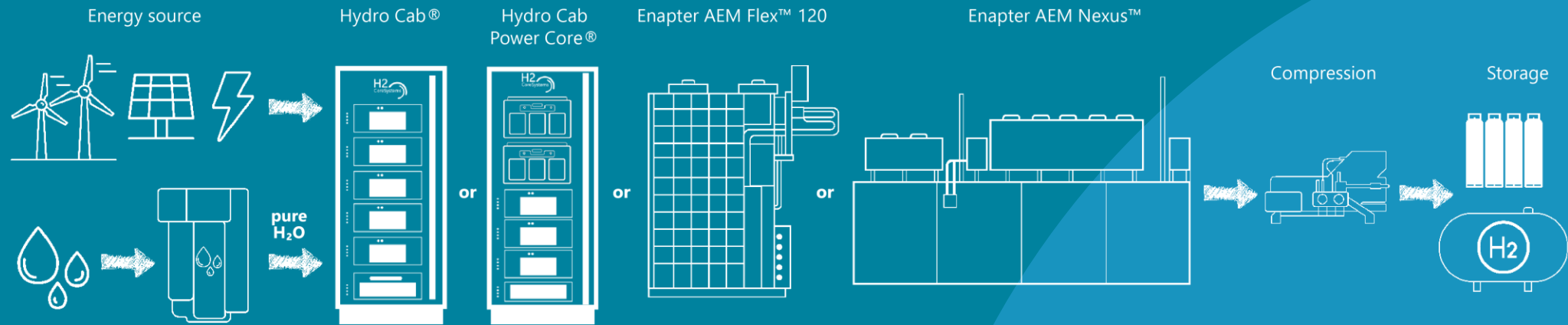


POWERING THE WORLD WITH GREEN HYDROGEN



Intelligent off-grid and urban solutions with H₂

ALL-IN-ONE H₂ SOLUTIONS FOR ENERGY INDEPENDENCE AND
LONGTERM SAVINGS THROUGH SEAMLESS INTERGRATION
OF ELECTROLYSIS, STORAGE, AND RENEWABLE ENERGY.

