DIVI
GAS

H2 always needs to be purified before use or re-use

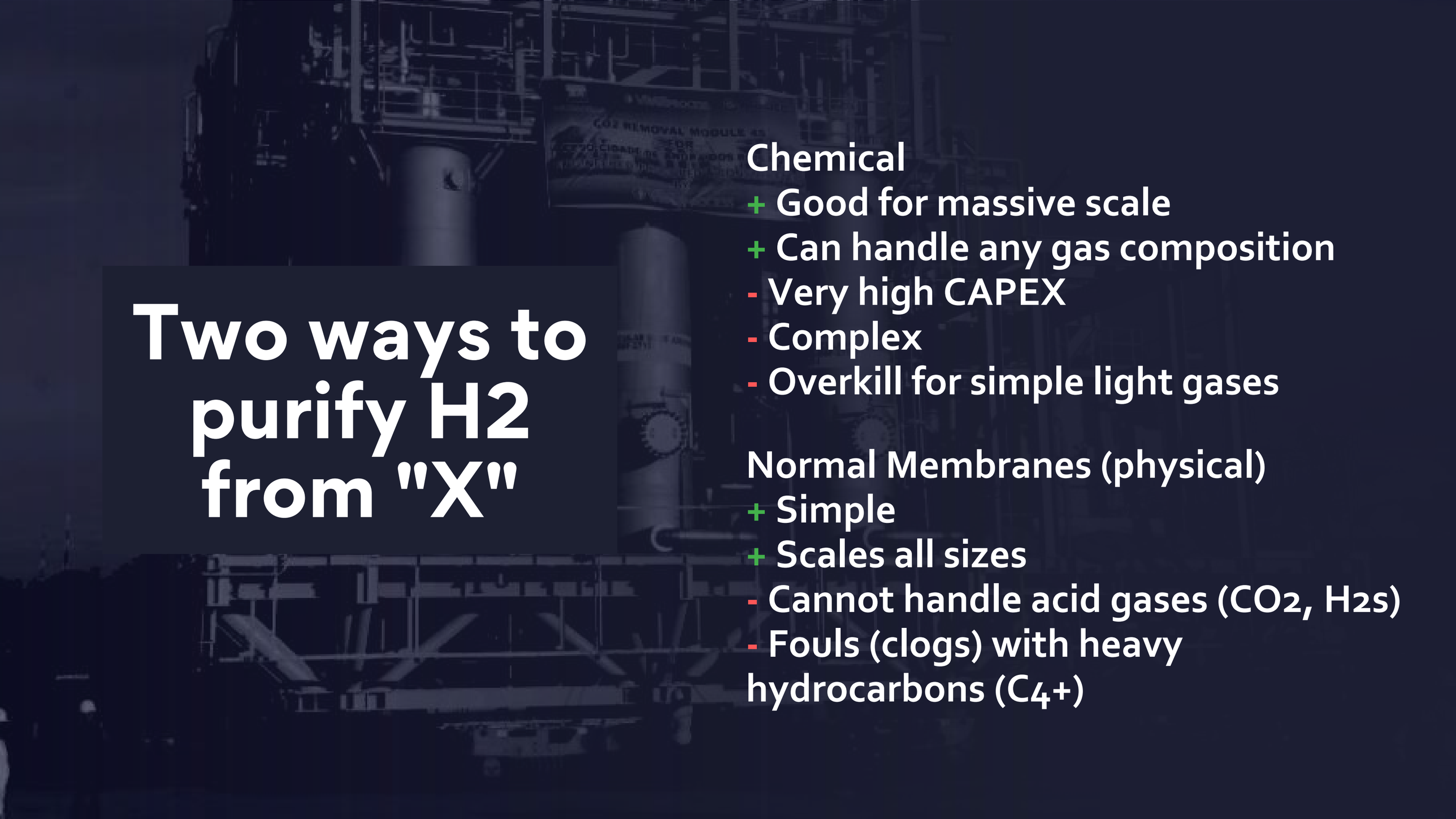
$110b of H2 made/yr

in plants making

gasoline

fertilizer

chemicals



Two ways to purify H2 from "X"

Chemical
+ Good for massive scale
+ Can handle any gas composition
- Very high CAPEX
- Complex
- Overkill for simple light gases

Normal Membranes (physical)
+ Simple
+ Scales all sizes
- Cannot handle acid gases (CO_2, H_2S)
- Fouls (clogs) with heavy hydrocarbons (C_{4+})

These shortcomings cause problems all over the H2 value chain

- Carbon Capture (CCUS) at H_2 plants too expensive for almost a Gigaton of CO_2 (Blue H_2)

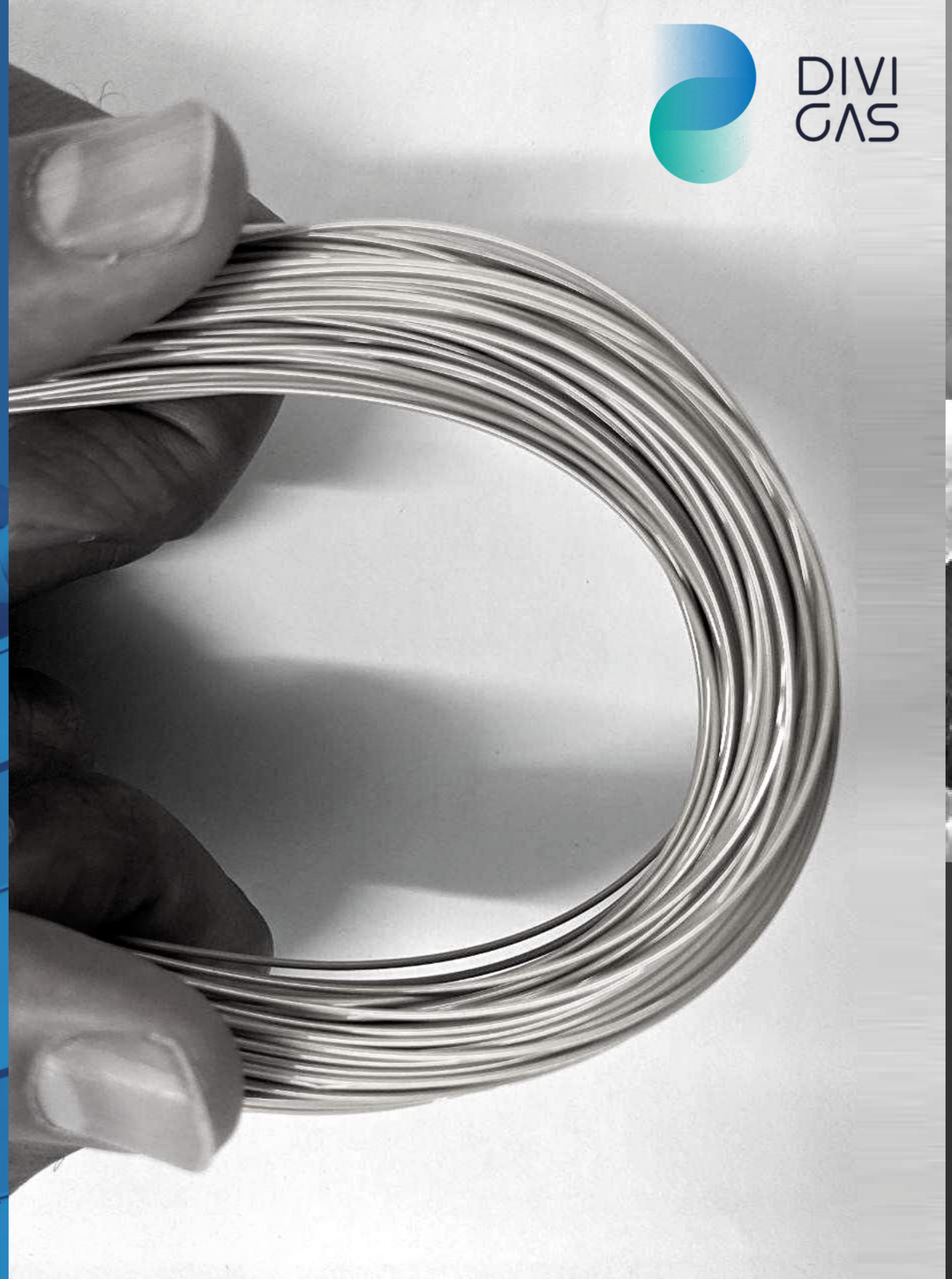
- Biomass Gasification limited in feasiblity (Green H_2)

