



H₂ SITE

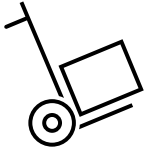
Membrane reactors for H₂ generation

On-site hydrogen
solutions

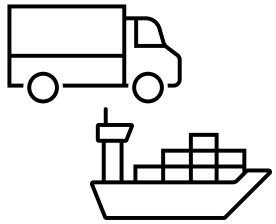


H2SITE produces **cost-efficient, on-site, renewable H₂** for small and medium consumers in industry and mobility segments using **feedstock-versatile** membrane reactors.

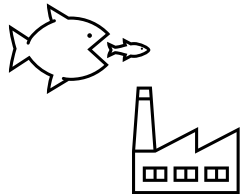
PROBLEM



Transport cost **adds 80% - 300%** to the H₂ generation cost



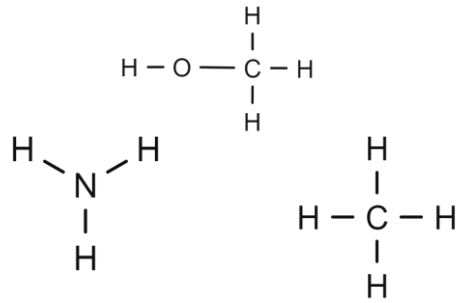
Trucks and ship transport are **energetically and environmentally inefficient**: leaks of >10% H₂ & CO₂ emissions of trucks



Small and medium hydrogen consumers pay the price

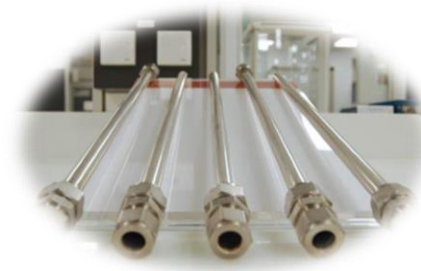
SOLUTION

Versatile, on-site, simple and cost-effective
H₂ membrane reactors



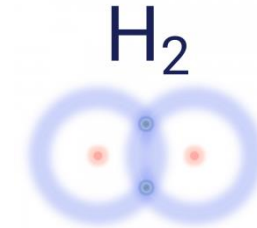
Different feedstocks

Ammonia, bioethanol, biogas,
formic Acid...



Membrane reactors

Catalytic, fluidized bed
integrated membrane reactors



Fuel cell grade H₂

Examples of solutions

We solve the problem of H₂ transport with solutions economically feasible today.



We transform **ammonia into H₂ with 97,5% efficiency**. Ammonia is one of the most promising H₂ carriers since it has a well-known supply chain and a high H₂ density.



We can **separate almost all H₂ from blended gas streams**, including the CH₄/H₂ stream that will become more and more frequent in our gas distribution and transport infrastructure. It's a perfect enabler for a renewable hydrogen economy.

