Proving and Scaling Hydrogen: Building a Viable, Commercial Hydrogen Economy from the Ground Up

Ian Wilkinson, COO

GeoPura®

Sustainable Power Now

ZERO EMISSION FUEL

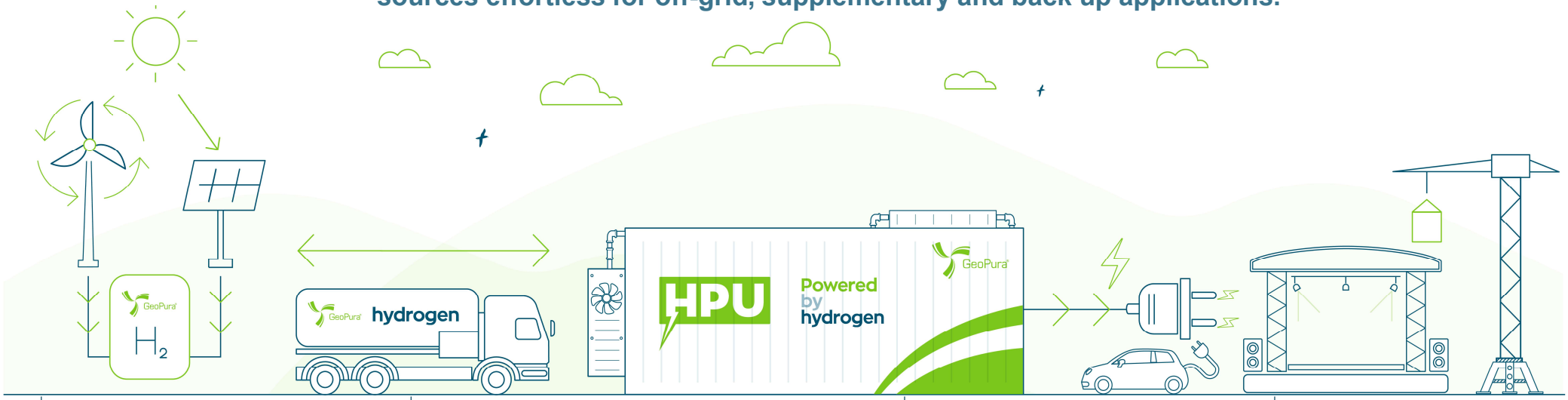
GREEN POWER GENERATION

Making a start

Energy as a Service

GeoPura | Sustainable Power Now

Operating an Energy as a Service model, the GeoPura HPU makes transitioning away from traditional diesel sources effortless for off-grid, supplementary and back up applications.



1 Hydrogen Production

Utilising renewable energy to generate green hydrogen via electrolysis.

2 Delivery & Refuelling

Full fuel management system – including delivery and refuelling.

3 Plug & Play Solution

Set up and operated by GeoPura engineers.

4 Fully Monitored & Maintained

To optimise performance and energy use.

About us

GeoPura is decarbonising power generation through zero-emission fuels and clean power technologies to end our reliance on fossil fuels.

“As much renewable energy as you want, where you want it, when you want it!”

Working with our global partners we’re reducing emissions, improving air quality, and powering net-zero around the world.

Significant emissions reductions are needed from areas other than electricity supply to hit 2030 targets in the UK

GeoPura | Sustainable Power Now

Figure 1 Pace of emissions reduction 2015–2022, 2022–2023 and required for 2023–2030 (excluding international aviation and shipping)

Source: Department for Energy Security and Net Zero (DESNZ) (2024) *Provisional UK greenhouse gas emissions national statistics 2023*; DESNZ (2024) *Final UK greenhouse gas emissions national statistics: 1990 to 2022*; DESNZ (2023) *Carbon Budget Delivery Plan*; Climate Change Committee (CCC) analysis.
Notes: The orange bars show the annual pace of emissions reductions that will be required starting from the published provisional 2023 emissions data to meet the 2030 NDC.
Description: The rate of emissions reduction seen in 2023 represents a significant increase from recent sustained rates and is roughly in line with the pace of change needed out to 2030. This pace will need to be maintained. In addition, the action to achieve it needs to spread across a broader range of sectors, with much of the reduction so far coming from electricity supply.