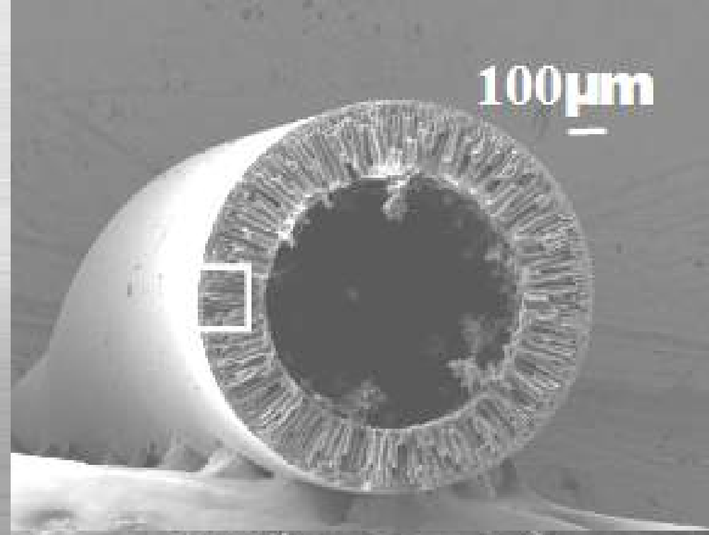
- Average refineries 'leaks' $6m per year in H_2 (Grey H_2)

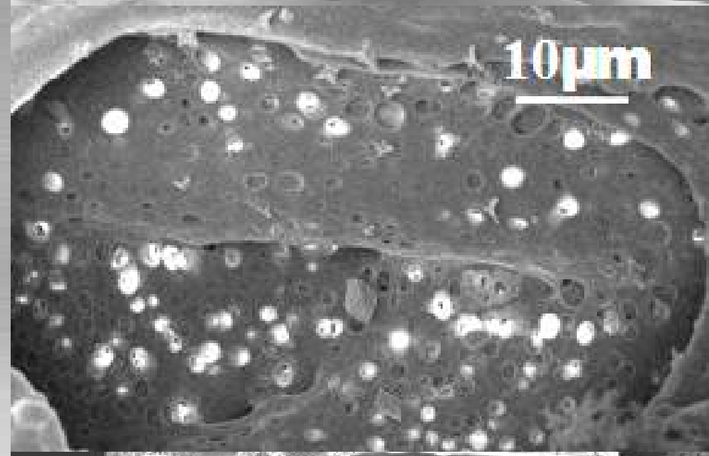
- Many other next-gen hydrogen projects have a bottleneck at separations as well

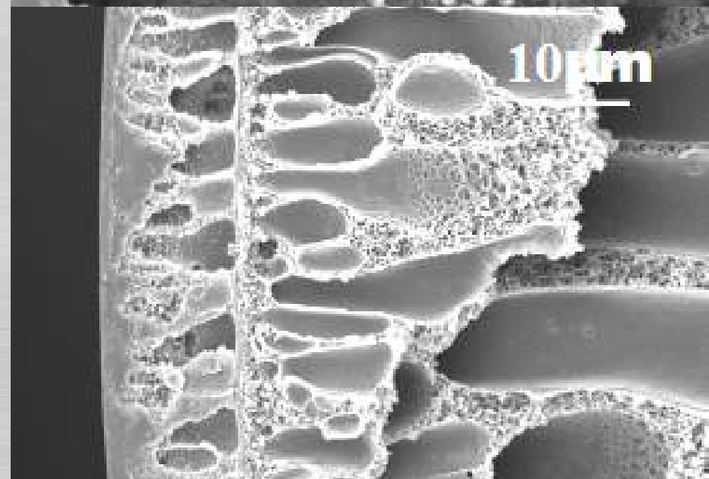
Enter Divigas

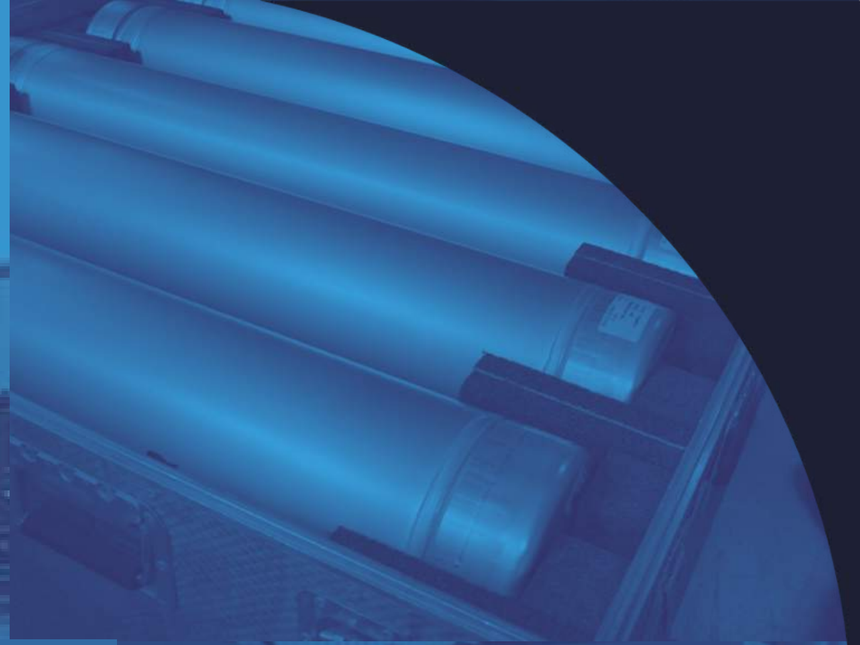
A proprietary new hollow fiber polymeric membrane that has resistant properties far beyond what is currently on the market at an affordable price











Like a standard membrane - The fibers are fitted inside 'module' systems.