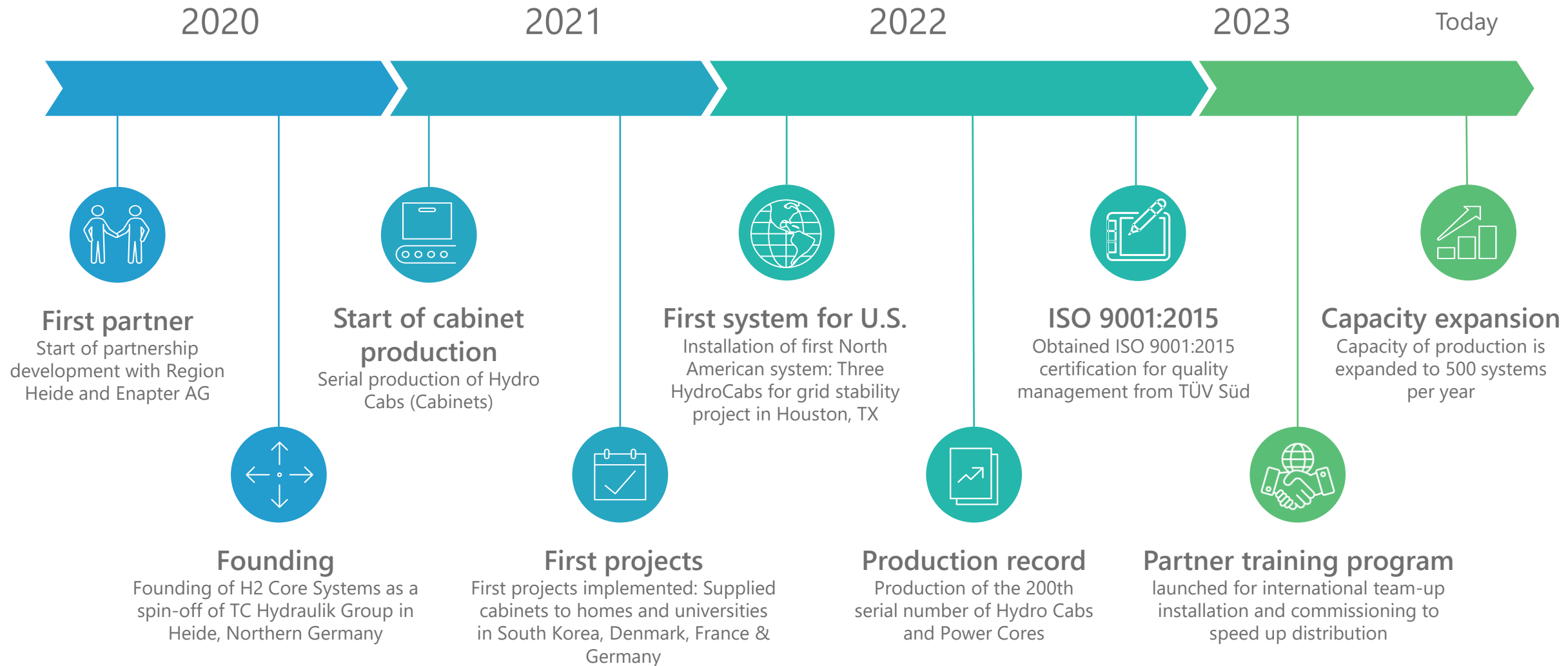




GLOBAL EXPERTISE IN MODULAR SYSTEMS AND STORAGE SOLUTIONS

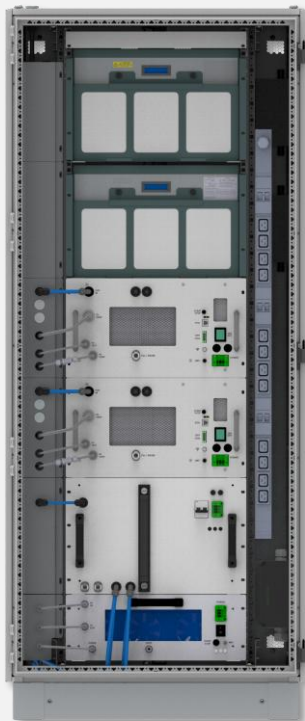
PLUG & PL..
AEM TECHNOLOGY
COMPRESSION
ELECTROLYSERS
FUEL CELL
SCALABLE
MODULAR
STORAGE

We have reached several important milestones since 2020



CORE ELECTROLYSERS IN OUR SOLUTIONS

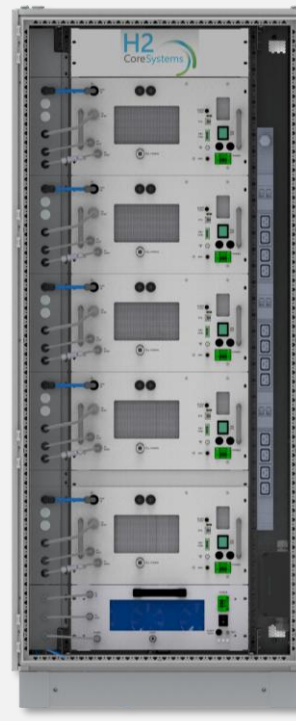
HYDROCAB POWERCORE®



modular
Electrolyser + Fuel Cell
up to 1.5 Nm³ / h H₂
up to 3 kg / 24 h
up to 8 kW electr.
output

This advanced technology delivers high efficiency and eco-friendliness by harnessing hydrogen. The PowerCore ensures a reliable supply of both electricity and heat, providing you with a flexible and sustainable energy source. With our state-of-the-art solution, we support you in meeting your energy needs while minimizing your environmental footprint.

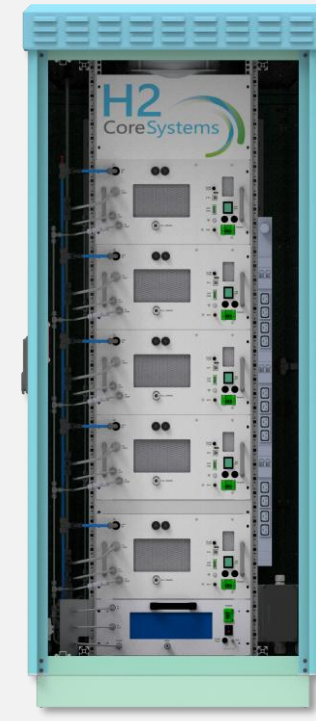
INDOOR HYDROCAB®



modular
up to 12 kW
5 kg / 24 h
0,5 Nm³ / h

The Indoor HydroCab by H2 Core Systems GmbH is a plug-and-play solution for small to medium hydrogen needs. It integrates up to five Enapter Electrolysers 4.1, each capable of producing up to 0.5 Nm³/h of hydrogen. The output of each electrolyser can be adjusted between 60% and 100%.