Source: Climate Change Committee's 2024 Progress Report to Parliament.

The challenge

GeoPura | Sustainable Power Now

EU must cut carbon emissions three times faster to meet targets, report says

Climate commissioner says pace of reductions needs to speed up in buildings, transport and agriculture to meet 55% target by 2030

AIR POLLUTION

‘Outdoor workers are exposed to 15% more pollution than the average Londoner’

BBC

UK investigating fraud claims around green fuel HVO diesel

UK investigating claims green fuel contains virgin palm oil · Close-up shot of a red bus being refuelled via a green pump, labelled · Line graph...

3 weeks ago

Fleet World

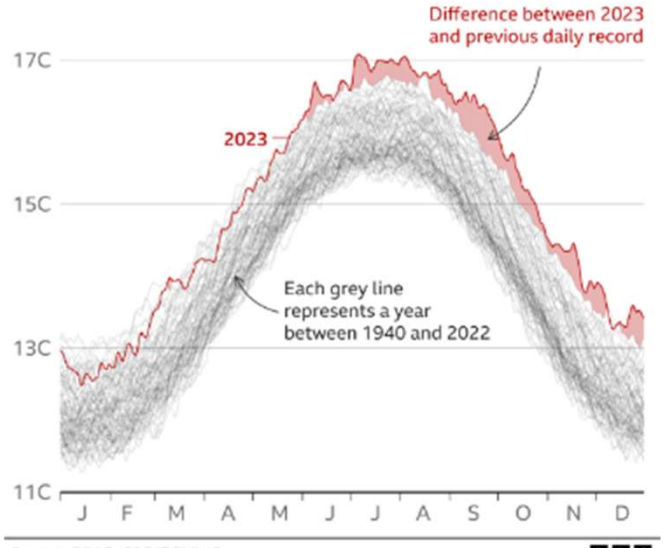
Huge concerns about HVO sustainability amid fraud claims

Huge concerns about HVO sustainability amid fraud claims ... Major concerns have been raised about fleet use of hydrotreated vegetable oil (HVO)...

3 days ago

Global temperatures at record levels in 2023

Daily global average air temperature, 1940-2023



Source: ERA5, C3S/ECMWF BBC

Electric cars powered up by generators as grid delays slow charging point rollout

Gridserve explores alternatives amid long delays connecting to the electricity grid

Howard Mustoe
9 September 2023 • 1:59pm

News

Plan for leading 500 firms to ban diesel generators by 2025

Aaron Morby 1 year ago

Renewable energy + Add to myFT

Grid bottlenecks delay transition to clean energy

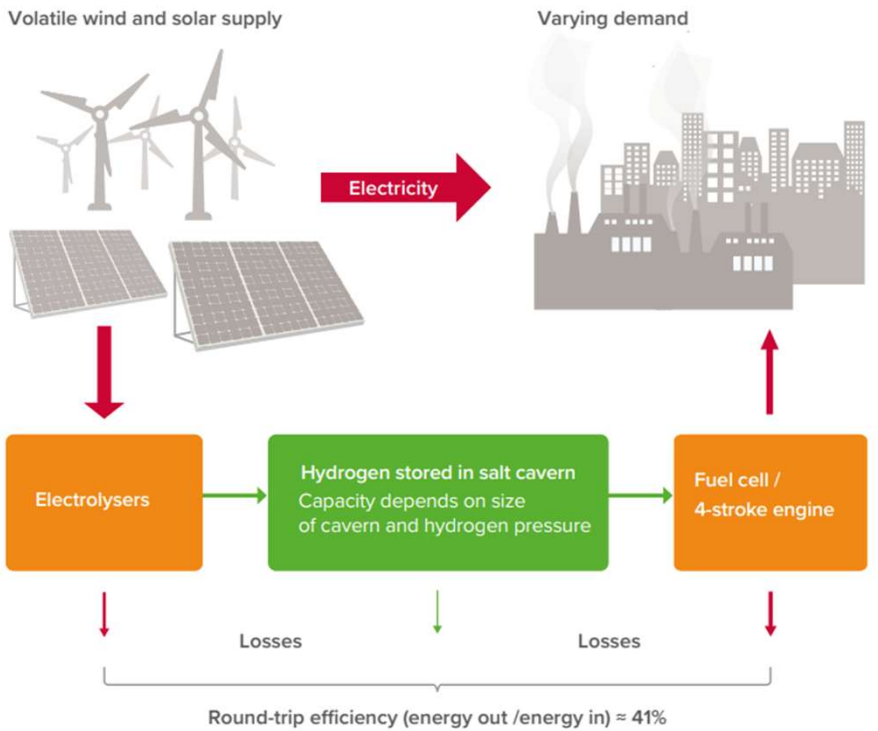
Connecting wind and solar farms to tomorrow's electricity-hungry customers will require huge investment