Compared to existing systems, DiviGas:

Resist Acids

Good for H_2S, CO_2, and tested on extreme acids

Resist Heat

Up to 150C, which prevents Fouling by C4+

Unique Pressure

High Max operating pressure + high delta pressure

Great Value

Very high selectivity, Permaence

Solved

- Carbon Capture (CCUS) at H_2 plants too expensive for almost a Gigaton of CO_2 (Blue H_2)

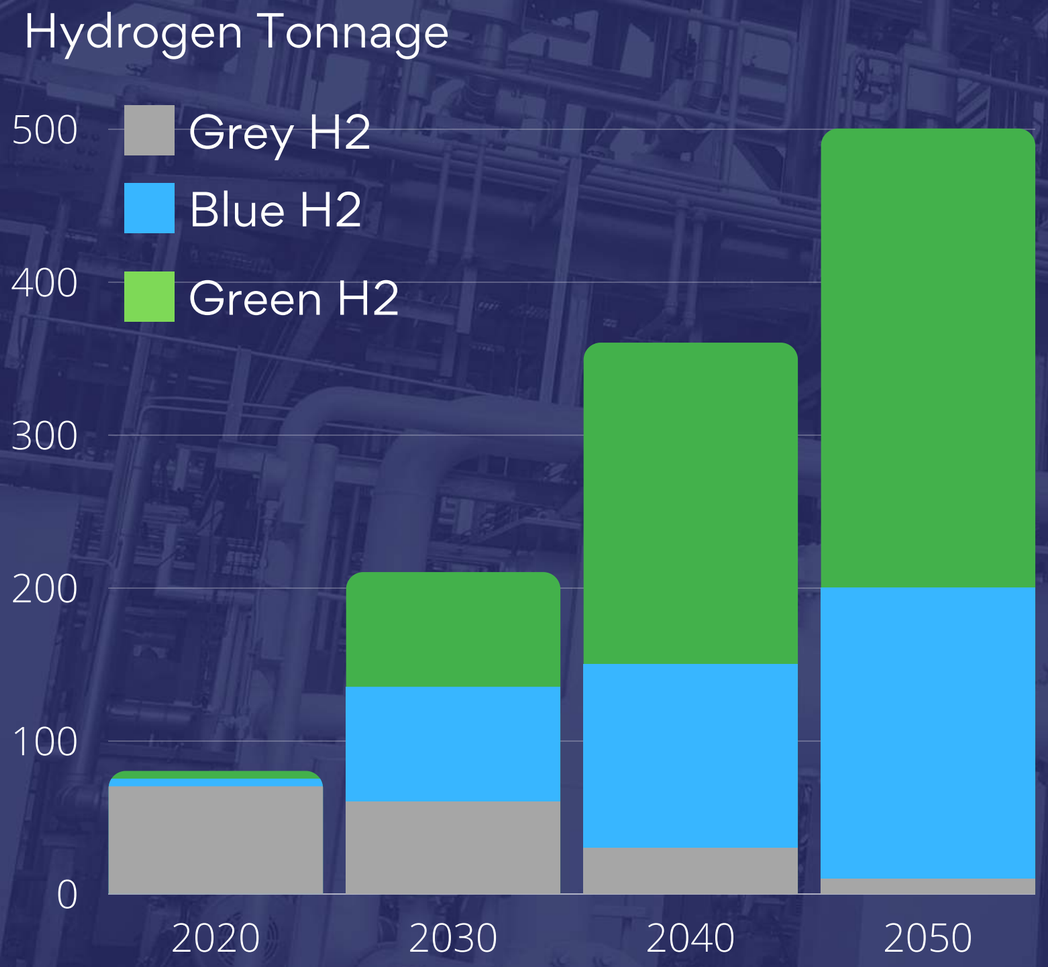
- Biomass Gasification limited in feasiblity (Green H_2)

- Average refineries 'leaks' $6m per year in H_2 (Grey H_2)

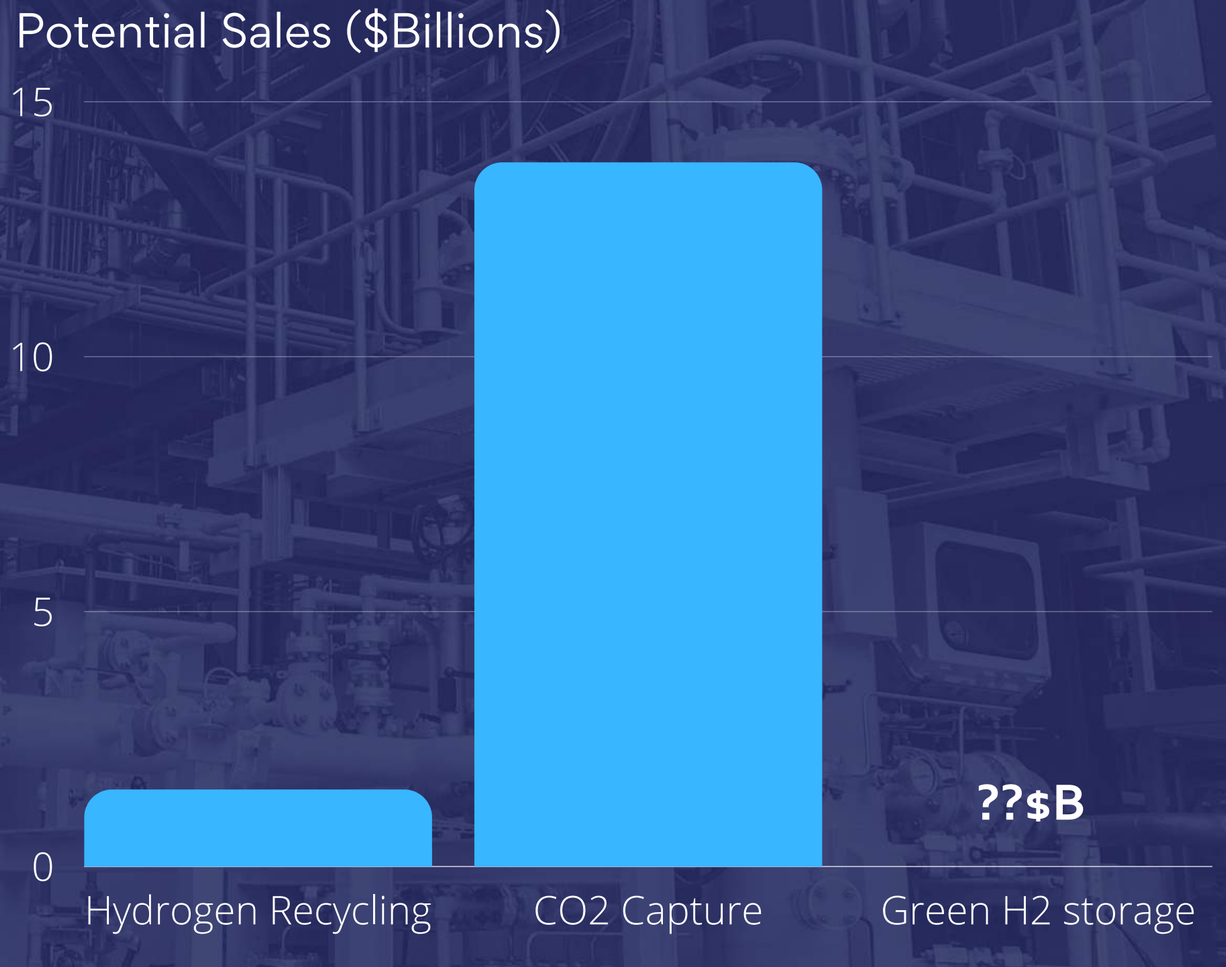
- Many other next-gen hydrogen projects have a bottleneck at separations as well