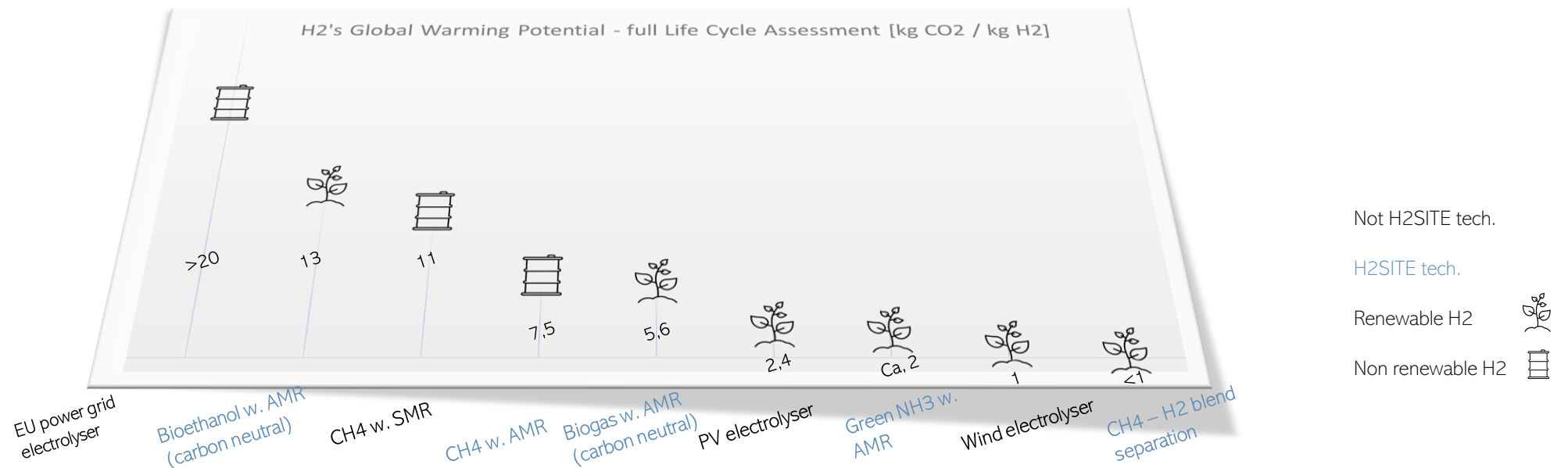


We **convert biogas into H₂ in one single process step, without upgrading or pressure swing adsorption (PSA)** for mobility applications.

WHY NOW?

The world is looking for an economically interesting, low to 0 CO2 hydrogen.

H2SITE's Advanced Membrane Reactor (AMR) can adapt to both criteria and works with bioethanol, CH4, biogas, green ammonia... as well as separating H2 from blended streams



Industrial H2 for small users

TAM
10 bn€

SAM
1 bn€

SOM
50 M€

Up to 55 €/kg, avg. 13 €/kg...

...price small and medium industrial users pay for H2 bottles

80 to 300%...

...additional cost for transport of H2 depending on the distance travelled

H2 for decentralized power

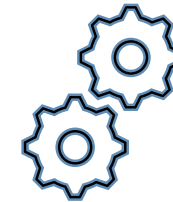
TAM
16 bn€

SAM
160 M€

SOM
2 M€



0-carbon fuels
easy to store &
transport replace
diesel



H2SITE
produces H2
locally



Fuel cell
generates
clean power



Data center
gets reliable,
low carbon
power

Early adopters show appetite for a premium to replace existing diesel generators using a carbon free solution.

H2 for maritime mobility

TAM	SAM	SOM
100 bn€	10 bn€	100 M€

6 – 36 MMT/year

Green H2 demand in 2050 if CO2 reduction targets are to be met

58%

Bunker fuel demand that could be met using renewable NH3 (2050)

27 – 145 USD/t CO2

Carbon price required for green ammonia to reach cost parity with oil- and LNG- based bulk carriers in 2050

Unblending H2 in CH4 infra.

TAM	SAM	SOM
1 bn€	500 M€	100 M€

0,31 USD/kg H2

Cost of transporting H2 in a 500 km pipeline, including compression and storage. Compared to >3€/kg for trucks or ships

0 - 12%

Current limits of H2 blending into natural gas grids around the world

20 USD/MWh vs. 120 USD/MWh

Cost comparison between CH4 and H2 retail prices show potential value destruction when blending without separation