OUTDOOR HYDROCAB®



modular
up to 12 kW
5 kg / 24 h
0,5 Nm³ / h

For customers with limited space inside their buildings, we offer a solution in an outdoor cabinet that utilizes surplus PV energy. The system features a high-quality 19" cabinet equipped with heating, ventilation, and five electrolyzers. Hydrogen production can be customized from 1 to 5 kg/day per cabinet. Additional modules are available, including water purification systems, compressors, water tanks, and fuel cells in various power levels. The system is managed via a cloud-based management platform and can be controlled through a laptop, mobile app, main panel, Modbus, or external PLC.

CORE ELECTROLYSERS IN OUR SOLUTIONS

HYDROCLUSTER® 120 OUTDOOR

modular
up to 120 kW
53.9 kg / 24 h
25 Nm³ / h



The special feature of this HydroCluster® 120 is that we offer the HydroCluster® 120 in modular versions with power ratings of 48 kW, 72 kW, 96 kW and 120 kW. The advantage for the customer is that it is possible to equip this electrolyser with a partial output and, if required, to increase it to the full output of 120 kW at a later date.

Modular HydroCluster® 120 in the available H₂ production stages:

48 kW (10 Nm ³ /h, 21,56 kg/24h)	96 kW (20 Nm ³ /h, 43,12 kg/24h)
72 kW (15 Nm ³ /h, 32,34 kg/24h)	120 kW (25 Nm ³ /h, 53,9 kg/24h)

ENAPTER AEM FLEX™ 120 INDOOR

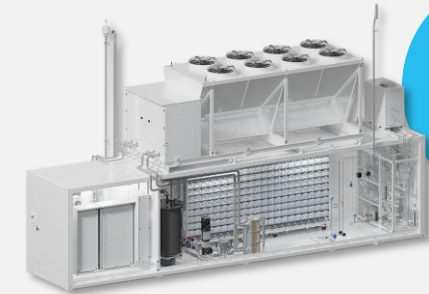
modular
up to 120 kW
53.9 kg / 24 h
25 Nm³ / h



The Enapter AEM Flex™ 120 is a versatile and efficient 120 kW hydrogen electrolyser using advanced AEM technology. Its compact design and high efficiency make it ideal for various pilot projects, from industrial process heat to refueling, helping customers launch sustainable hydrogen solutions while lowering operational costs and supporting eco-friendly energy use.

ENAPTER AEM NEXUS™ 500

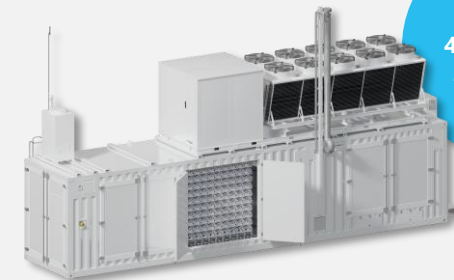
504 kW
225 kg / 24 h
105 Nm³ / h



The Enapter AEM Nexus™ 500 offer advanced hydrogen production solutions tailored to different needs. The Nexus™ 500 is ideal for smaller applications, pilot projects, and research purposes. With a capacity of 500 watts and utilizing efficient Anion Exchange Membrane (AEM) technology, it provides a compact and flexible solution that integrates well with renewable energy systems.

ENAPTER AEM NEXUS™ 1000

1.008 kW
450 kg / 24 h
210 Nm³ / h



The Enapter Electrolyser AEM Nexus™ 1000 is pre-assembled for fast commissioning, featuring hundreds of AEM stack modules around a common balance of plant (BoP). The Enapter AEM Nexus™ 1000 uses many electrolyser cores for a more resilient and reactive system that runs at optimal efficiency no matter the load applied.

SUPPLEMENTARY MODULES

WPS – Water Purification System



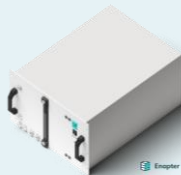
A simple reverse osmosis processes with resin filters can provide the required water quality. The water input to the electrolyser needs to be desalinated and have a conductivity of < 20 µS/cm.

Input water: Drinking water or Tap water

Standard power supply: 230 V / 50 Hz

Water storage tank: 2 l

WTM Enapter Water Tank Module



Enapter's water tank provides storage for 38 litres of clean water for the aem electrolyser.

The water tank is rack mountable into a standard 19" cabinet. The tank contains a conductivity sensor and a pump system to supply up to 9 AEM electrolyzers with clean water.

ENAPTER DRYER



Enapter's dryer is a hybrid temperature/pressure swing adsorption system which produces 5.0 dry hydrogen from 3.0 quality. (5.0 = 99.999% und 3.0 = 99.9%)

HYDRO FUELL CELL



Our fuel cells can be integrated into our modular and individual configurable H2 Core systems, complementing the systems immensely, because the hydrogen produced can be easily and reliably converted back into electricity. Available power levels: 1.2 kW, 2.4 kW and 4.0 kW.

