

H2 MicroGrid

Autarke Energieversorgung von Standorten durch Wasserstoff

HYDAC New Technologies GmbH
Dr. Dirk Burkhard





Reliable
partner since
1963



100 %
family-owned



11.000
experienced
employees worldwide



20 product areas,
52 international subsidiaries



Experience and
Expertise in more than
50 industries



Custom
solutions
and standard
components



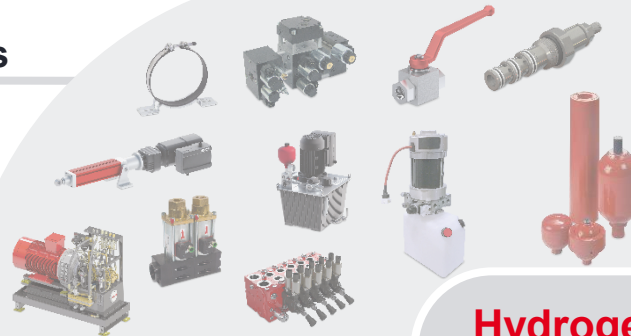
More than **500**
sales & service partners
worldwide



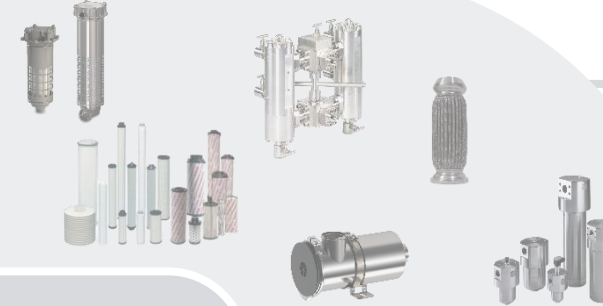