PRODUCT



H₂ onsite generation systems

Preferred feedstocks: NH₃, bioethanol, biogas



Customer saves money
40% to 75% savings per
kg of H₂ delivered*

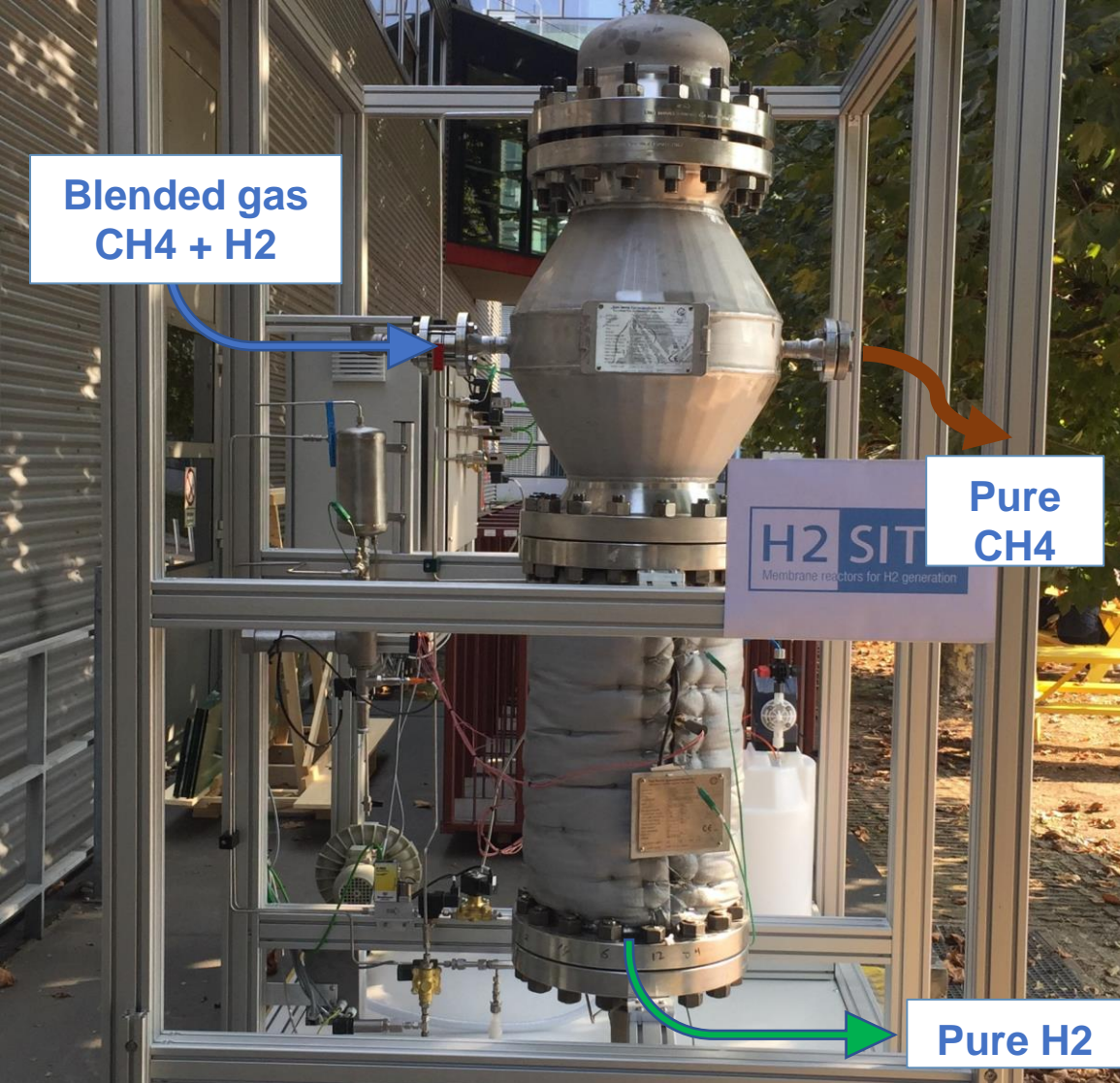


Planet saves CO₂
Each system saves 27 000
km of transportation & ca.
100 000 kg CO₂ per year*



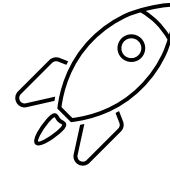
Factory saves room
4 process steps merged into
1, more compact, better
integrated

PRODUCT



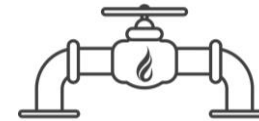
H₂ separation systems

Preferred feedstocks: blended gas streams with >10% H₂



Act as H₂ economy enabler

Allow retailers to sell H₂ pure to end consumers wo. destroying value



Existing infrastructure boosted

Millions of km of natural gas infrastructure valorized thanks to separation units

COMPETITIVE ADVANTAGES



Ad hoc design for small and medium users

Started with 4 kg/day and scaled up efficiently to 4 000 kg/day



Double skin Palladium membranes (patent pending)

Proven, infinite selectivity towards H₂ leads to very high purity



Palladium recovery IP (patent pending)