COMPRESSOR



Electromechanical Compressor for simple installation in non-industrial applications. This hermetically gas-tight, oil-less, dry-running piston compressor features a contactless and wear-free magnetic coupling. Designed for easy maintenance and long service life.

COMPRESSOR



The Maximator Huls Series is a scalable Gas Compression System, specifically designed for Hydrogen compression up to 1000 bar with scaleable volume flow.

STORAGE



The most cost efficient way to store hydrogen is using the already 35 bar of our electrolysis systems. Up to >4,000 Nm³ to 115 m³ vessels!

Cylinder bundle
0,6 m³- 0,8 m³ volume;
1.6 – 2.3 kg H₂
35 bar / bundle

ADDITIONAL SERVICES

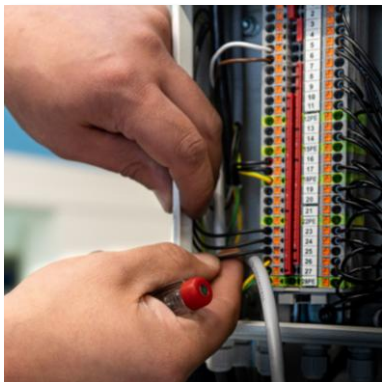
FOR AN EFFICIENT, STRESS-FREE PROJECT IMPLEMENTATION AND OPTIMAL RESULTS, TAKE ADVANTAGE OF OUR ADDITIONAL SERVICES

INSTALLATION
AND
COMMISSIONING

PROJECT
SUPPORT

SUPPORT WITH
HAZOP

MAINTENANCE
AND SERVICE



OUR PROJECTS AROUND THE GLOBE



Lancium – Dynamic grid load management - USA

Enapter's AEM Electrolysers ensure grid stability by dynamically adjusting hydrogen production to match electrical energy levels, preventing power outages and grid damage. This on-demand flexibility supports efficient and cost-effective green hydrogen production.



Universidade Federal do Rio de Janeiro - BRAZIL

3 Outdoor HydroCabs® V2.1 incl. Enapter Electrolyser, Enapter dryer, Enapter water storage, water purification, fuel cells, compressor system, Enapter EMS, H2 storage (including commissioning)



FOTOVOLTAICA-UFSC. Florianópolis - BRAZIL

3 Indoor HydroCabs®



Sesame Solar, Inc., USA

Installed an Indoor HydroCab PoweCore incl. Electrolyser to support the Nanogrid.



SIZ Braunschweig - GERMANY

1 Megawatt Nexus Project



THM - University of Applied Science - GERMANY

1 Indoor HydroCab V2.1 (4 EL, DRY & WTM), 1 Indoor HydroCab V2.1 (1 FC), 1 PYLONTECH LifePO4 storage 48V, 1 compressor system hulf, 5 12ers gas cylinder bundles 500bar, 1 H2 Tank 0,85m³ @35 bar



EGAT Learning Center - THAILAND

EGAT Learning Center was established with the aim of providing knowledge and experience in power generation. To become a Trust & Pride of the nation, as well as a source of energy learning in Thailand and the world from the past, present and future.



SBB Energy S.A. - POLAND

Hydrogen Fuel will be used to help creating a grid-balancing and train-recharging application. A lot of components had to work together – production, storage, compression and re-use of hydrogen for electrical power was all part of the process.



H2SYS - FRANCE

7 Indoor HydroCab V4.0, EL4.1, Dryer, Water Tank Module (WTM) CAT (customer acceptance test)

SELF-SUFFICIENCY and reliable energy at LOW OPEX



Hydrogen represents a compelling energy source to replace diesel generators in supporting high availability requirements of micro grids, telecommunication towers, utility power stations and all rural applications. Where grid power is unavailable or unreliable, a high reliance is placed on diesel power generation, which creates environmental problems and is subject to rising costs of fuel and maintenance.