Key Differentiator

Already massive, and ever growing Markets



Internal Energy Agency June 2021



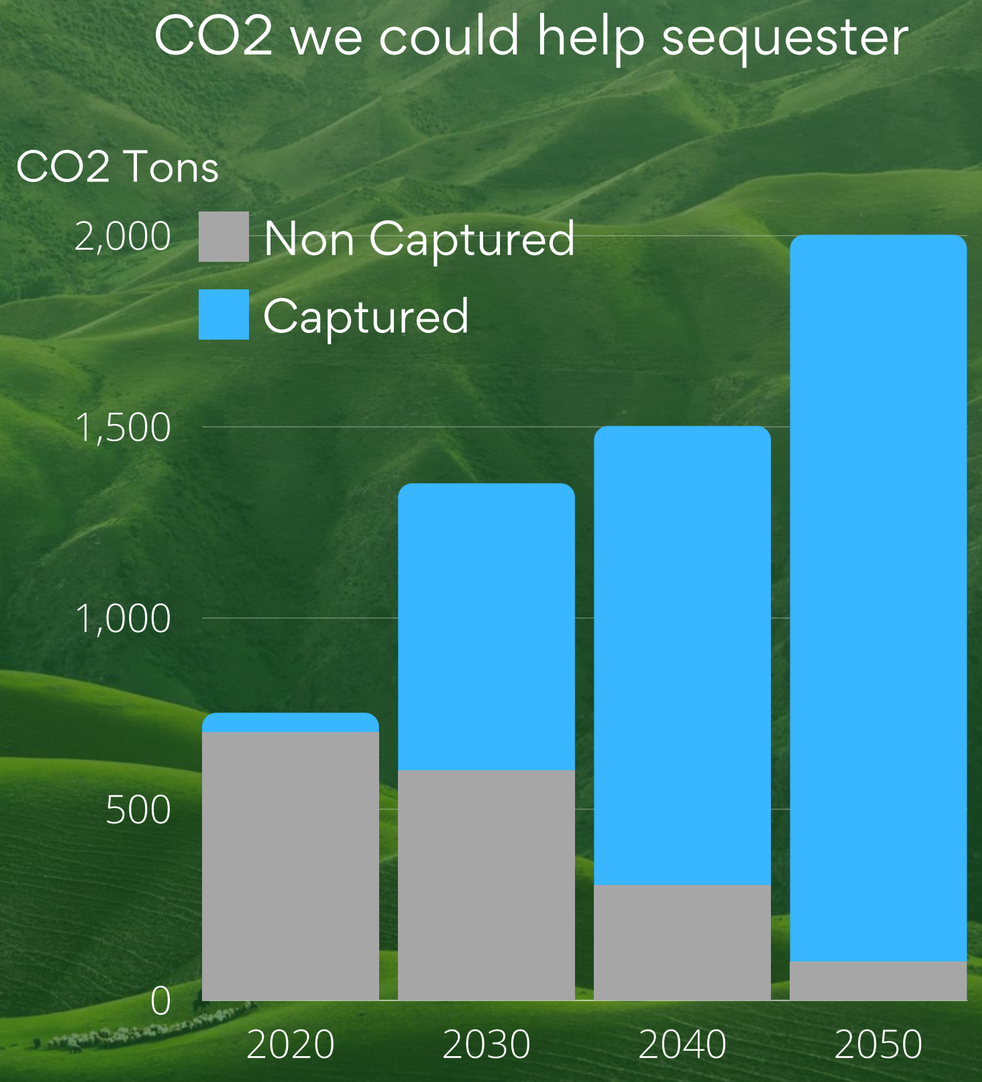
Climate Impact

1 Ton of Grey H_2 = ~10 Tons of CO_2

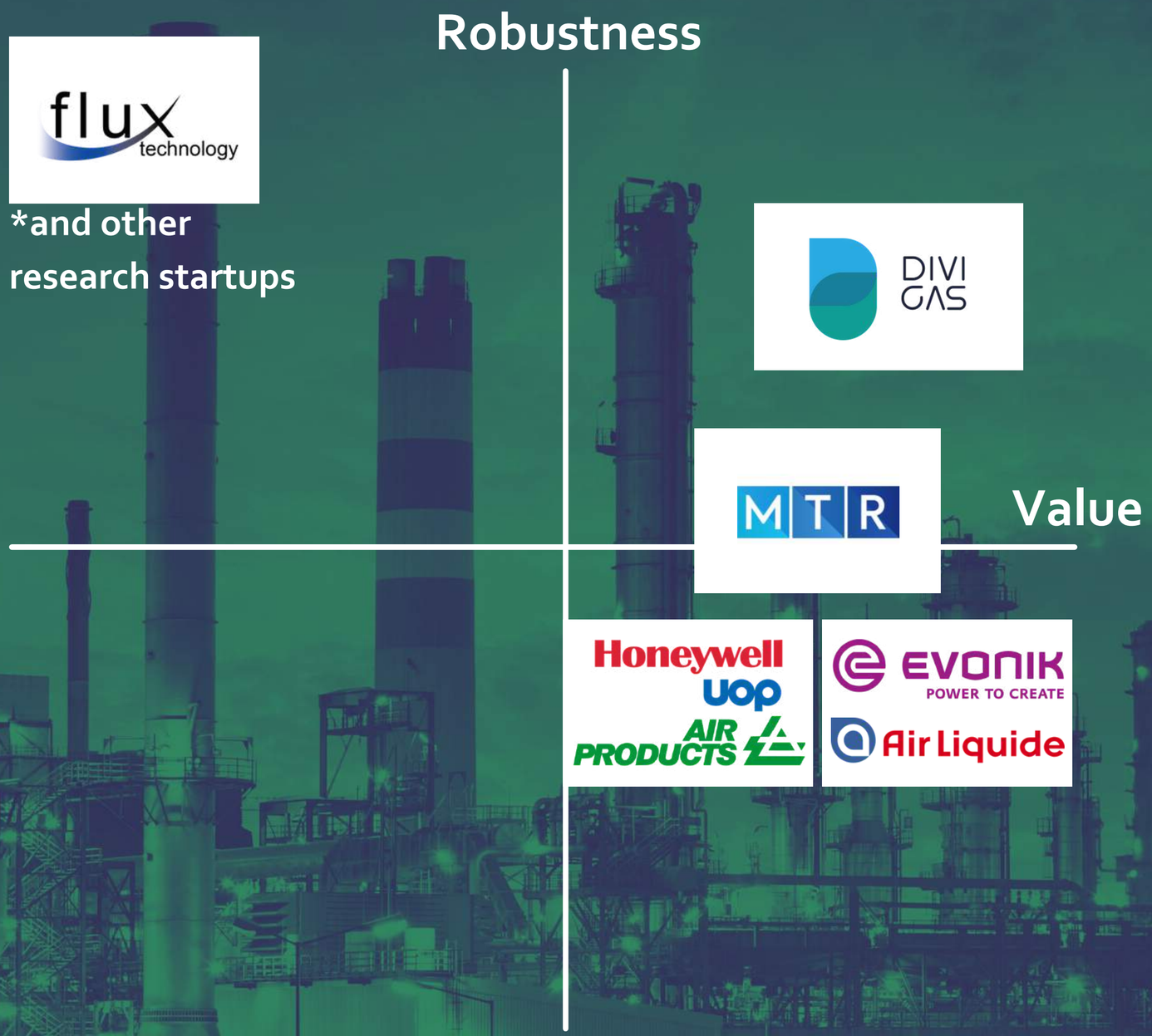
750 Million tons of CO_2 made from fossil fuel today

2 Gigatons of CO_2 by 2050

We can be a key piece of infrastructure for all of it



IEA - "net-Zero by 2050" report from June 2021



DiviGas is the only membrane that

- Is Affordable
- Is Scalable
- Can handle these difficult gases at high performance

Client Pipeline

+08
Clients Piloting

$700K/yr
Average Client size after pilot

>$50M
In pipeline