2,1 billion EUR
turnover in 2025

Fluid Technology, Hydraulics and Electronics Including Worldwide Service

Hydraulics & Electro-Mechanics

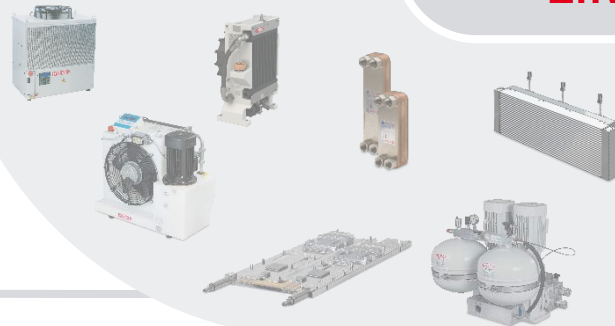


Filtration/ Separation

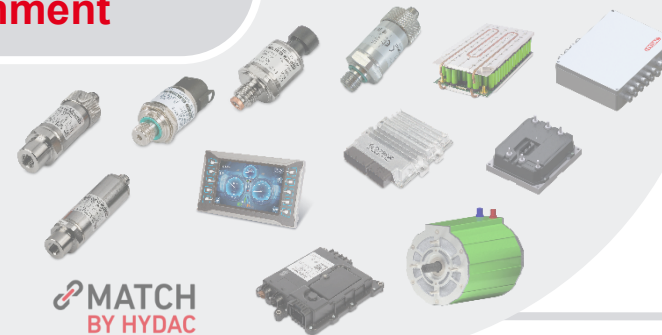


Hydrogen Application Environment

Cooling & Thermal Management



Electronics & Software

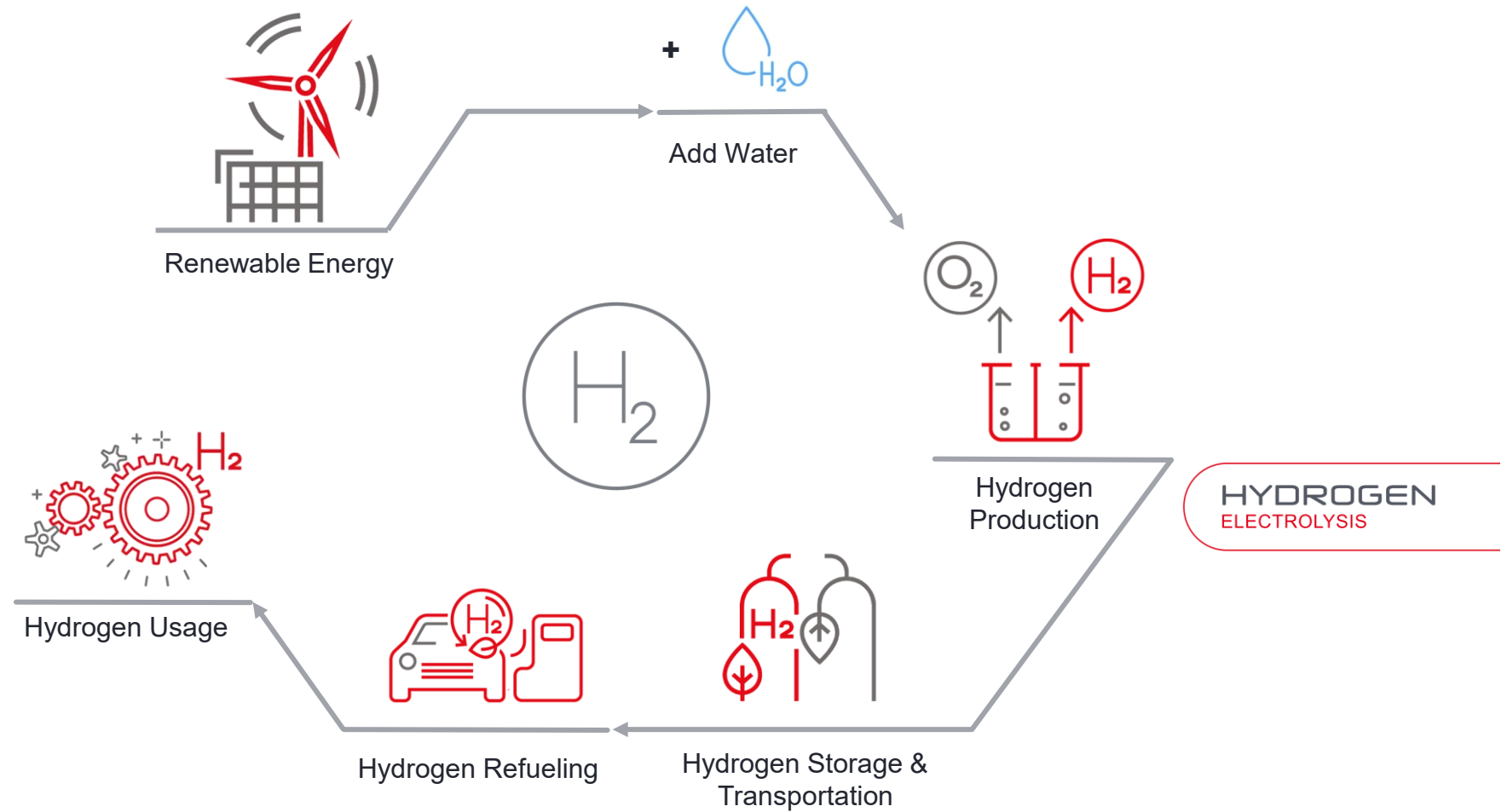


PRODUCTS AND REFERENCES

HYDAC Solutions along the Hydrogen Value Chain

Addresses all links in the value chain