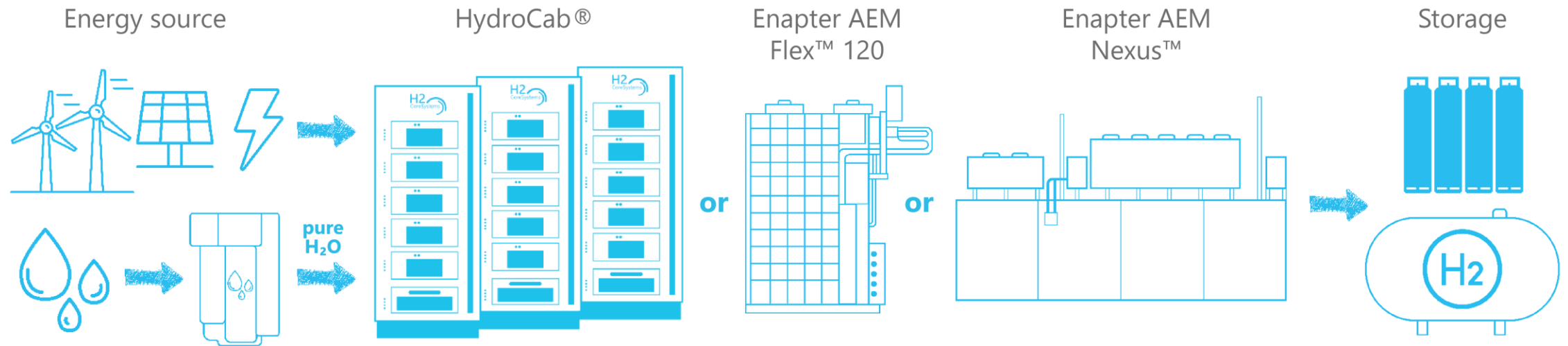
H2 Core Systems have a flagship product, the PowerCore® fully self-contained, self-refuelling hydrogen energy system is a perfect replacement for diesel generators in the above sectors for reliable 24/7 energy supply, without a grid connection in combination with solar PV arrays (or all other sources, such as wind, instable grid, ...) needs to be available. If sites do not have the land footprint to accommodate these assets, a logistics model can be considered due to the versatility and modularity of hydrogen energy systems. In this scenario, a larger electrolyser is placed centrally (with either a grid connection or solar farm) and hydrogen is delivered to each site where storage vessels and a fuel cell are installed.

A detailed analysis can be provided to show the economics of such a business model for deployments worldwide.

GRID SOLUTIONS

Grid Stability: Can be improved through a smart response solution using a dynamic grid load management with electrolysis. The number of variable loads like electrolyzers will be increased or decreased, depending on the status of the power net/grid.

Microgrid: The basic idea is to use hydrogen systems to balance out grid fluctuations, so that our HydroCabs are always switched on or off depending on the current load, thus enabling continuous use.





GRID SOLUTIONS

YOUR BENEFITS:

GRID STABILITY

Helps balance supply and demand by storing excess energy as hydrogen.

FLEXIBLE ENERGY STORAGE

Provides a reliable way to store and release energy as needed.

RENEWABLE INTEGRATION

Facilitates the integration of renewable energy sources by smoothing out fluctuations.

REDUCED CURTAILMENT

Minimizes the need to curtail excess renewable energy production.

ENHANCED RELIABILITY

Strengthens collaborations with industry and research institutions.



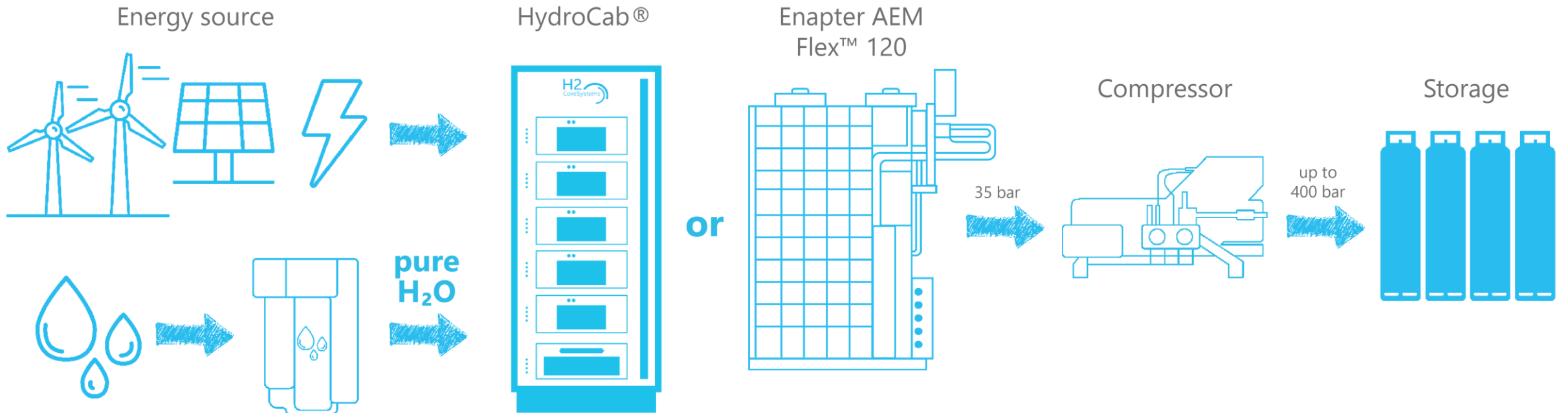
USE CASE:

Grid Solutions USA



ISLAND HYDROGEN PRODUCTION

On-site hydrogen production involves generating hydrogen at the location where it is used, reducing transportation costs and increasing efficiency, particularly when combined with renewable energy sources.