- Our clients are large veteran equipment providers of refineries and plants
- They already approved price and performance and are waiting our pilots

of clients

6 Grey H2

2 Blue H2*

2 Green H2

***overlap between Grey/Blue**

Business Model

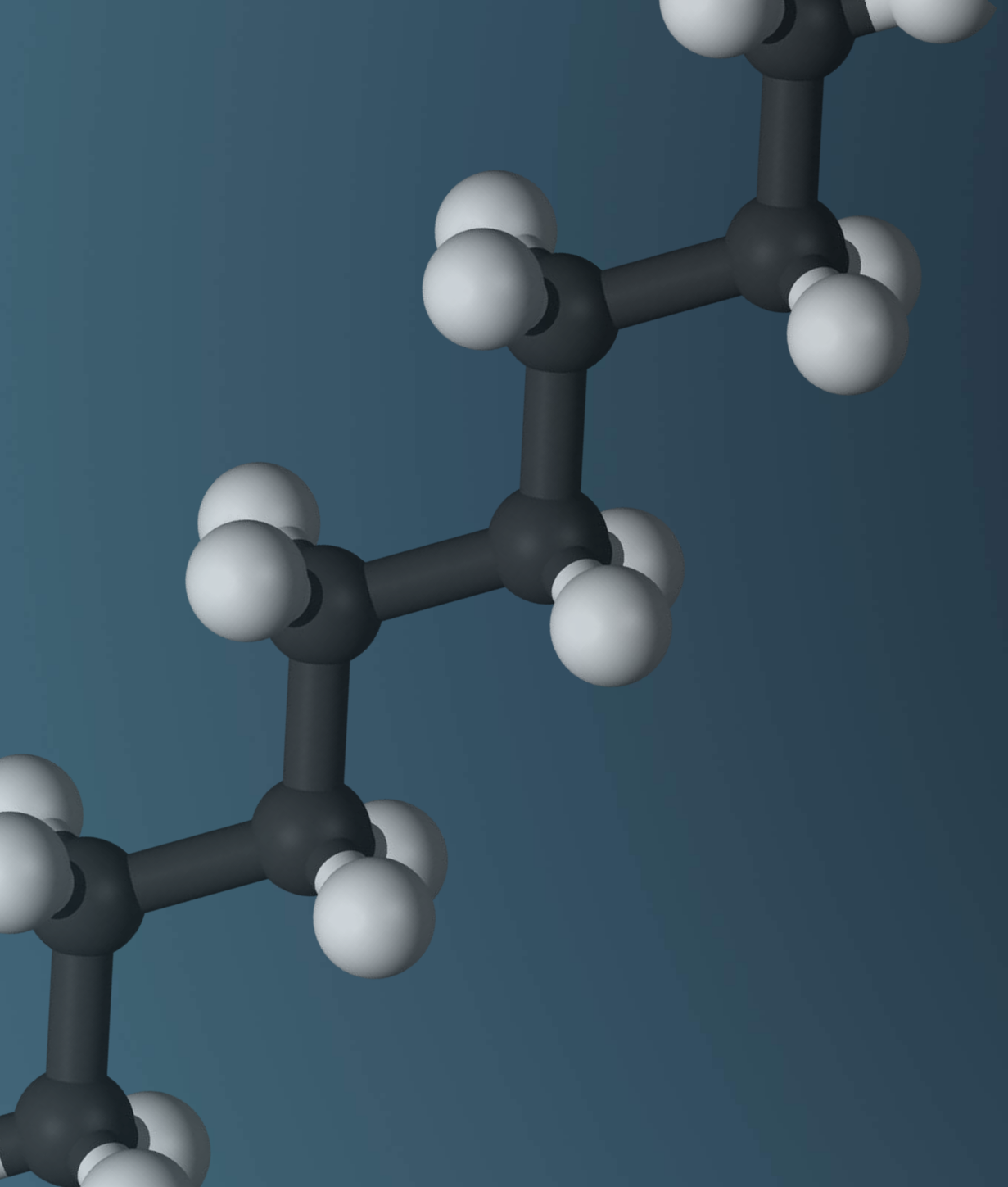
- Steel 'modules' systems sold to large plant equipment providers
  - Each module cost ~$32,000
  - Any system can have 3-3000 modules
- Modules contain 'cartridges' that last 1-5 years before needing replacement
- System is guaranteed >15 years, deals (and revenues) locked in for decade+
- Clients can expect to save anywhere from $60,000-$100,000 per module or 2-3x their costs