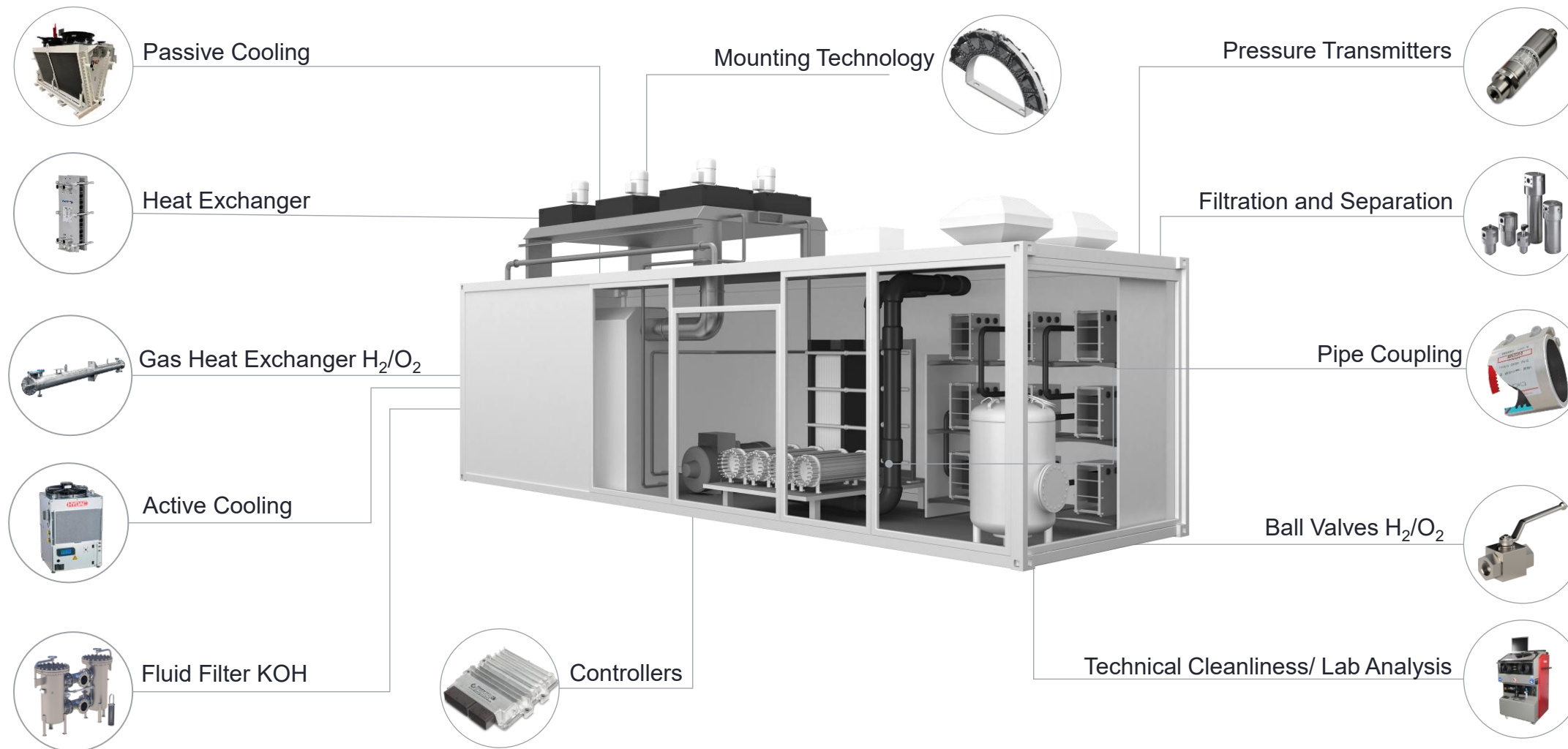
HYDROGEN
HYDAC



Solution for Electrolysis

Insight Into The Product Portfolio

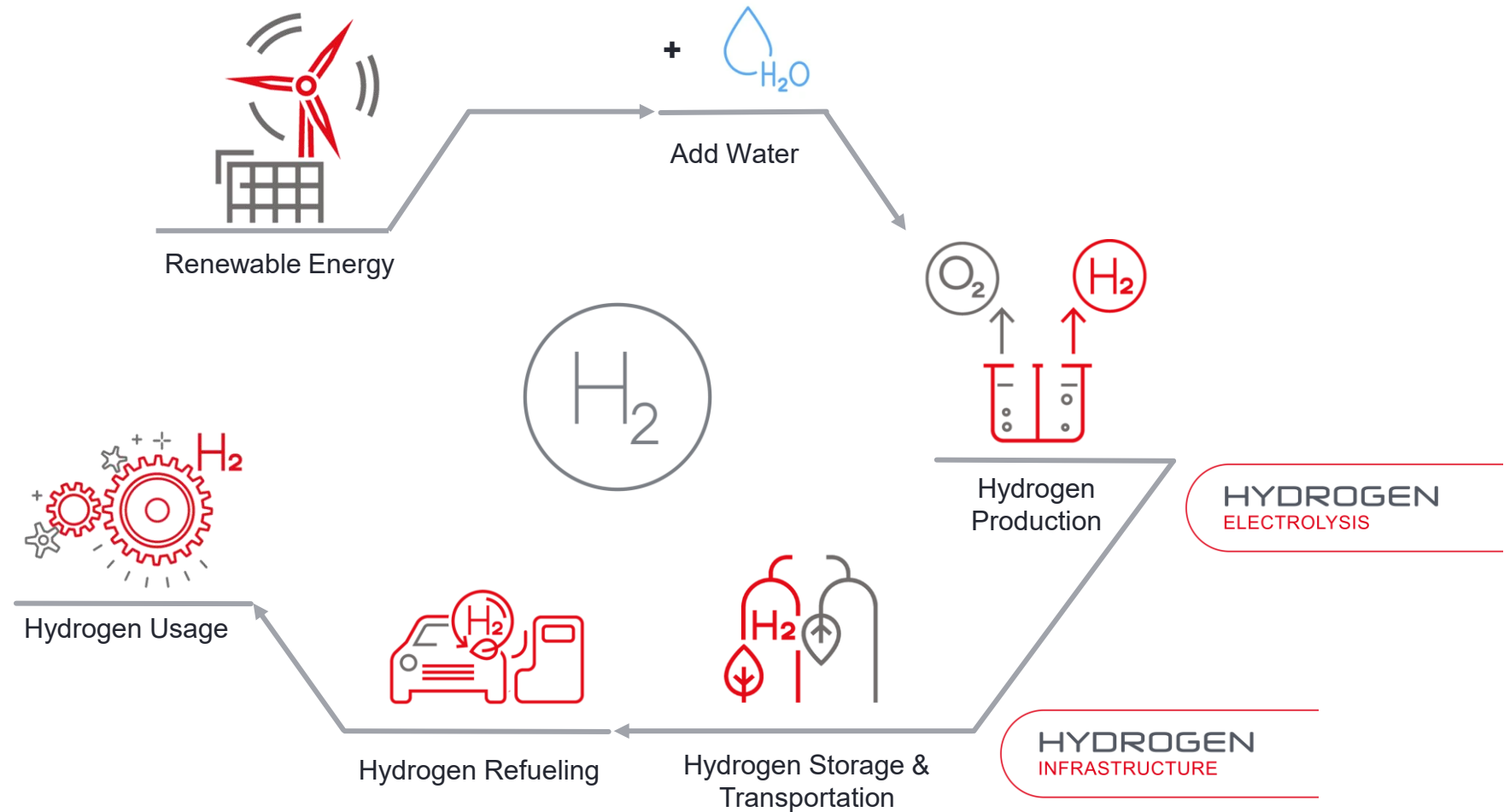
HYDROGEN
HYDAC



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HYDAC



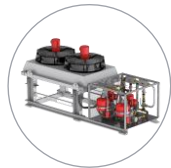
Solution for The Hydrogen Refueling Stations

Insight Into The Product Portfolio

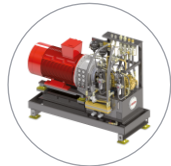
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Mounting Technologies



