



**H2 CORE
SYSTEMS GMBH**

SAYS

„MOIN“

**POWERING
THE WORLD
WITH GREEN
HYDROGEN!**

ELECTROLYSIS

PLUG & PLAY

SCALABLE

STORAGE

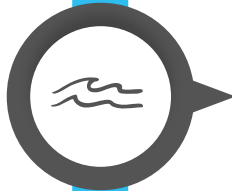
MODULAR



WHERE WE COME FROM



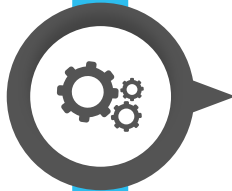
H2 Core Systems GmbH is a spin off of the TC-Hydraulik Group, Heide Germany. More than 35 years of experience in fluid systems (hydraulic, pneumatic, gases)



We are based at the west coast of Schleswig-Holstein, which is an important generator of electricity from renewable energies.



The H2 Core Systems team combines the know-how and experience in fluid machine engineering with the advanced Enapter AEM electrolyzers and the intelligent, cloud-based energy management system EMS.

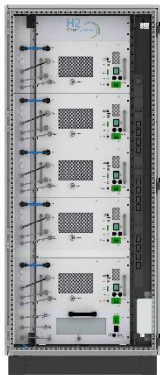


We are building, installing and servicing modular, scalable, plug & play electrolysis systems, your individual configurable hydrogen source.

PRODUCT DEVELOPMENT AND PRODUCT STRATEGY

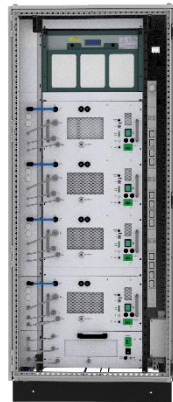


HydroCab



- ≡ Up to 5 EL-modules – 2.500 NI/h
- ≡ Optional dryer for 99.999 % purity
- ≡ 35 bar H2 outlet pressure
- ≡ Standardized and flexible
- ≡ Fully expandable with more racks
- ≡ Plug and play ready
- ≡ Leadtime only 3 weeks

PowerCore



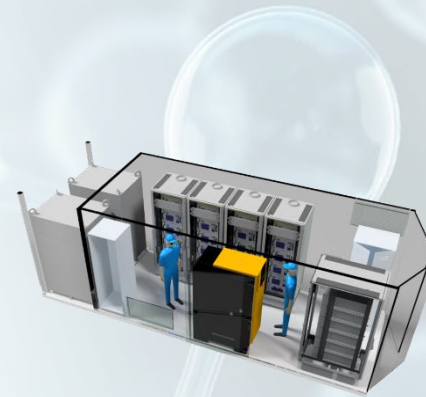
- ≡ Up to 5 modules
- ≡ Combination of EL and FC
- ≡ EL power up to 2.000 NI/h
- ≡ FC power from 1.2 to 8 kW
- ≡ Optional dryer for 99.999 % purity
- ≡ Standardized and flexible
- ≡ Plug and play ready
- ≡ Leadtime 12 weeks

HydroMercure



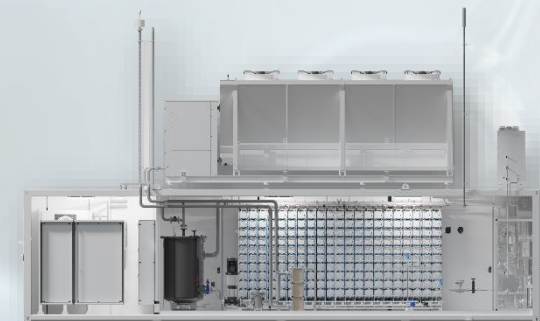
- ≡ Compressor system
- ≡ Perfectly suiting for EL modules
- ≡ Pressure 350 bar
- ≡ Electrical-driven
- ≡ Scalable
- ≡ Standardized and flexible
- ≡ Plug and play ready
- ≡ Leadtime 16 weeks

