the multicore products which accounts for the nearly flat sales revenue as single core electrolyzer sales grew incrementally and orders flowed in for multicore products








Note: 1 ) 2023 Rev. included €15m from a US licensing deal at the end of 2023, of which €2m was paid at signing and the remaining is receivable. 2) FY25E – FY26E is based on the latest broker research from mwb research (22.11.2024), Bryan Garnier (09.01.2024), First Berlin (29.11.2024) and Pareto (22.10.2024). Note: 3): Enapter Guidance

# Historical & projected EBITDA development

EBITDA (€m)

Broker research estimates<sup>2</sup>

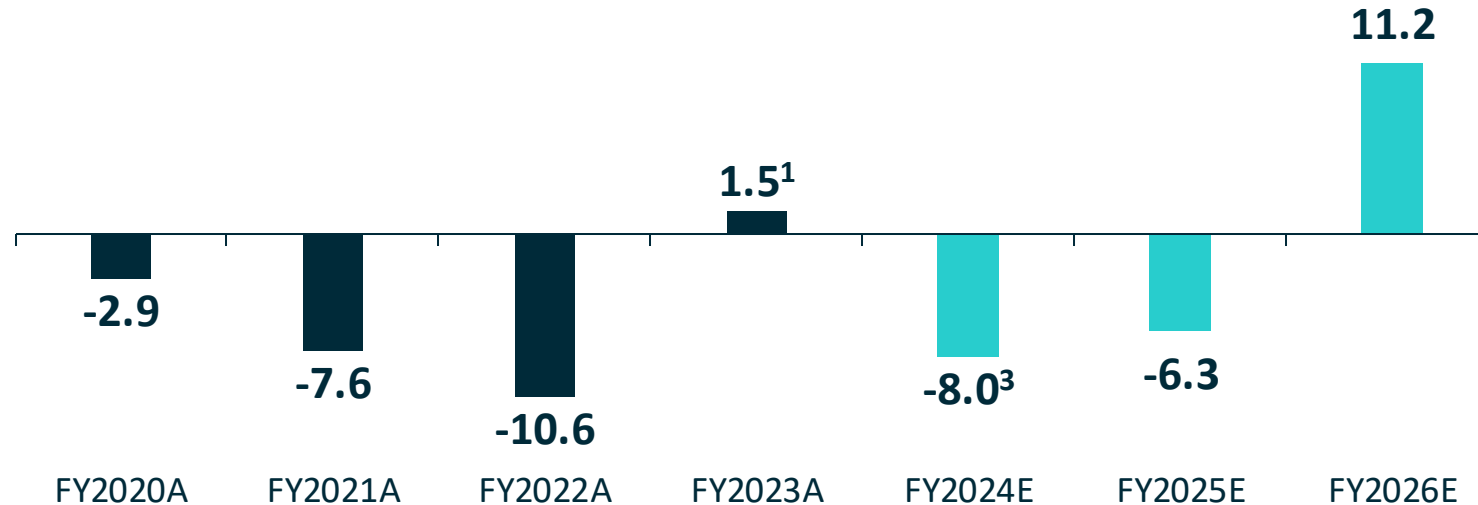
|   | FY2020A | FY2021A | FY2022A | FY2023A          | FY2024E              | FY2025E      | FY2026E     |
|---|---------|---------|---------|------------------|----------------------|--------------|-------------|
|  Enapter             | (2.9)   | (7.6)   | (10.6)  | 1.5 <sup>1</sup> | (7)-(8) <sup>3</sup> |              |             |
|  mwb research        |         |         |         |                  |                      | (3.4)        | 18.6        |
|  BRYAN, GARNIER & CO |         |         |         |                  |                      | (20.0)       | n/a         |
|  Pareto Securities   |         |         |         |                  |                      | 0            | 10          |
|  First Berlin        |         |         |         |                  |                      | (1.7)        | 5.1         |
| <b>Broker Consensus</b>   |         |         |         |                  |                      | <b>(6.3)</b> | <b>11.2</b> |



Economies of scale in production ensure better margins.