Cooling Solutions



Hydraulic Power Units



Ball Valves



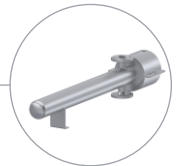
Filtration



Technical Cleanliness/ Particle Sampling



Heat Exchanger



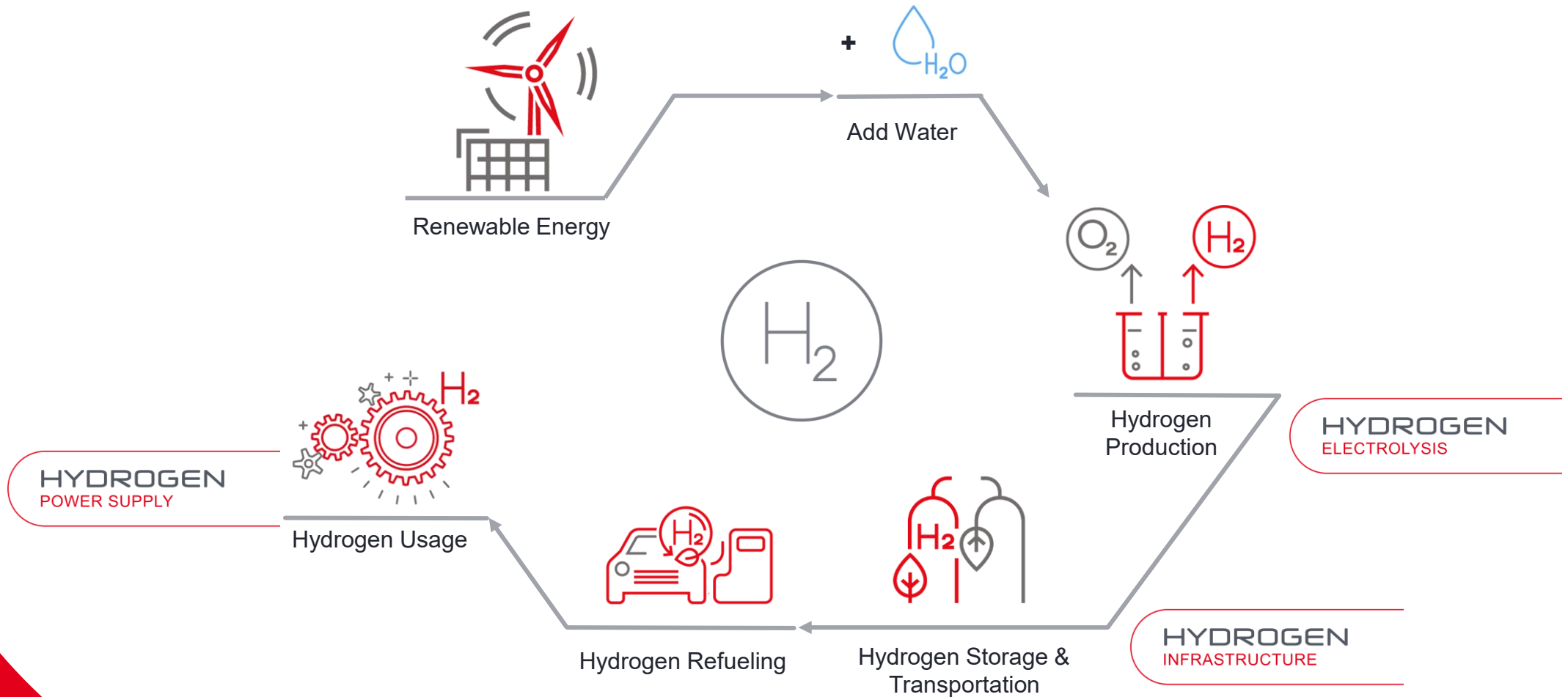
Pressure Transmitters



HYDAC Solutions along the Hydrogen Value Chain

Addresses all links in the value chain

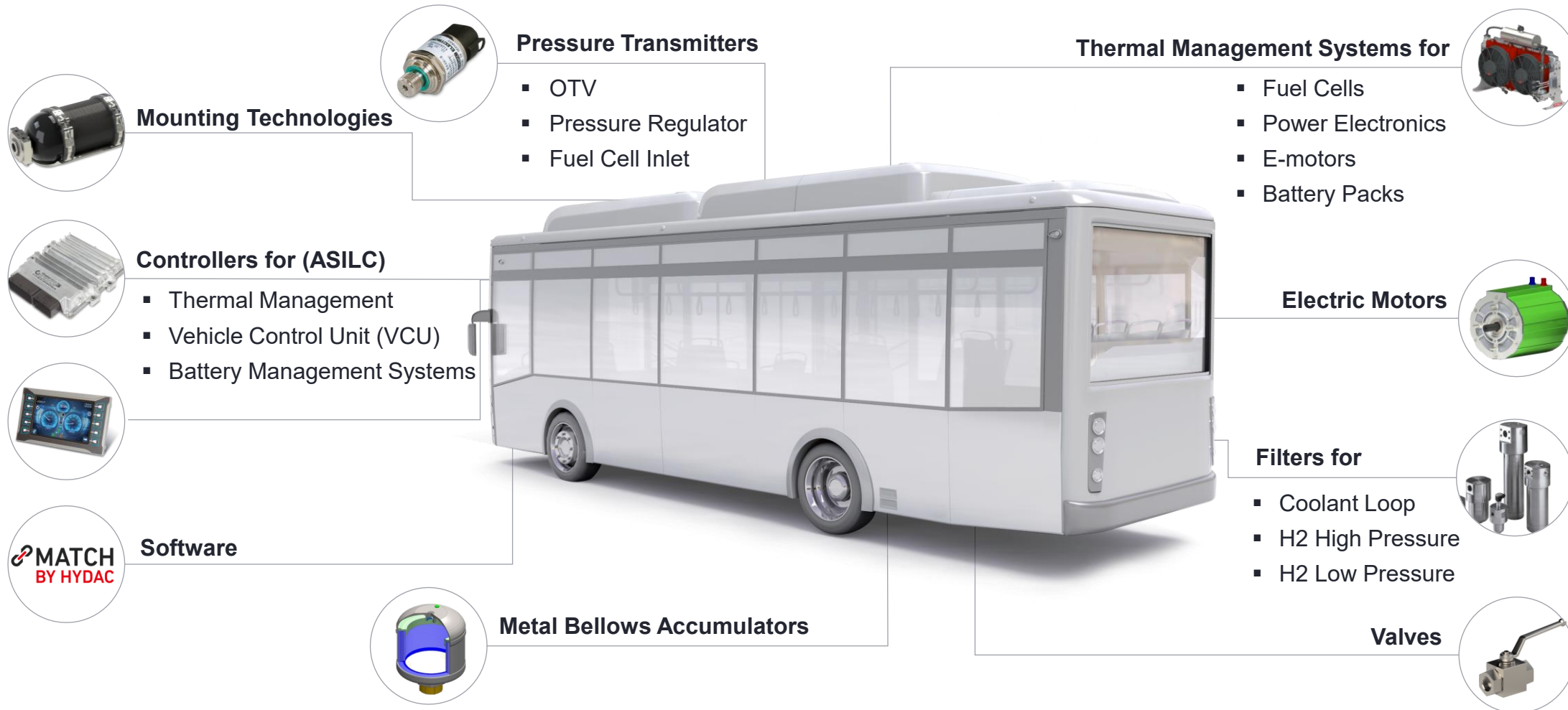
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Solutions for Mobile Applications for H2ICE and Fuel Cell