Multi Container



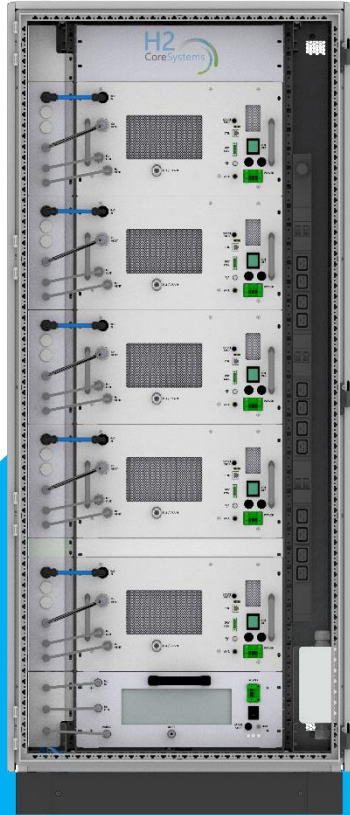
- ≡ Combined electrolysis with compression, storage, dispenser and fuel cell
- ≡ Multi-Container 20 ft
- ≡ Modular scalable, flexible
- ≡ Forklift-refueling
- ≡ Energy independency
- ≡ H2 production
- ≡ Storage/compression
- ≡ Available from 2Q 2022

AEM MultiCore

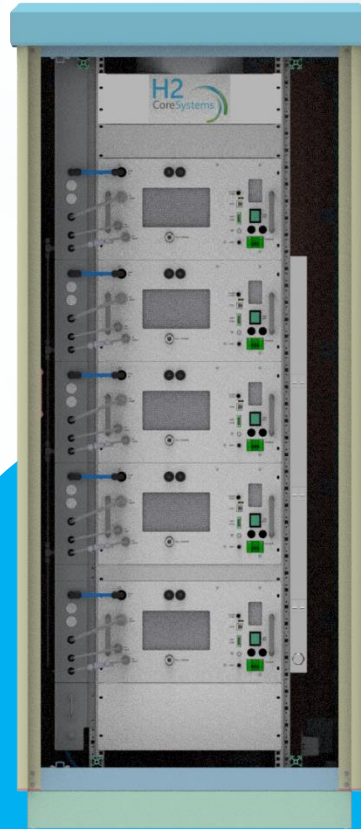


- ≡ MegaWatt Class
- ≡ 1 MW = 450 kg/day
- ≡ or 500 kW = 225 kg/day
- ≡ Optional dryer for 99.999 % purity
- ≡ 35 bar pressure outlet
- ≡ Standardized and flexible
- ≡ Modular scalable
- ≡ Plug and play ready
- ≡ Leadtime 6 months
- ≡ First MultiCore pilot will be built in 2022
- ≡ First customer project sold for June 2023