Recover & reuse all the Pd once membranes reach the end of their lifespan



Low temperature, feedstock versatile reforming

Full life cycle analysis shows our H₂ contains between 2,5 and 5,6 kg CO₂/kg H₂



H₂ separation capabilities from blended streams (patent pending)

Centrally generated H₂ transported via natural gas infrastructure can be separated using our membranes at the consumption point

CORE TEAM

A team combining startup experience, deep tech growth and energy business



Andrés Galnares
CEO

- Industrial Engineering
- +10y in distributed renewable energy project
- Startup founder and developer



Igor Egaña, PhD
Business Development

- PhD in Electrical Engineering
- Startup founder and developer
- +20y experience in renewable energy business development



Gorka Hermoso
CFO

- MBA
- +8y in management consulting (BCG)
- +5y on entrepreneurship
- Board member / advisor of several deep-tech companies



Jon Meléndez, PhD
Technical Director
Membrane Engineering

- Chemist with Master's Degree on Material Engineering
- PhD Cum Laude on development of Pd-based supported membranes as a H2 separation technology



José A. Medrano, PhD
Technical Director Process
Engineering

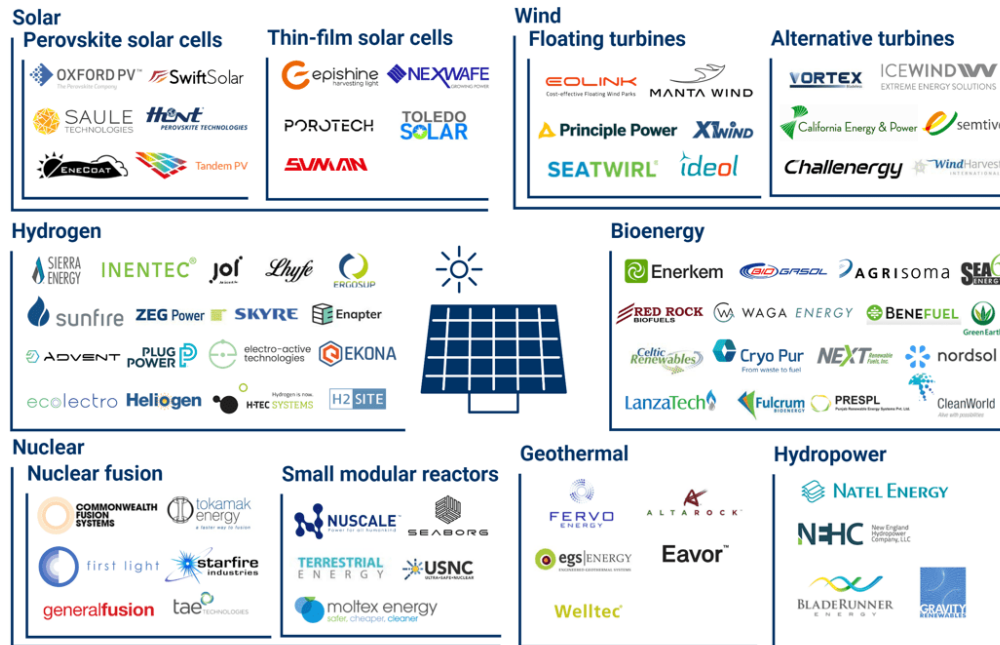
- Chemical engineer
- PhD Cum Laude on development & demonstration of innovative solution based on membrane reactors for H2 generation integrating CO2 capture techniques

+20y of cumulated experience working on membrane reactors development

H2SITE recognized as a leading innovative H2 startup



75+ companies driving innovation in renewable energy



*Map includes Advent Technologies, which is in the process of going public via reverse merger with a SPAC, and Plug Power, which went public in 1999. Created by You. Powered by CBINSIGHTS



Won European Association of Research and Technology Organization's award for Impact innovation



Selected for ENGIE's Grand Jury innovation trophies 2021



Qualified by Morgan Stanley as one of ENGIE's hidden gems

- One of the 75 companies worldwide driving RnW Energy innovation
- One of the 20 companies in H2 driving innovation



H2 SITE

Membrane reactors for H2 generation



**THANK YOU FOR
YOUR ATTENTION**

CONTACT DETAILS:

Andrés Galnares

+34 607.157.487

Andres.galnares@h2site.eu