Dr. Ali Naderi
CTO, Inventor & Cofounder

Discovered the idea for the uniquely strong polymer chain structure while patenting other membrane polymer tech with NUS for BASF. He realized its potential and started DIVIGAS

10 years of commercial work and research on polymers including on

- Numerous membranes
- Space shuttle ablative shielding
- Car chassis crash dampening



Robustness at Nano-scale

- IP in combination of materials and polymer manufacturing technique
- IP completely owned by DiviGas
- Patents in process
- Cannot be reverse engineered from end product (normal for polymers)

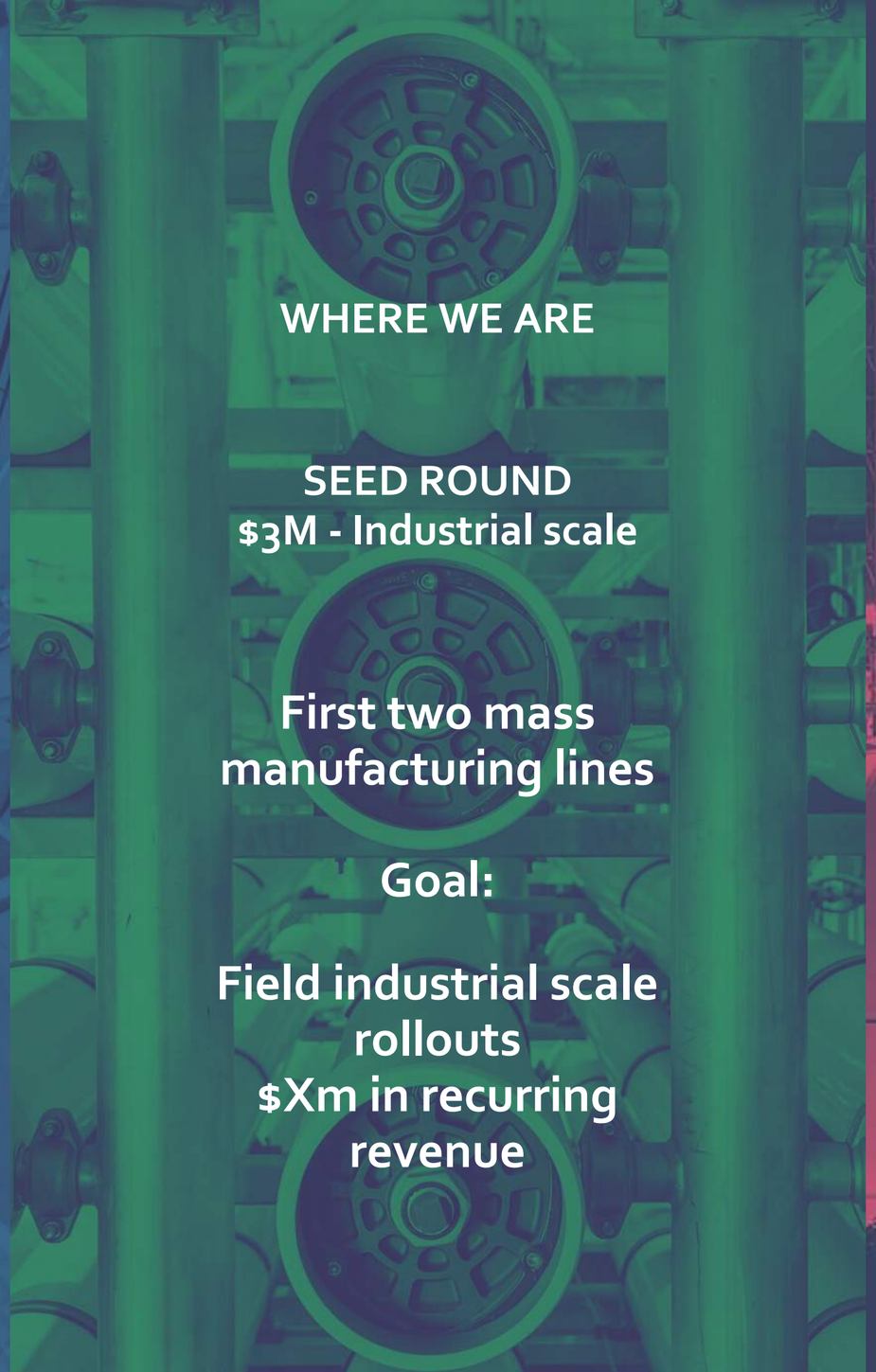
What we've passed

Pre-Seed Round
$350K - POC

Lab Scale

Goal:

Prove end-product
Obtain first clients



WHERE WE ARE

SEED ROUND
$3M - Industrial scale

First two mass manufacturing lines

Goal:

Field industrial scale rollouts
$Xm in recurring revenue

Where we are going

Growth Funding
>$10M - ScaleUp

Mass Scale Up

Goal:

Market-share dominance
$Xo-Xoom revenue

DIVI GAS solution DiviH

What this round takes us to:

- 2 manufacturing lines - 70 modules per year total
- $3m in potential revenue
- Product Shipped, operating and outputting
- Client demand for larger systems

André Lorenceau
CEO & Founder

Repeat Founder, raised +$15m Capital previously

Forbes 30under30

Led a team of 60+ to deliver global media tech products

Dr. Ali Naderi
CTO & Founder

Master in Polymer Eng.

Ph.D. in Chemical Eng.

10 years of work and research experience on polymers

Funded and Backed by

HAX SOSV

Selected by and part of

PLUG AND PLAY

ADVANCED MATERIALS COMPETITION

NEW ENERGY CHALLENGE

HARDWARE CLUB

CREATIVE DESTRUCTION LAB

SGMEM
Singapore Membrane Consortium

rockstart. YES!DELFT Shell StartUp Engine

ALL SLIDES AFTER THIS ARE ANNEX

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Use Cases

Grey Hydrogen

What:
Recycle wasted Hydrogen

Market:
$1-3B in membranes
6 Clients found

Why us:
Tough gas handling

Where:
Refineries
PolyPropylene/Ethylene
Nylon 6 plants

Market stage:
Mature

Blue Hydrogen

What:
Carbon Capture at H_2 plants

Market:
$14B in membranes
2 Clients found

Why us:
Co_2 separation performance

Where:
Hydrogen plants

When:
Emerging

Green Hydrogen

What:
Green Hydrogen Energy Storage

Market:
$???B in membranes
2 Clients found

Why us:
Co_2 separation performance

Where:
H_2 storage sites

When:
Nascent

Multiple Potential on Seed in an Exit Scenario

Bottom up analysis of market through one client that wants us to deliver >100 modules in 2023

Burns & Mcdonnel
Type: Hydrotreater recovery
$3m /yr deal = $45m in guaranteed/booked revenue over 15 yrs

1 out of 6 refineries - 2 hydrotreaters per refinery. These 12 units could be worth $36m a year, or $540m guaranteed/booked revenue by 2024

We already have 6 clients with similar use cases.