H2-PRODUCTION ELECTROLYSIS



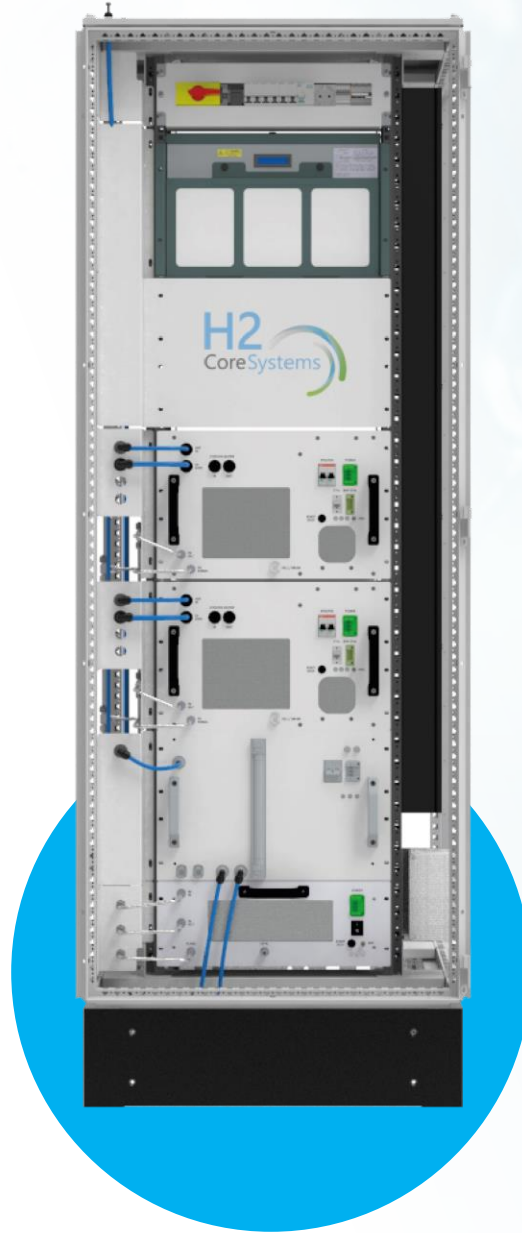
INDOOR



OUTDOOR

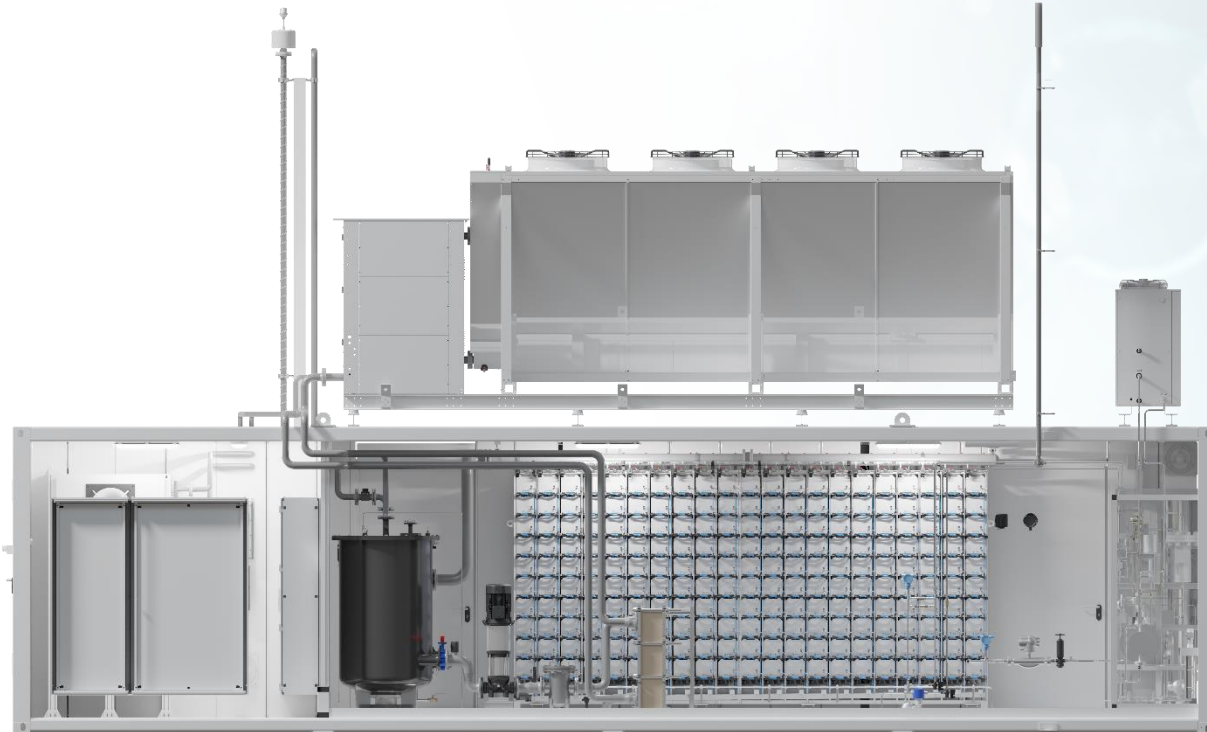
HYDROCAB

- up to 5 electrolyser modules per cab
- optional dryer for 99.999% H₂-purity
- 35bar hydrogen output pressure
- optional water tank + fuel cell integration
- standardized and flexible
- fully expandable with more racks
- plug and play ready
- available in no time --> "on stock"