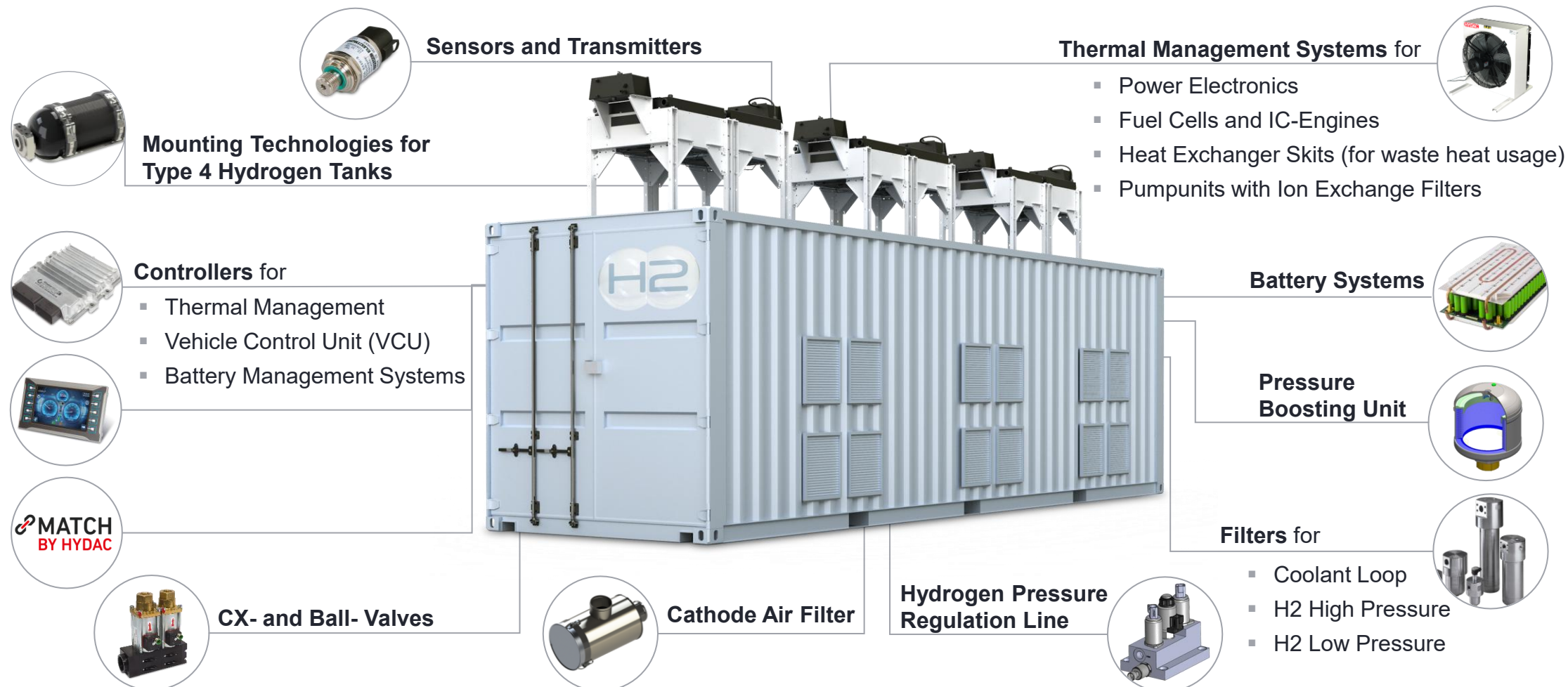
Insight into the Product Portfolio

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Solutions for Applications with Fuel Cell and H₂ Engine

Insight into the Product Portfolio



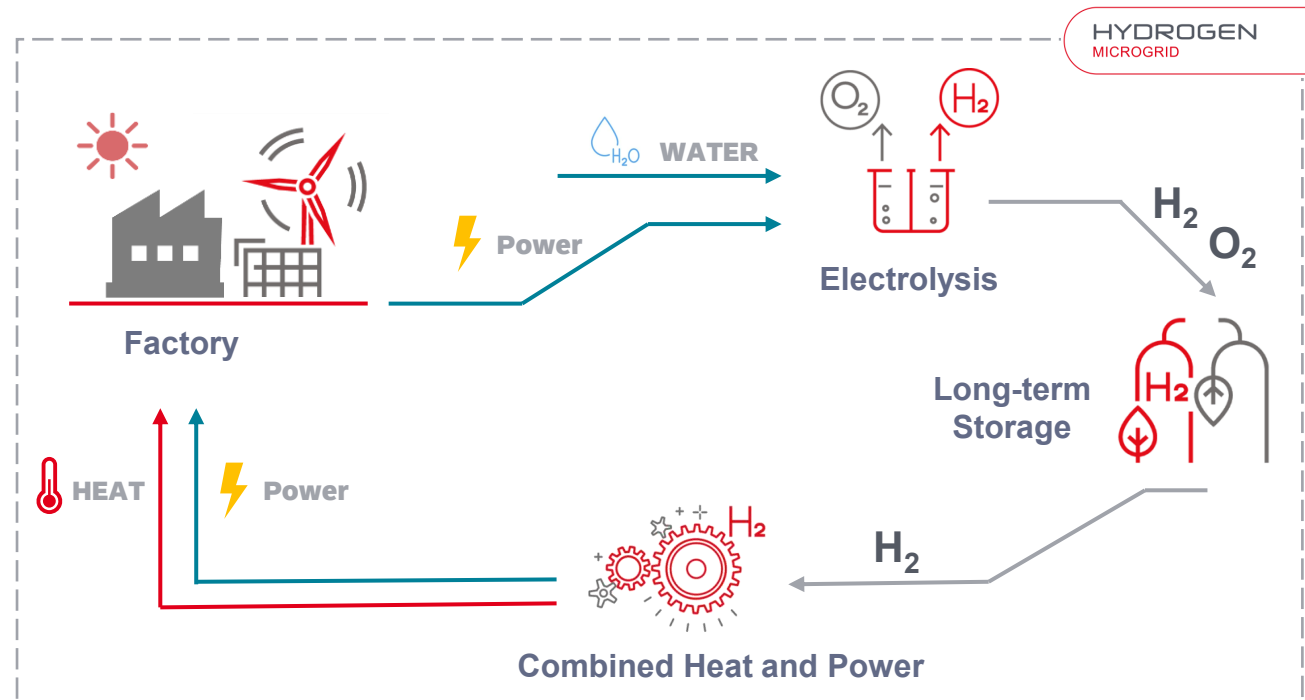
MICROGRID

MicroGrid: Holistic H₂ Energy Systems

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MICROGRID

Why is a MicroGrid needed?

- Companies are facing fluctuating energy prices
- Grid connection must be reserved for peak loads, resulting in significant costs
- Energy autonomy as a strategic objective – with purely electrical solutions often not economically viable



H₂MicroGrid Solution: Winner German Renewables Award

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MICROGRID



German Renewables Award 2025

Category: Hydrogen Innovation of the Year

- Award presented by EEHH (Renewable Energy Hamburg): Network of around 300 companies, universities & institutions
- Joint project by HYDAC, Helmholtz-Zentrum Hereon & Helmut Schmidt University

Award-winning project

- MicroGrid solution for energy storage in the form of hydrogen
- Contribution to long-term energy storage & sector coupling

Special recognition

- High level of innovation
- Successful collaboration between industry & research

MicroGrid: From Theory to Real Application

MicroGrid: Von der Theorie in die reale Anwendung

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Cooler and Thermal Management