ISLAND HYDROGEN PRODUCTION

YOUR BENEFITS:

LOWER TRANSPORTATIONS COSTS

Eliminates the need for transport.

HIGHER EFFICIENCY

In situ production for direct usage.

BETTER INTEGRATION

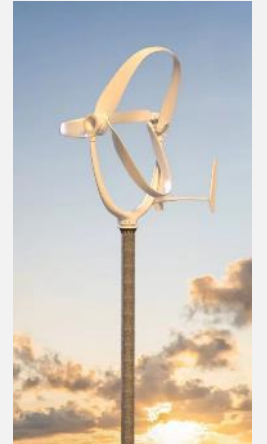
Wind, sun is allways available on Galapagos Islands.

IMMEDIATE ACCESS

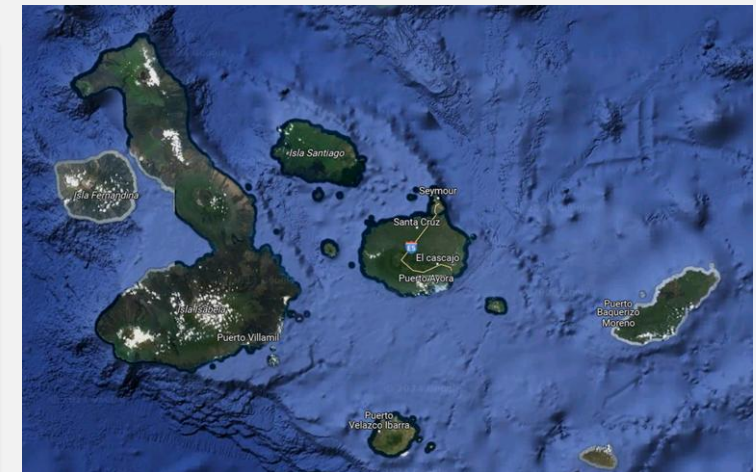
Provide quick availability for use.

ENVIRONMENTAL BENEFITS

No harm to heritage of UNESCO

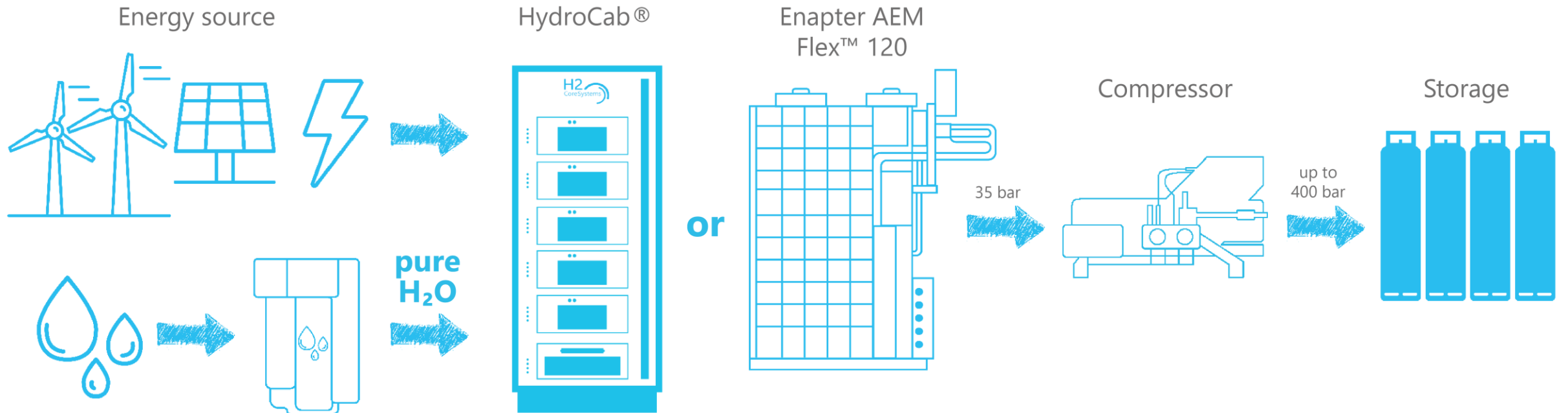


USE CASE:
Hydrogen supply
Belfort,
France



ON-SITE HYDROGEN PRODUCTION

On-site hydrogen production involves generating hydrogen at the location where it is used, reducing transportation costs and increasing efficiency, particularly when combined with renewable energy sources.