HYDROCAB POWERCORE

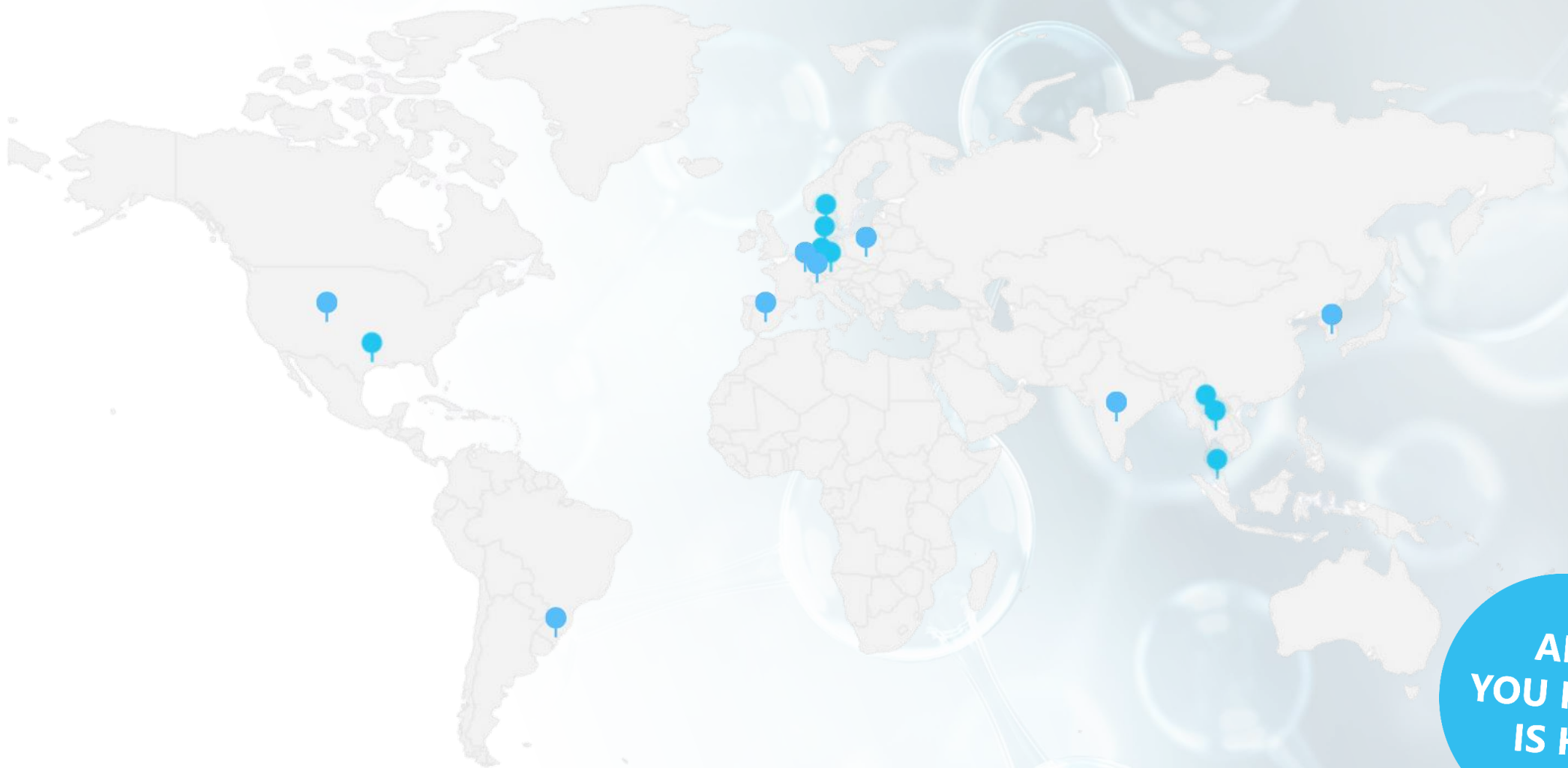
- combining the best of hydrogen and battery systems to a short- and long-term energy storage system.
- up to 3 Enapter electrolyser modules
- 35 bar hydrogen pressure outlet
- dryer for 99.999 % H₂-purity included
- fuel Cell power output options ranging from 1,2 kW to 8kW per cabinet, higher output power on request
- high Efficiency super capacitors for short term storage
- optional hydrogen storage 50 kWh, 75 kWh, 240 kWh in expandable modules
- plug and play ready