Hydrogen has a role in electricity generation, too

GeoPura | Sustainable Power Now

Recent report by The Royal Society on Large-scale electricity storage highlighted:

- Storage Capacity Needs: The UK will require 100–300 TWh of long-duration electricity storage to support a net-zero electricity system powered predominantly by wind and solar energy.
- Hydrogen's Role: Hydrogen is identified as the basis for long-duration storage, offering lower costs compared to other low-carbon alternatives.
- Current Storage Landscape: As of June 2024, the UK's grid battery storage capacity stood at 4.6 GW of power and 5.9 GWh of energy, highlighting the need for significant expansion to meet future demands.



Large-scale electricity storage
Issued: September 2023 DES6851_1
ISBN: 978-1-78252-666-7

GeoPura | Sustainable Power Now

Introducing the GeoPura Hydrogen Power Unit

The GeoPura HPU provides 250kW of standard three-phase, 400V critical electrical power backed up by an integral 250kWh battery system.

Zero-emission solution – the only output is water!

The HPU1-M 250kW

GeoPura | Sustainable Power Now

Trailer mounted for maximum power and flexible deployment

Our new trailer-mounted HPU is designed for quick deployment and seamless operation.

With in built fuel storage and a compact footprint, the plug and play solution is the perfect option for shorter term projects, outside broadcasts and multiple locations.

Our technology

GeoPura | Sustainable Power Now

HPU2

- HPU2 delivers 500kW of clean, scalable hydrogen power, engineered for high-demand industrial use.
- **Modular design** – scalable from 500kW to 50MW.
- Provides power where grid access is limited or unavailable.
- Use in temporary or permanent infrastructure.
- **Zero-emission solution** – the only output is water!

HPUs in mass production in the UK

Working in collaboration with Siemens Energy we are manufacturing HPUs at scale.

- Collaboration agreement in operation since 2019.
- Siemens Energy have been a GeoPura shareholder since Feb 2022.
- Updated and strengthened collaboration agreement signed January 2024, giving Siemens Energy 3 years manufacturing exclusivity with potential for parties to review and extend.

Siemens Energy is investing in their Newcastle, UK site with a focus on clean energy solutions. CA Parsons Works is a hydrogen centre of excellence.

Recent deployments

GeoPura | Sustainable Power Now

Our customers

GeoPura | Sustainable Power Now

- Ideal for EV charging & transport, construction, film & TV production, outdoor events and more bespoke solutions.

- Proven by a wide range of high-profile commercial customers, including:

Ministry of Defence
ONE DEVONPORT
Strategic Command Defence Support
WESTMORLAND FAMILY
uniper
Balfour Beatty
HS2
polestar
Disney
gm general motors
nationalgrid
EKFB
EXTREME E
BBC
Cadent Your Gas Network
Climate Assembly 2023
IMG
DP WORLD TOUR
ESB Energy for generations

Case studies

First live sports TV production and global broadcast powered by green hydrogen

In a world first for a live sporting event, the European Tour Productions and IMG led production was powered 100% by green hydrogen, producing zero emissions.