Electrolyzer

Compressor

H₂ Storage

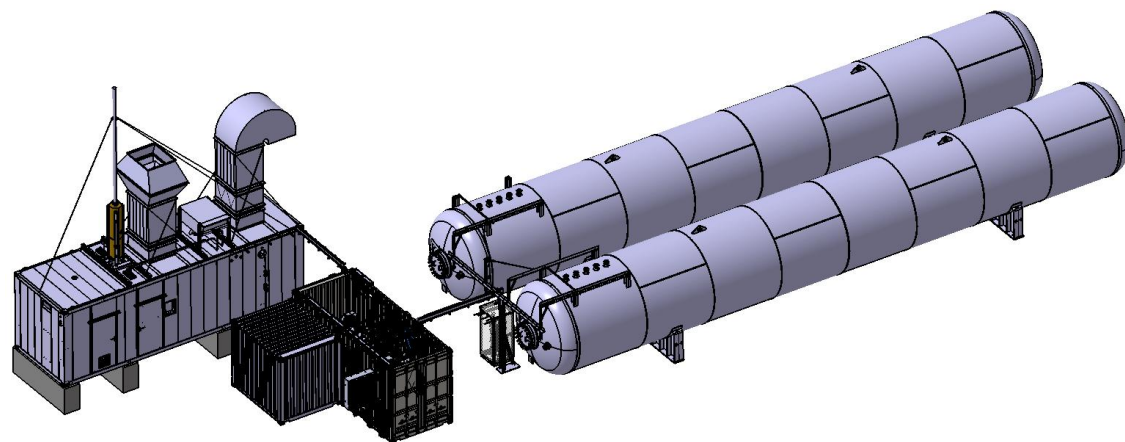
Fuel Cell

Battery

MicroGrid: We Increase Continuously our Added Value

MicroGrid: Wir erhöhen kontinuierlich unsere Wertschöpfung

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MICROGRID



Electrolyzer



Water treatment



Compressor



H₂ Storage

Cooler and Thermal Management

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MICROGRID



Cooler and Thermal Management

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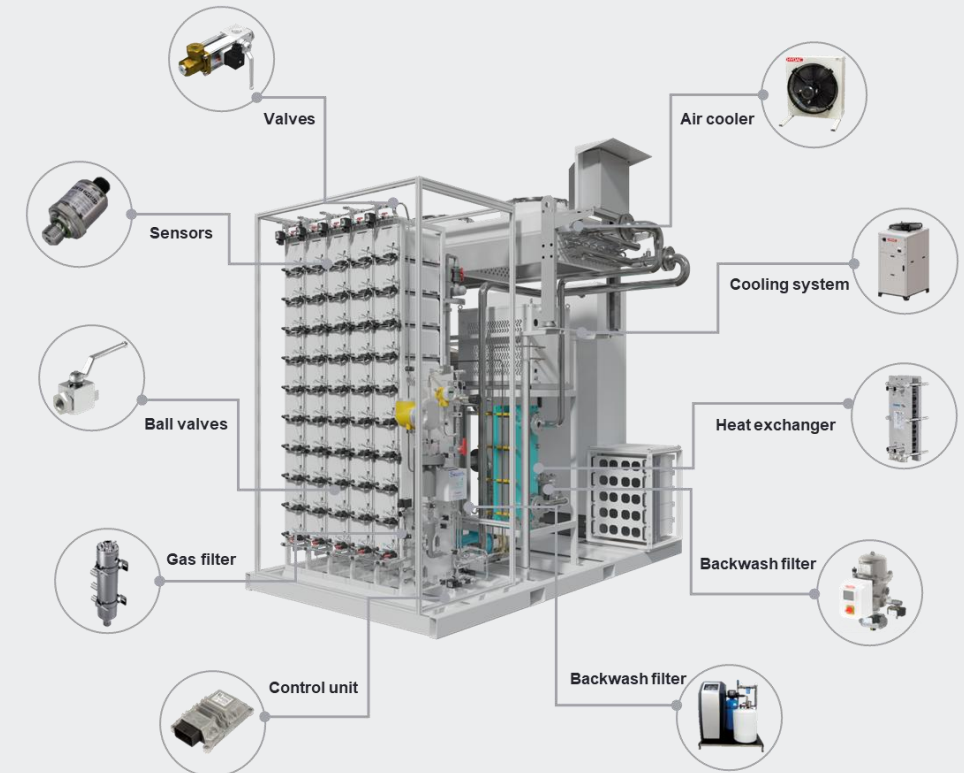
Battery

CHANGE OF PERSPECTIVE

Subsystem: Electrolyzer

Electrolyzer as a core component of the MicroGrid

- Robust balance of plant technologies from 20 years of hydrogen
- In the electrolyzer, **HYDAC** accounts for 40% of the added value
- **Flexible power** scaling of the electrolyzer across a range from 12% to 100%
- **Integrated stack redundancy** to ensure high system reliability and availability
- Use of waste heat of the electrolyzer to reach **80% overall efficiency**