Massive demand for megawatt systems underpins growth and automated production build-up.




Note: 1) FY23 published 30 April 2024. 2) FY24E and FY25E is based on the latest broker research from mwb research (22.11.2024), Bryan Garnier (09.01.2024), First Berlin (29.11.2024) and Pareto (22.10.2024). Note: 3): Enapter Guidance



# ESG and Honors

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
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# Enapter Pisa: Our production site for the AEM-Cores

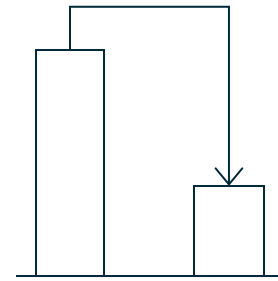
100% powered by renewable energies



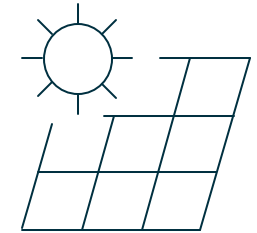


# We honor our environment

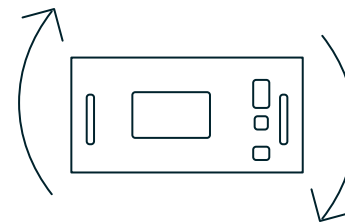
- We have analyzed our carbon footprint and reduced our Scope 1 and 2 emissions by more than 90 % since 2022.
- Our production site in Pisa is powered by 100% renewable electricity.
- We aim to make our production as circular as possible and have already developed a reverse logistics process to take back our electrolyzers at the end of their lifetime.
- We report according to European Sustainability Reporting Standards (ESRS) and Sustainability Accounting Standards Board (SASB).



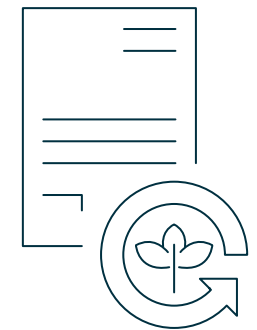
90% less Scope 1 & 2 emissions



Production sites powered by 100% renewable energy



Circular production principles



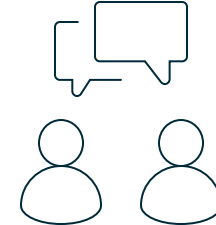
ESRS and SASB Reporting

# We set high ethical standards in what we do

- We truly value our colleagues.
- We prioritize their well-being and development, fostering open communication and providing ample opportunities for growth.
- Our compensation packages are competitive, and we strive to maintain a positive and inclusive work environment that encourages collaboration and creativity.



Code of Conduct



Whistle-blower mechanism



202 employees  
32% female 68% male



100% employees  
with social protection

Honors

# Award winning company



# Enapter is supported and advised by experienced entrepreneurs, investors and academics

## Supervisory board



**Armin Steiner**  
SB Chairman,  
Enapter SB Member,  
zoo.de Ex-CFO, Beta System



**Ragnar Kruse**  
SB Member, Enapter  
Co-Founder, AI.HAMBURG  
Co-Founder, Smaato



**Eva Katheder**  
SB Member, Enapter  
SB Member, H2 Core AG



**Prof. Dr. Christof Wetter**  
SB Member, Enapter  
SB Member, 2G  
Professor, FH Münster

## Majority shareholder



**Sebastian-Justus Schmidt**  
Co-Founder and former CEO of  
Enapter

- Mr. Schmidt co-founded Enapter in 2017 and led the company as CEO and co-CEO until 2023. He continues to remain closely involved in an advisory capacity and as majority shareholder.
- Previously founder and CEO of SPB Software, which was acquired in 2011 by US-listed Yandex for a double-digit million euro price tag
- Former Executive Vice President and GM Mobile for Yandex, Europe's largest internet company