ON-SITE HYDROGEN PRODUCTION

YOUR BENEFITS:

LOWER TRANSPORTATIONS COSTS

Eliminates the need for transport and storage.

HIGHER EFFICIENCY

Reduces energy losses from distribution.

BETTER INTEGRATION

Utilizes local renewable energy sources.

IMMEDIATE ACCESS

Provide quick availability for use.

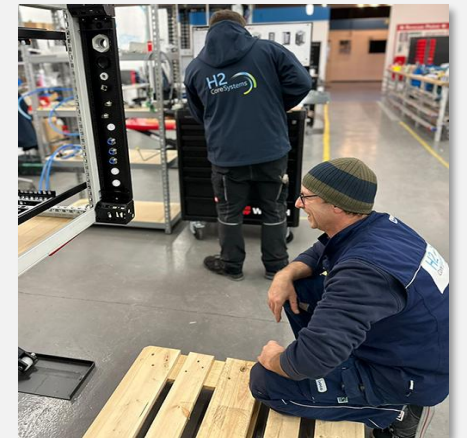
ENVIRONMENTAL BENEFITS

Reduces CO₂ emissions by minimizing storage and transport needs.



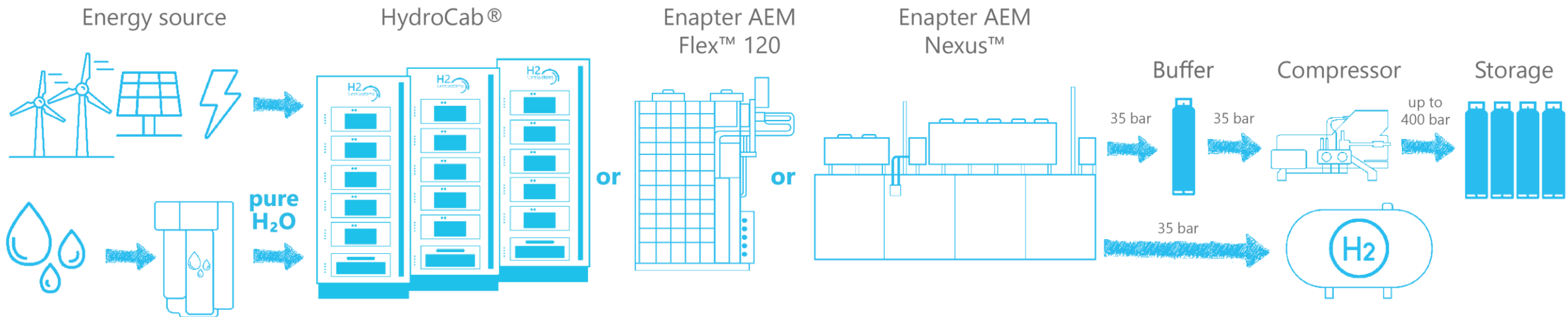
USE CASE:

Hydrogen supply
Belfort,
France



SUBSTITUTION OF NATURAL GAS

Transitioning from fossil fuels to green energy reduces the environmental impact and promotes sustainability by leveraging renewable sources, for example by replacing natural gas with green hydrogen, which lowers emissions while ensuring a high degree of energy independence.



SUBSTITUTION OF NATURAL GAS

YOUR BENEFITS:

COST SAVINGS

Lower long-term energy expenses.

COMPETITIVE ADVANTAGE

Stronger market position through sustainability.

ENERGY INDEPENDENCE

Natural gas is gradually replaced by hydrogen.

RISK MITIGATION

Reduced dependence on volatile fuels prices.

REPUTATION BOOST

Enhanced corporate image through environmental responsibility.