Cooler and Thermal Management

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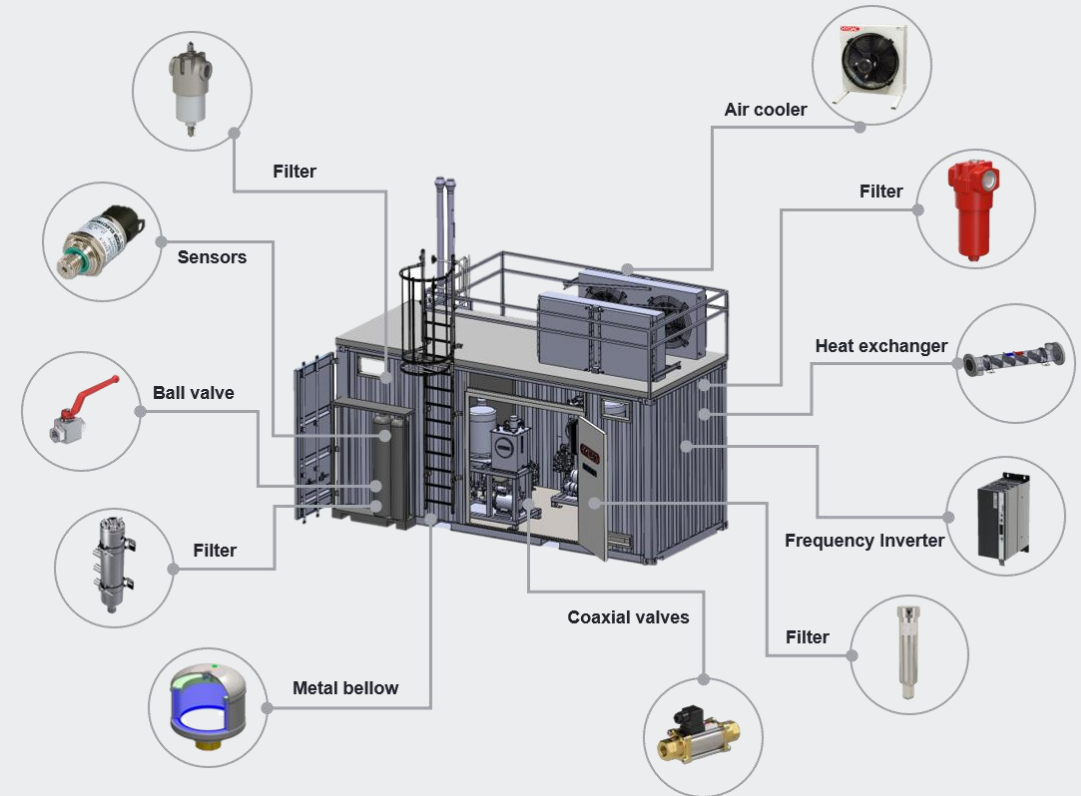
Battery

Subsystem: Compressor

If today's H₂-Systems fail, it's because of the compressor

→ Development of the metal below compressor based on long standing expertise in compression and hydraulic business

- **Permeation-free** (no contamination of gases and liquids)
- **Low maintenance** – **10.000.000 cycles** without maintenance of the metall bellow
- **No mixing of media and fluids**
- **No moving parts**
- **Suitable for ammonia, methanol, hydrogen etc.**
- **Modular and adaptable design** of the metal belows in different sizes to meet **project specific requirements** with efficient compression



Cooler and Thermal Management

Electrolyzer

Compressor

H₂ Storage

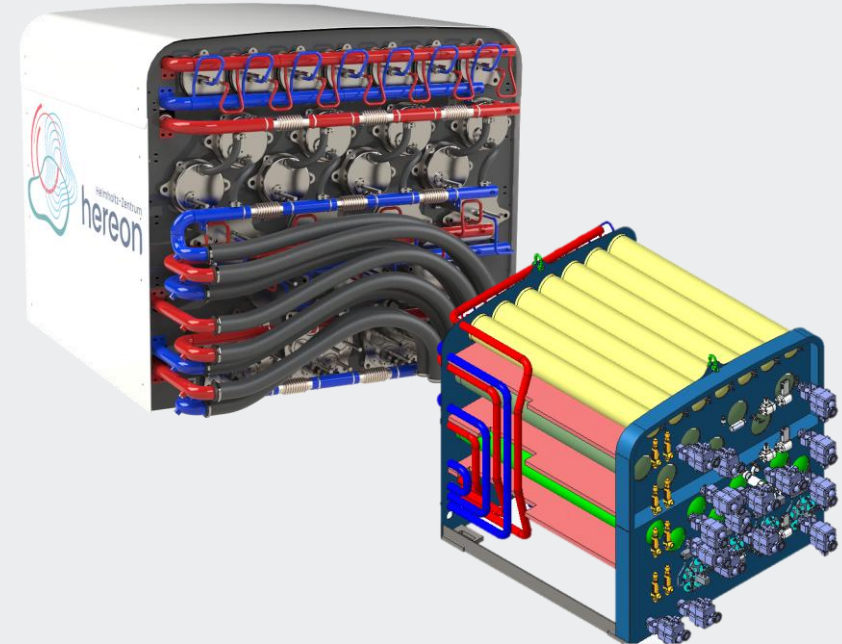
Fuel Cell

Battery

Subsystem: Metall Hydrid Storage

The reliable storage of energy in a compact space is a key requirement for any mobile and stationary application

- **High safety:** Hydrogen is stored in a solid-state form
- **High volumetric density:** Metal hydrides can store a large amount of hydrogen in a small volume, **400–700 kWh/m³ metallhydrid** compared to 400–800 kWh/m³ Li-Ion battery
- **Low operating pressure:** The energy density of a **30-bar metal hydride storage system is the same** as that of a **1,000-bar H₂ storage**