## Advisory board



**Udo Filzmaier**  
Board Member, e.battery  
systems F Technologies,  
Owner/CEO



**Prof. Hubert Gasteiger**  
Professor, TU Munich  
Ex-Director Catalyst  
Technology, ACTA s.p.a



**Uwe Raschke**  
Former Member  
Board of Management,  
Robert Bosch GmbH



**Christof Winker**  
Cobira, Business  
Development  
cw-1 Consulting



**Torsten Frühauf**  
Angel Investor  
CEO Prokonzept GmbH



**Sergei Storozhenko**  
Serial entrepreneur  
and Angel Investor



**Boris Tatievski**  
Founder of Bosger  
Holding, Autobooking  
24/7, Bizol Germany



**Nicolas Proisy**  
Hydrogen Process  
Innovation Manager  
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# Selected Customer Projects



Industrial solution | ABC Klinker, Germany



## Decarbonising brick production

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



Mobility, research | Steinbeis Innovation Center, GF



## Clean mobility research hub at megawatt scale

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



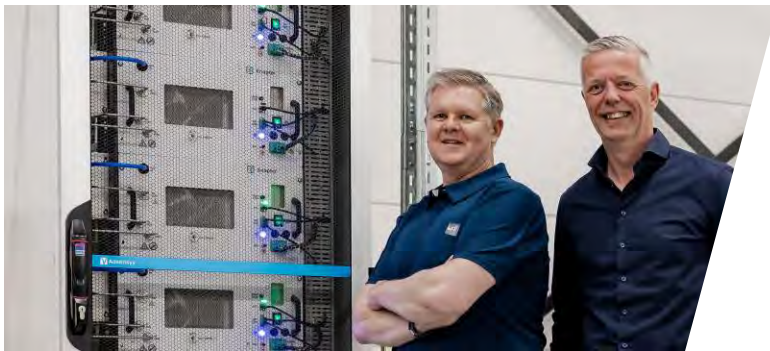


Industrial solution | Roto-Art, Netherlands



## Replacing natural gas with green hydrogen for industrial ovens

- 7 × electrolyser AEM EL 4.0 (singlecore)
- 7 kg/24 h of green hydrogen



Industrial solution | Yanmar, Japan



## Industrial H<sub>2</sub> pilots at Yanmar Clean Energy Site

- 14 × electrolyser AEM EL 2.1 (singlecore)
- 14 × electrolyser AEM EL 4.0 (singlecore)
- 28 kg/24 h of green hydrogen