AEM MULTICORE

- **Produce Megawatt-Scale Green Hydrogen. Simply. Rapidly. Anywhere.**
- **1MW/500 kW Scale Electrolyser**
- **production of up to 450kg H₂/day**
- **up to 210Nm³/h nominal flow**
- **optional dryer for purity 99.999%**
- **flexibility 3% - 100% of nominal rate**
- **Optional waste heat recovery**

PROJECTS AND MARKETS



ALL
YOU NEED
IS H2

— DYNAMIC GRID LOAD MANAGEMENT WITH ELECTROLYSIS – HOUSTON, USA

Electrolyser EL 2.1
DRY 2.1



Location

Houston, USA

What was installed?

Electrolyser (AEM single-core)	15 x EL 2.1
Photovoltaic (PV)	Multi-MW
Turbine	Multi-MW
Dryer	3 x DRY 2.1

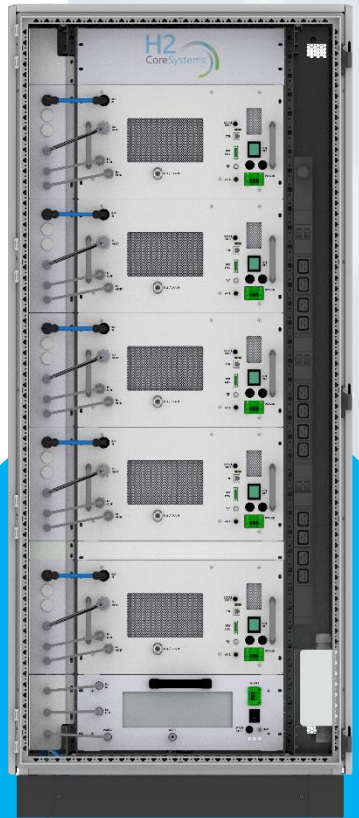
Where was it installed?

Variable load-management system

Description

Lancium Texas Houston, a US client of certified partner H2 Core Systems, are using a system featuring Enapter's AEM Electrolysers to help achieve grid stability, assisting in the prevention of major power outages and grid damage. The turnkey green hydrogen production system is integrated into the client's variable load-management system, producing green hydrogen from fluctuating renewable electricity that can also destabilise the grid.

When too much electrical energy is in the grid, the flexible AEM Electrolysis workload is increased to create more hydrogen, and decreased when too little energy is present. This on-demand ramp-up and ramp-down of production within seconds supports both grid stability and the production of cheap, regenerative green hydrogen. After multiple rounds of testing, next steps are planned to expand the system to a multi-megawatt level, with hydrogen sold to industry and mobility offtakers.



CONTAINERISED REFUELLING SOLUTIONS – LOWER SAXONY, GERMANY

Electrolyser EL 2.1



Location

Lower Saxony, Germany

What was installed?

30 x EL 2.1

Where was it installed?

Container-based demonstration system on the JAG Test-area

Description

JA-Gastechnology GmbH (JAG) has developed a multi-function hydrogen refuelling system that draws on stacked AEM Electrolysers to unlock hydrogen mobility solutions. The container-based demonstration system integrates 30 AEM electrolyzers with gas dryers and gas compression to achieve 90 kW of electrolysis but future systems could feature between 30 kW and 210 kW. Several different projects are in production at JAG, with the solution designed to adapt to diverse use cases.

For example, the integrated 350bar compressor unit allows efficient storage and direct refuelling of fleets with 350bar requirements such as forklifts, while the hydrogen quality will fulfill standard fuel cell needs for the automotive industry. Using the compact, modular AEM Electrolysers will allow users to start small for testing purposes and then scale up with stackable modules as needed. The fully-automated system can also regulate optimum efficiency in fluctuating power input such as energy from PV solar systems. In a later stage, JAG intends to plan larger systems of up to 1MW.