Cooler and Thermal Management

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H₂ Storage

Fuel Cell

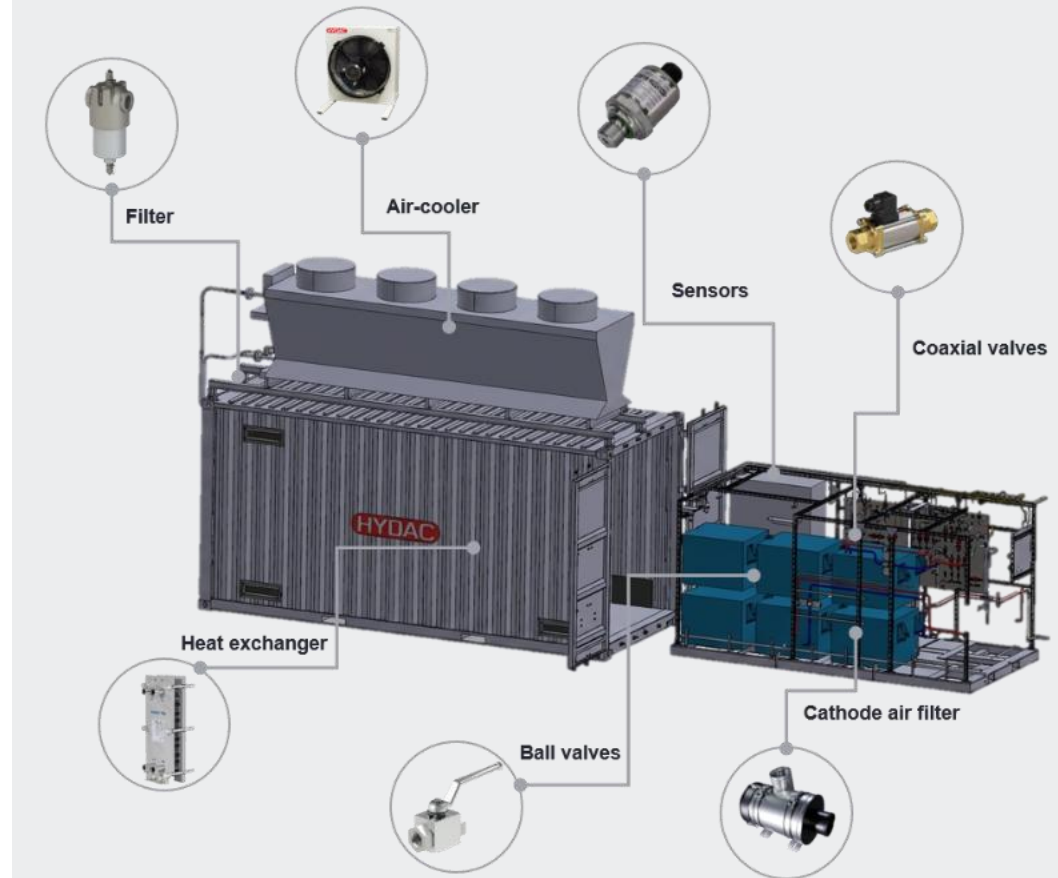
Battery

Subsysteme: Fuel Cell System

By 2030, electricity demand in Germany will rise from 520 TWh to 750 TWh

HNT is developing a modular fuel cell system to produce electrical and thermal energy out of hydrogen:

- **No CO₂, no ut** no particulate matter - the only byproduct is water vapor.
- With this solution, fuel cells achieve **cost parity with Combustion** units at the point of purchase but higher electrical efficiency then CHP (**55% el. Eff**)
- Maintenance costs are already **one-third lower** than those of CHP units.



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Cooler and Thermal Management

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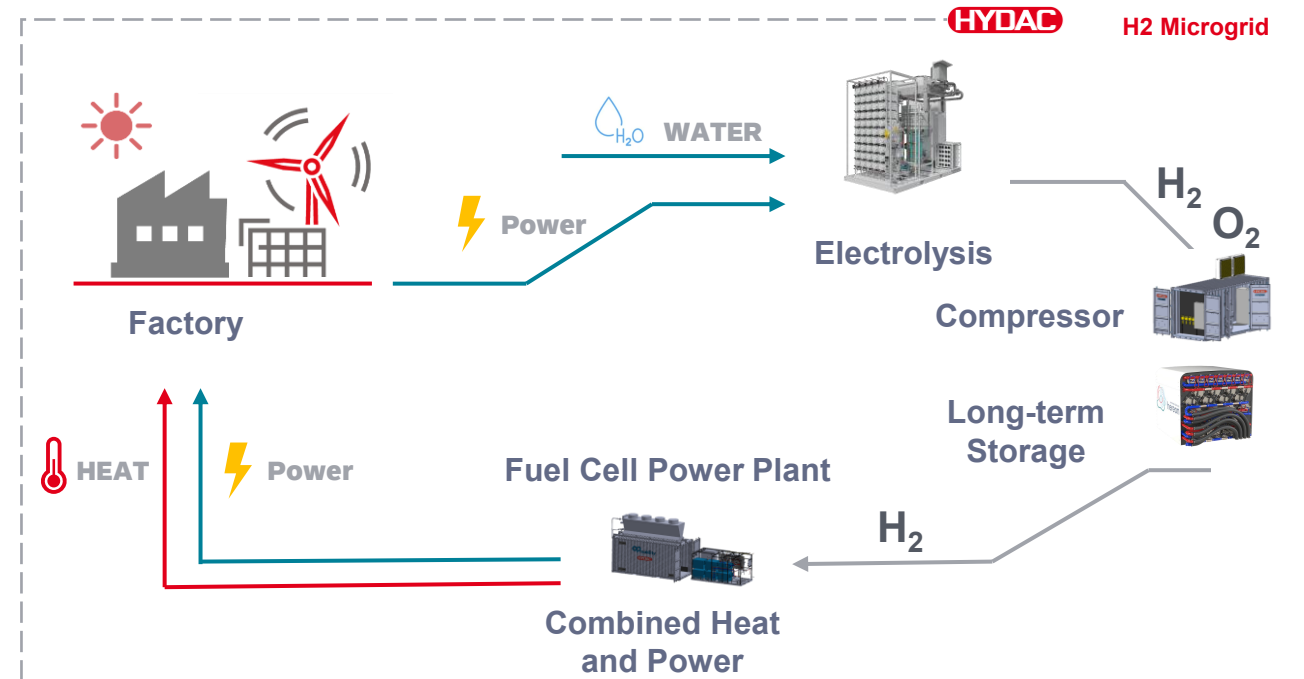
Project 2026: HYDAC covers the Entire Value Chain

Projekt 2026: HYDAC deckt die gesamte Wertschöpfungskette ab

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MICROGRID

Energy self-sufficiency provides independence from fluctuating energy prices and rising CO₂ costs

- Two 120 kW electrolyzers, compressor, 230 kg H₂ -storage, 170 kW fuel cell
- Reasons for awarding the contract to HYDAC:**
 - Increases overall efficiency by utilizing waste heat
 - High value-added services provided in-house (electrolyzer, compressor, H₂ -storage and fuel cell)



Cooler and Thermal Management

Electrolyzer

Compressor

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Battery

Hydrogen Competence Day 2026

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Eventinfo

Datum: 01. Oktober 2026

Ort: Ecomat Bremen

Zielgruppe: Kunden, Partner und H₂-Experten

Ablauf: Vorträge & Networking



Anmeldung & weitere Infos: [Anmeldung zum HYDAC Hydrogen Competence Day 2026 | DE-DE](#)

Vorträge von

- Jorgo Chatzimarkakis, CEO Hydrogen Europe
- Hendrik Seidel, Goldbeck
- Dr. Sebastian Waldeck, thyssenkrupp nucera
- Keno Leites, Zeppelin Power Systems
- Dr. Sebastian Pohl, TURN2X
- Und weitere Vorträge...



GOLDBECK



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