Mobility | Tokyo Gas, Japan



## Commercial hydrogen refuelling station in Tokyo

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



Mobility | ZeroAvia, UK



## Mobile refuelling for hydrogen aircrafts

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



Mobility | Baglietto, Italy



## Green hydrogen production for the naval sector

- 10 × electrolyser AEM EL 4.0 (singlecore)
- 10 kg/24 h of green hydrogen



Electricity storage | Hylife Innovations, Netherlands



## District-wide energy storage on a Dutch island

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



Electricity storage | PowiDian Energy, France



## Hydrogen seasonal storage in remote location

- 1 x electrolyser AEM EL 2.1 (singlecore)
- 1 kg/24 h of green hydrogen



Electricity storage | Creo, UK



## Autonomous energy management

- 2 × electrolyser AEM EL 2.1 (singlecore)
- 2 kg/24 h of green hydrogen



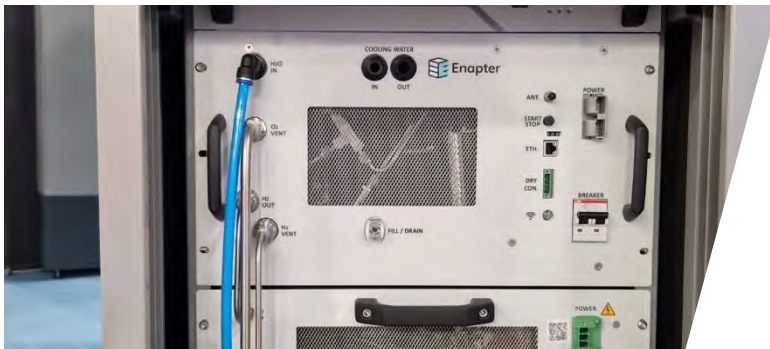


Electricity storage | Hybitat, Italy



## Energy storage for buildings

- 1 x electrolyser AEM EL 4.0 (singlecore)
- 1 kg/24 h of green hydrogen

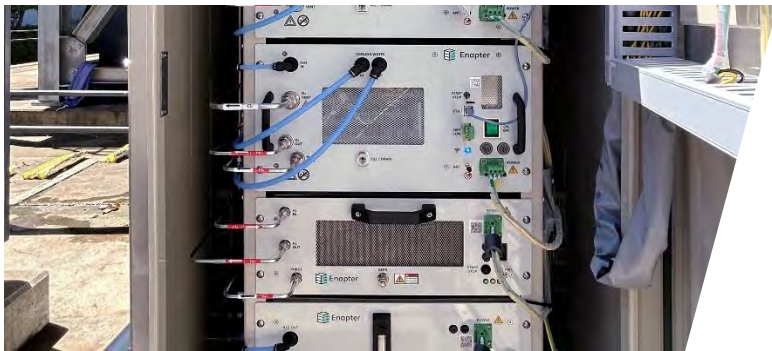


Electricity storage | Obayashi, Japan



## Green hydrogen generation for Japanese construction sector

- 2 × electrolyser AEM EL 4.0 (singlecore)