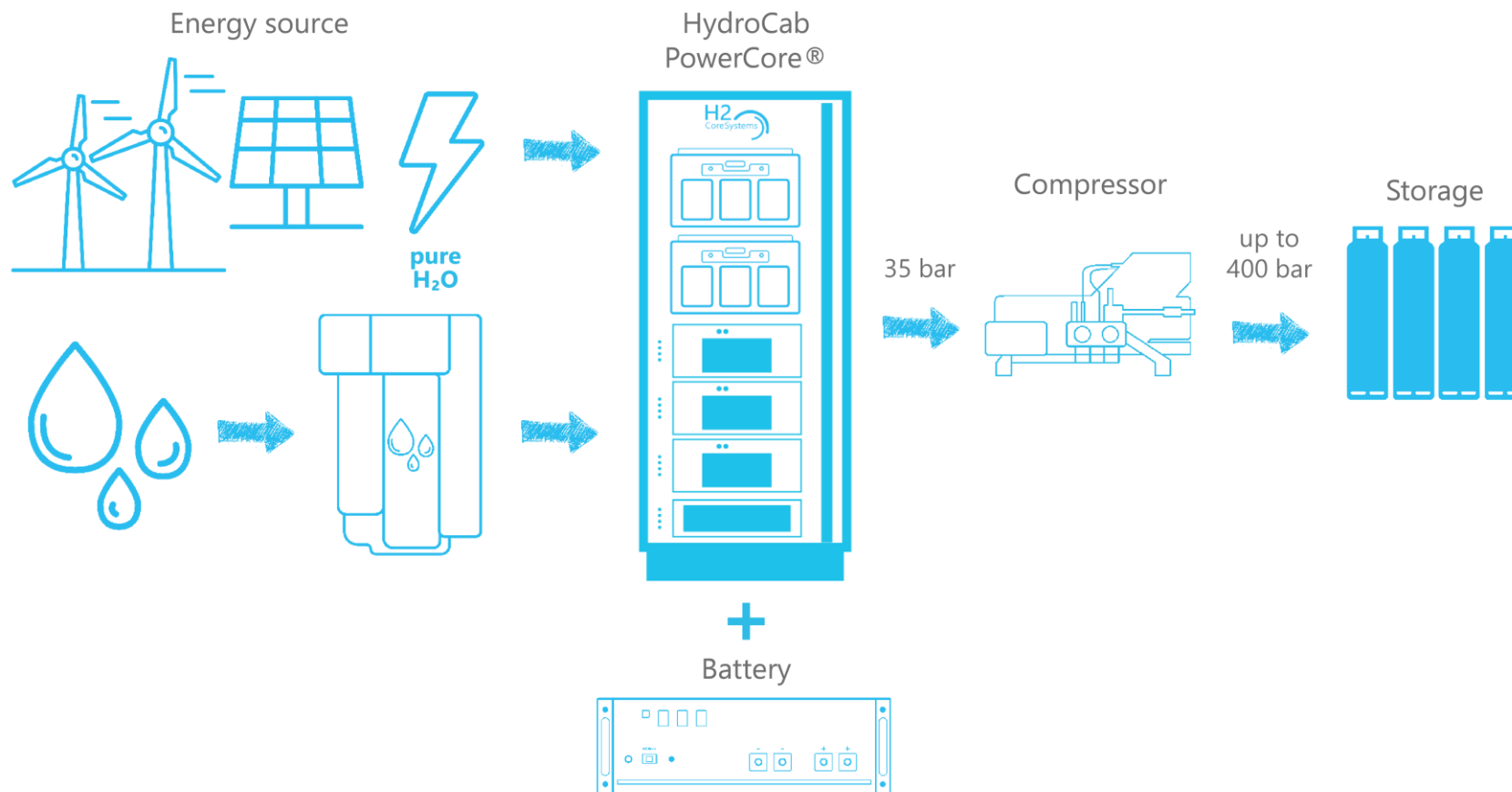
USE CASE:

Heat processes like:
Electroplating
Ceramic
Hot-dip galvanizing



R&D, EDUCATION, DEMONSTRATION

Hydrogen systems for R&D, education and demonstration help to foster innovation, training and practical applications for a sustainable future.



YOUR BENEFITS:

HANDS-ON TRAINING

Provides students with direct experience in hydrogen technologies.

ENHANCED CURRICULUM

Enriches the curriculum with current topics in renewable energy.

CAREER PREPARATION

Prepares students for careers in the hydrogen sector.

INNOVATION PROMOTION

Encourages innovative projects and research within the educational setting.

PARTNERSHIP OPPORTUNITIES

Strengthens collaborations with industry and research institutions.



USE CASE:

Mobility
Universidade federal
do Rio de Janeiro,
Brasil



OUR PARTNERS

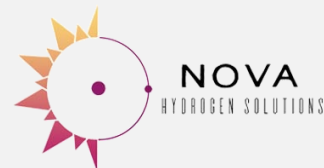


Enapter

"**Enapter** relies on its partners to create the complete green hydrogen systems the world needs. Today, H2 Core Systems is at the forefront of this ecosystem, developing the most innovative hydrogen solutions."

MAXIMATOR®
Maximum Pressure.

"It is very inspiring for us at **Maximator** to work with visionary companies like H2Core, we are grateful for the innovative and open exchange and proud to support H2Core with our HydroHulc in their business field in the long term."



THANK YOU!

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Find out more
about us