Our partner

[JA-Gastechnology GmbH \(JAG\)](#)

— HYDROGEN HOUSE – STARNBERGER SEE, GERMANY

HydroCab **PowerCore**

Location

Starnberger See, Germany

What was installed?

HydroCab Power Core

Where was it installed?

Single house, completely supplied with solar and hydrogen (electricity and heating).

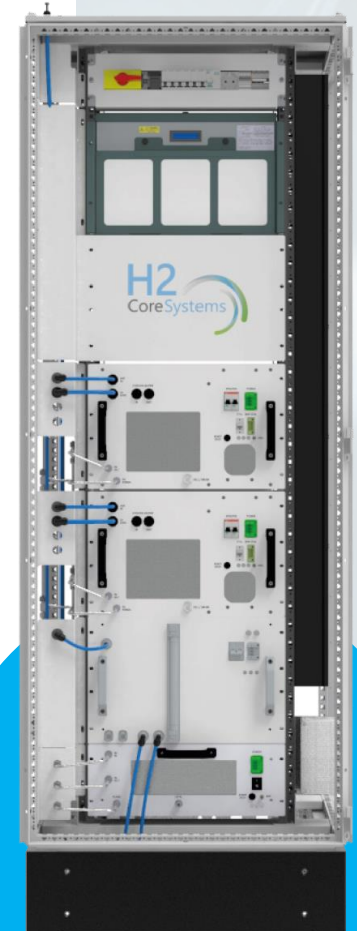
Model house for school classes, training courses and house-building companies

Who are the users of the hydrogen we produce?

Electricity (fuel cell) and heating (combustion)

What have we learned from working on this application?

It is fun to work with highly motivated people.



— EGAT LEARNING CENTER -THAILAND

3 x IndoorCabs (10x EElectrolysers, 3x Fuel Cell, 2x Dryer, 1x WTM)

Location

Thailand

What was installed?

3 x IndoorCabs (10x EElectrolysers, 3x Fuel Cell, 2x Dryer, 1x WTM)

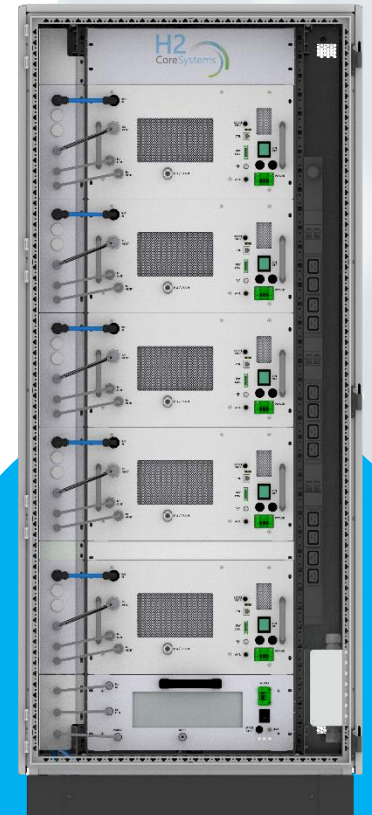
Where was it installed?

EGAT Learning Center Thailand

Description

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. It is also a learning resource for energy efficient buildings, international standards that aim to achieve maximum benefits for society.

At the EGAT Learning Centre in Thailand, our partner and electrolyser supplier Enapter worked with Egat on a demonstration project and we brought the components together by installing 3 IndoorCabs. This is a school and research centre where the subject of hydrogen can be explained to interested people.