- 2 kg/24 h of green hydrogen



Power-to-heat | DNVGL, Netherlands



## Residential heating with hydrogen

- 8 x electrolyser AEM EL 2.1 (singlecore)
- 8 kg/24 h of green hydrogen



Research | Deep Branch, Netherlands



## Protein creation with gas fermentation

- 1 × electrolyser AEM EL 2.1 (singlecore)
- 1 kg/24 h of green hydrogen

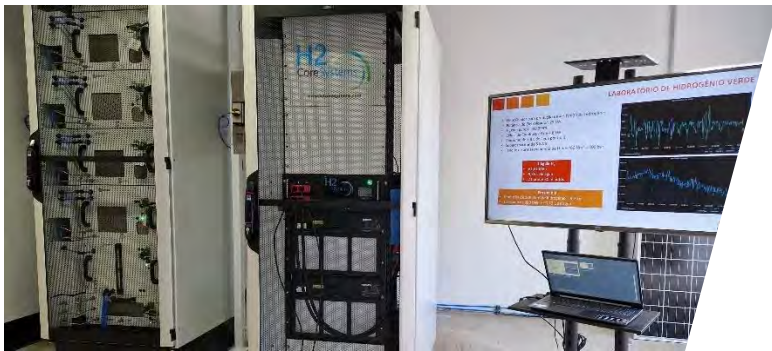


Research | University of Santa Catarina (UFSC), Brazil



## Green H<sub>2</sub> production for diverse uses in Florianópolis

- 9 × electrolyser AEM EL 2.1 (singlecore)
- 9 kg/24 h of green hydrogen



Research | Czech Technical University, Czech Republic



## H<sub>2</sub> mobility R&D at CTU Prague

- 4 × electrolyser AEM EL 2.1 (singlecore)
- 4 kg/24 h of green hydrogen



Research | CICITEM, Chile



## Mobile green hydrogen plant for research

- 8 × electrolyser AEM EL 2.1 (singlecore)
- 8 kg/24 h of green hydrogen

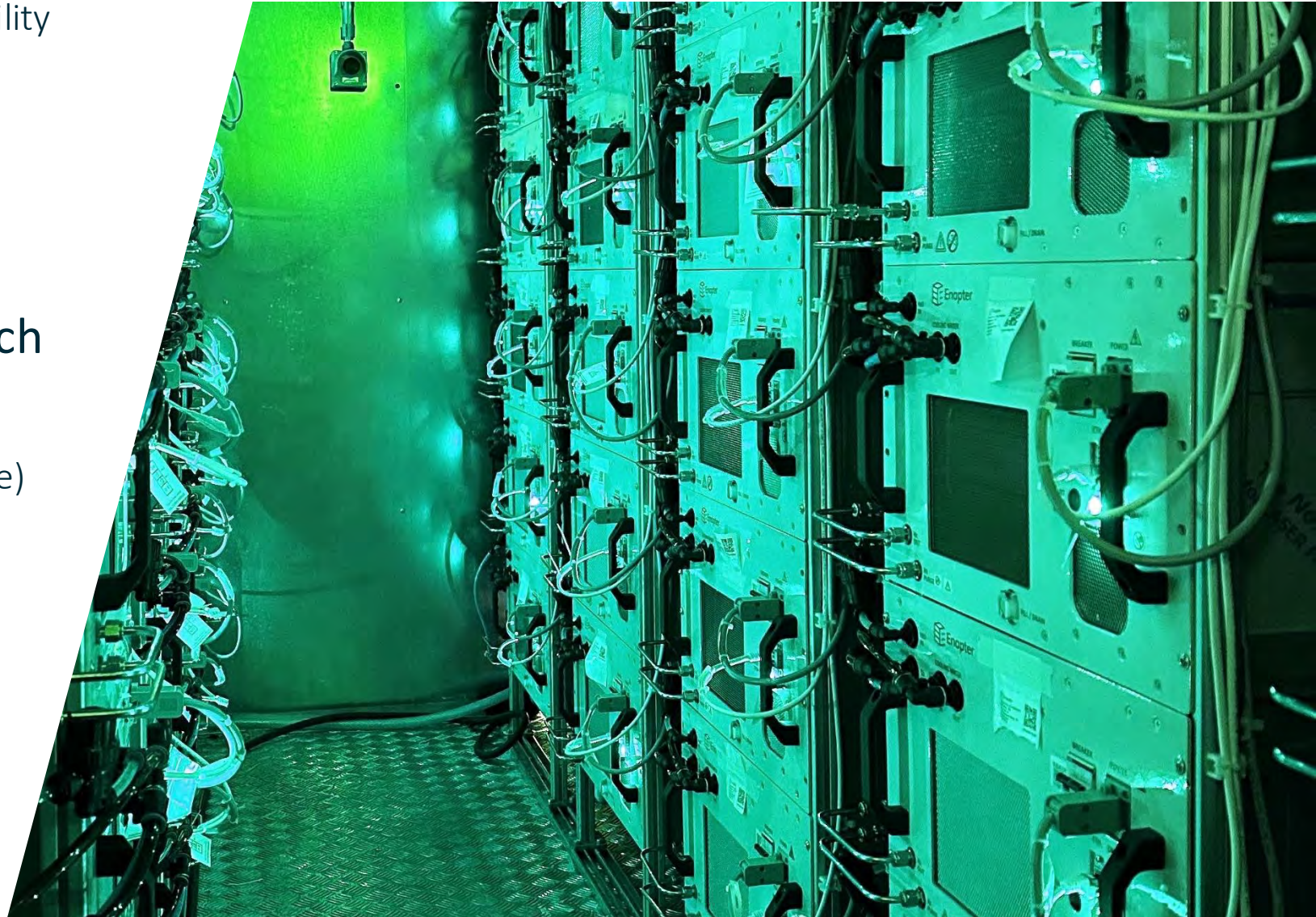


Research | HyLab of MORE Munich Mobility  
Research Campus, Germany



## Decentralised hydrogen production for mobility research

- 48 × electrolyser AEM EL 2.1 (singlecore)
- 48 kg/24 h of green hydrogen





Electricity storage | Wilo, Germany



## H2POWERPLANT for backup energy & sufficiency

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