Exit multiple (private or IPO) will not be on EBITDA but on market potential, booked revenue and clean impact. If we have $150m in booked revenue in 2024, we would not sell for less than $100m

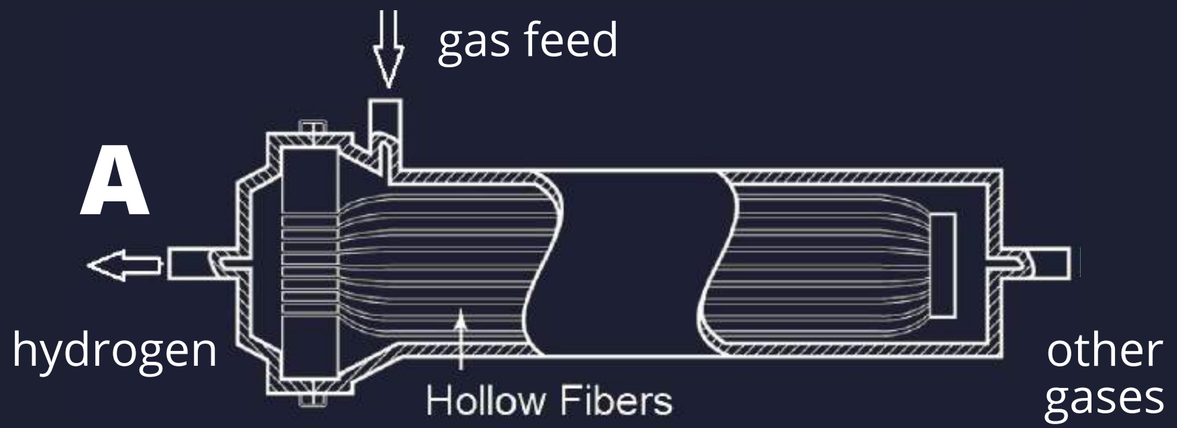
All numbers millions							
Date	Stage	Revenue /yr	% of hydrotreater market	Booked revenue	Valuation multiple (on Booked rev)	Exit price	**Multiple on Seed (20% dil. per rd)**
2021-2022	Seed	$3.5	0.08%	$52.5	2	$105	**8**
2023-2024	Series A	$20	0.44%	$300	2	$600	**38**
2025-2026	Series B	$75	1.67%	$1,125	2	$2,250	**115**

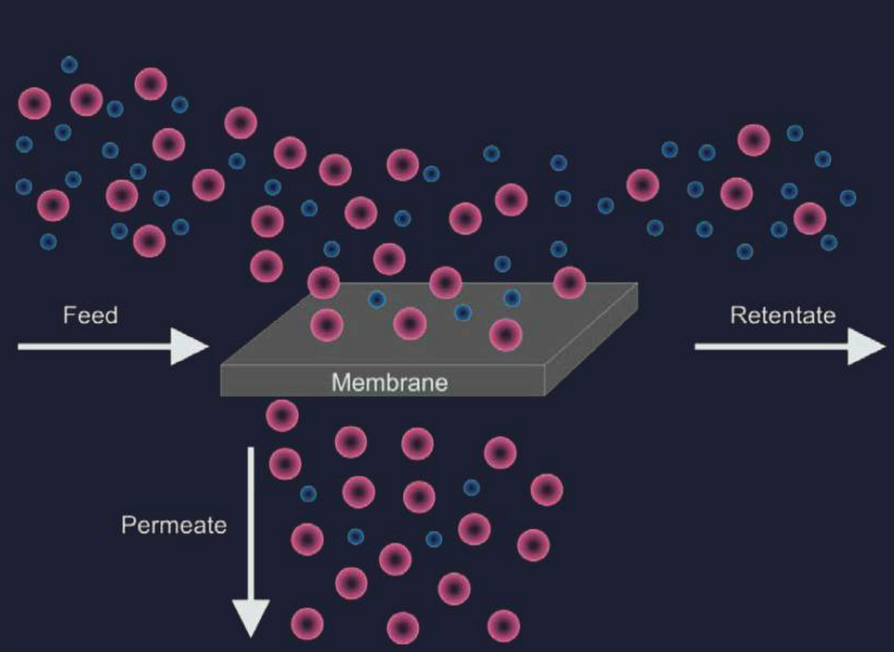
There's 1500 hydrotreaters in the world. A potential of $4.5b/yr in sales on this use case alone, locked for 15 years for $67.5b in total revenue.

This is before smaller but very rapidly growing other markets
- Other petrochemical Recovery (Likely another $1b a year)
- Carbon capture (another >$10B/yr market)
- H2-renewable energy storage (multiple $B/yr market).

How it works - in detail

- Mixed gas feed containing Hydrogen pushed through proprietary polymeric hollow fibers (A)
- Pressure drives a molecular separation of the Hydrogen only (B) - See video here
- Pure Hydrogen comes out at slightly lower pressure
- Other Gases (such as CO_2) come out together at full pressure





Carbon Capture (CCUS) Economics

For Carbon Capture, a huge portion of the cost is in compression of CO_2 after separation

Our membrane is the only one that can separate pure CO_2 from H_2 at full pressure, dramatically reducing CCUS costs by removing compression needs

Carbon Capture (CCUS) Economics III - Carbon Taxes

A number of laws today give tax breaks or price each ton of CO_2 emitted.