PROJECTS AND MARKETS



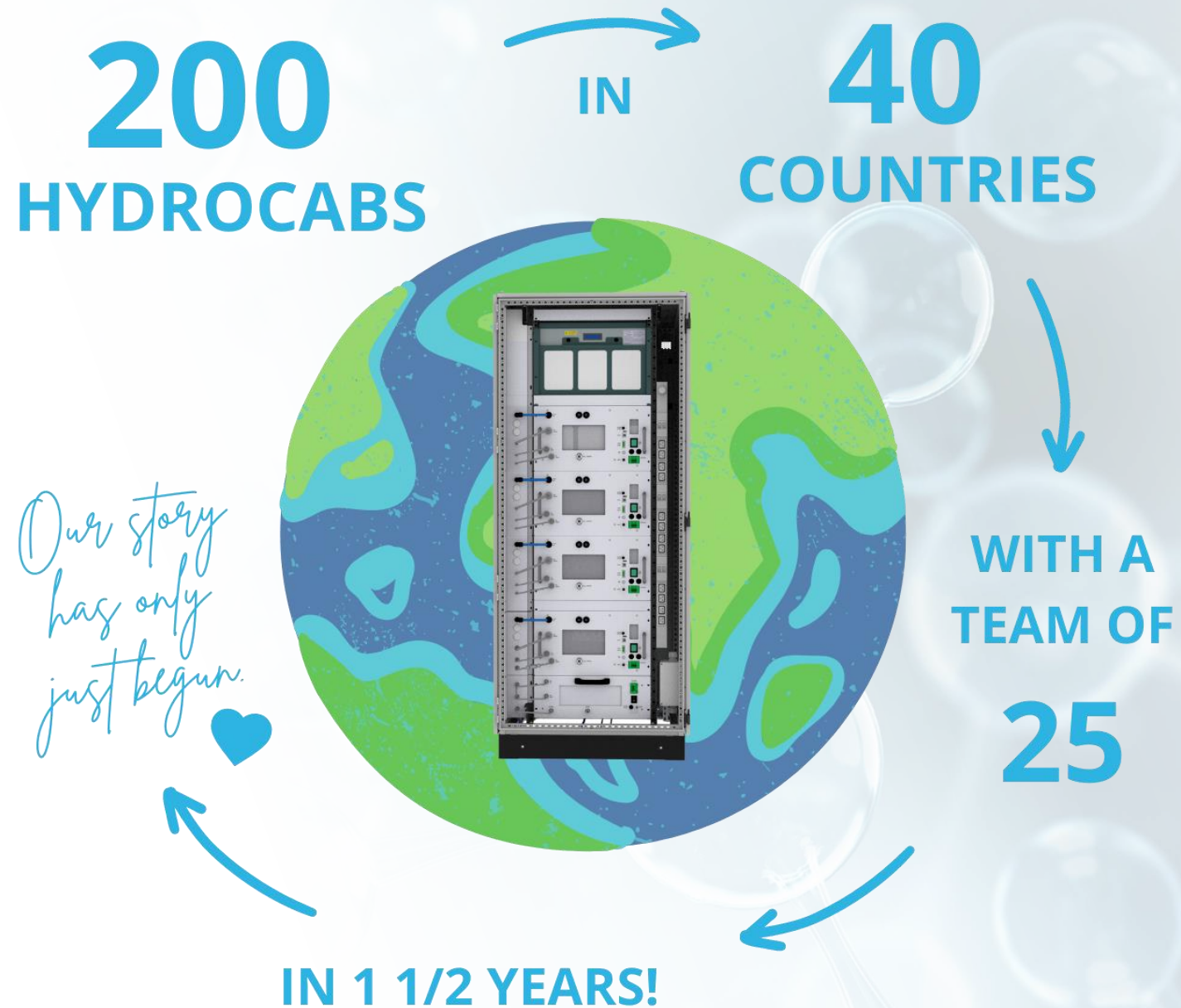
- Project from UFRJ Coppetec / Brasil
- 9 Els with the capacity of 9 Kg H₂ / day of hydrogen (purity 99.999%)
- Principal energy source: solar
- Compression up to 350 bar.
- Storage of up to 30Kg of hydrogen.
- Investigation in production of H₂ and the use in mobility.

PROJECTS AND MARKETS



- **Project from UFSC Fotovoltaica / Brasil**
- **9 Els with the capacity of 9 Kg H2 / day of hydrogen (purity 99.999%)**
- **Principal energy source: solar**
- **Compression up to 200 bar.**
- **Storage of up to 35Kg of hydrogen.**
- **Investigation in production of H2.**





WE CAN ONLY DO THAT TOGETHER WITH A GREAT TEAM AND WORLDWIDE PARTNERS!





**THANK
YOU!**

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