At $50/CO_2$ton, already existing in the US and multiple countries our technology, (as show on the right), would save $30 per ton of CO_2, and since H_2 produces ~10 CO_2 weight per H_2, we save $300 in credits per ton of H_2 separated

- **Significant Existing laws to price CO_2**
  - US '45Q' - ~$50/ton tax credit
  - France - ~$49/ton tax
  - Sweden - ~$119/ton tax
  - EU (ETS) - ~$19/ton (world bank)
  - And many more

- **Incoming Laws**
  - EU Covid package (30% for climate, June 2021)
  - Chinese 2030 neutrality plan (est 2021)
  - Biden US Climate package (est 2021)
  - Japan Carbon tax upgrade (est 2021)
  - Korea Carbon tax upgrade (est 2021)

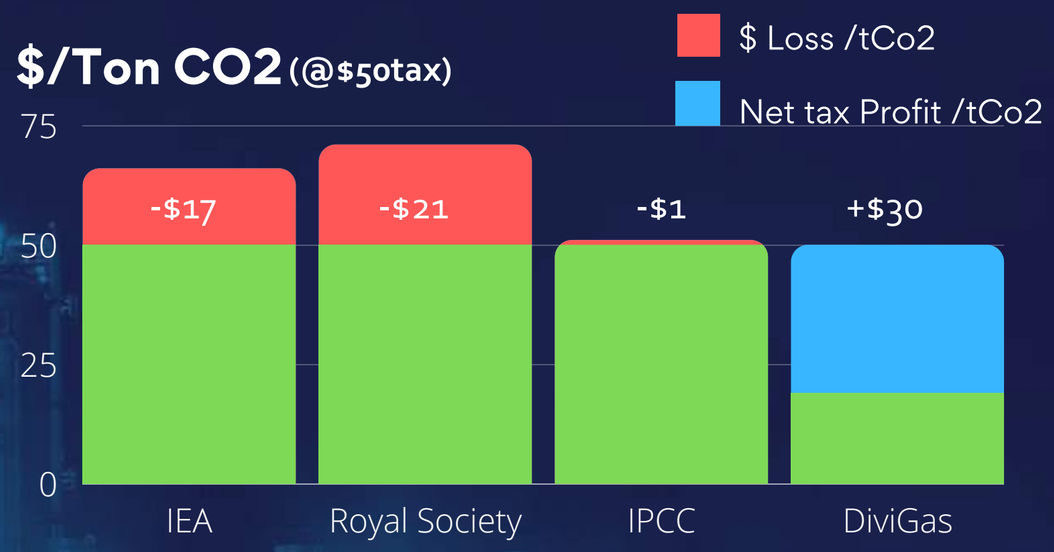
Carbon Capture (CCUS) Economics II

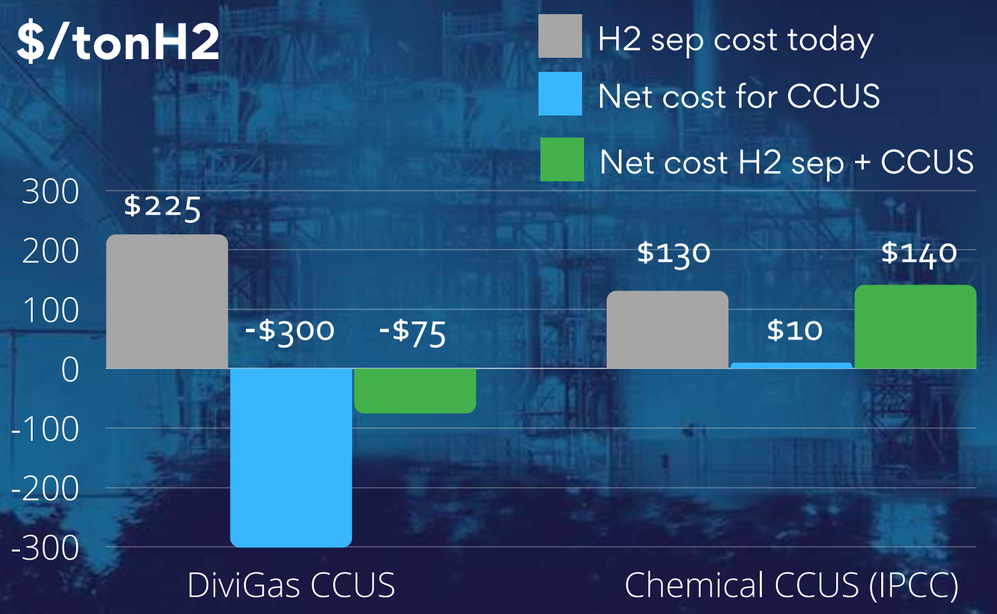
Today making 1 ton of hydrogen makes 10 ton of CO_2 costing a total of $130 (without CCUS)

Under "45Q", the $50/ton$CO_2$ tax credit, DiviGas CO_2 capture would create a $300 of tax credit per ton of H_2, resulting in a total of $75 in profit /ton$H_2$, before even selling/using the H_2

For more math on the topic, check out our 3 in depth annex slides

Cost Of H2 separation with/without CCUS





Theoratical SMR CCUS Stream

SMR	
Purity%	99.00%
Recovery%	95%

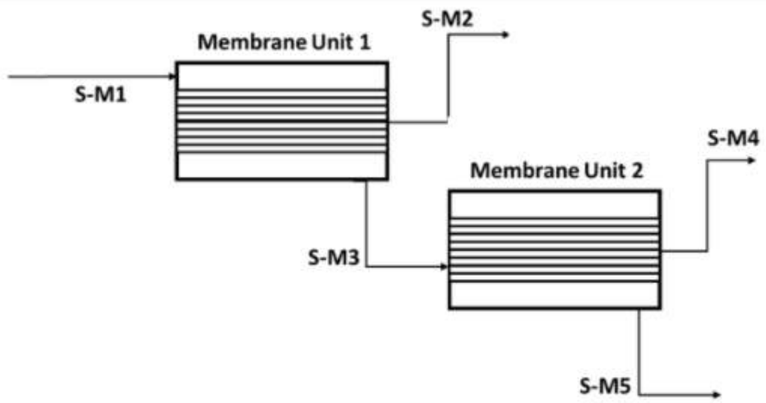
Number of module total	
Stage 1	68
Stage 2	60

	Inlet (SM1)		
	% MOLE	Kmol/hr	Mass (Kg/hour)
TOT	100%	201.716	2100
H2	80%	161.4	325.3
CO2	20%	40.3	1775.5
	Temp		150
	Pressure		60

	Post Membrane (SM2)		
	% MOLE	Kmol/hr	Kg/hour
TOT	100%	152	321
H2	99.0%	152	304
CO2	1.0%	0.40343	17.75092
	Temp		150
	Pressure		45

→ To Usage

	Residue 1 (SM3)		
	% MOLE	Kmol/hr	Kg/hour
TOT	100%	49.5	1777
H2	19%	9.6	19
CO2	81%	39.9	1757.3
	Temp		150
	Pressure		60



OPTIONAL STEP IF WANT PURER CO2

	Second Membrane Permeate (SM4)		
	% MOLE	Kmol/hr	Kg/hour
TOT	100%	9.430	36
H2	99.0%	9.030	18
CO2	1.0%	0.399	17.6
	Temp		150
	Pressure		45

→ To Usage or Discard

	Second membrane Residue (SM5)		
	% MOLE	Kmol/hr	Kg/hour
TOT	100%	40.1	1740.91
H2	0.1%	0.6	1.14
CO2	99.9%	39.5	1739.77
	Temp		150
	Pressure		45

→ To Co2 Capture Pipeline