Used to power the entire production village at Wentworth, including full fleet of outside broadcast units and production studios, global live broadcast equipment, welfare facilities and EV charging for all golf buggies on site.

No diesel or grid supply on site.

The BBCs clean power solution for the Watches

In a TV first, GeoPura has provided zero-emission power for all subsequent series of Springwatch, Autumnwatch and Winterwatch, since its initial trial in 2021.

Deemed the future of outside broadcasting by Chris Packham, the BBC has significantly reduced its emissions, minimising impact on the surrounding environment.

Two 250kW HPUs are used to power the production village, including cameras, lighting and sound equipment.

Low Carbon Alternatives to Standby Generators in Electrical Substations

Used to provide backup power to a substation for key activities such as cooling fans, pumps, and lighting, enabling it to continue to perform its crucial role in the electricity transmission system.

HPUs could save an estimated 500,000 kg of carbon across all National Grid substation sites.

Supporting Strategic Command to transition to a zero-emission vehicle fleet

Supporting the MOD in delivering off-grid charging for its growing EV fleet as part of the wider Sustainable Road Transport programme.

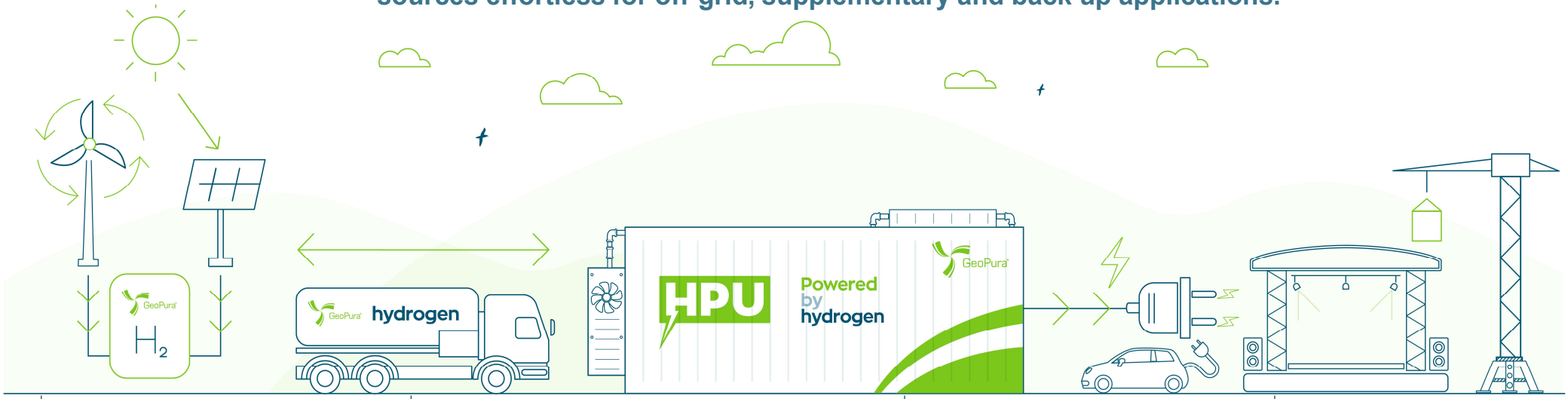
Trials running at RAF Leeming, Navy's HMNB Devonport and Army's Merville Barracks, Colchester.

GeoPura is providing all the energy, charging and payment infrastructure for the facilities.

Energy as a Service

GeoPura | Sustainable Power Now

Operating an Energy as a Service model, the GeoPura HPU makes transitioning away from traditional diesel sources effortless for off-grid, supplementary and back up applications.



1 Hydrogen Production

Utilising renewable energy to generate green hydrogen via electrolysis.

2 Delivery & Refuelling

Full fuel management system – including delivery and refuelling.

3 Plug & Play Solution

Set up and operated by GeoPura engineers.

4 Fully Monitored & Maintained

To optimise performance and energy use.

GeoPura | Sustainable Power Now

Investment in green hydrogen

HyMarnham Power

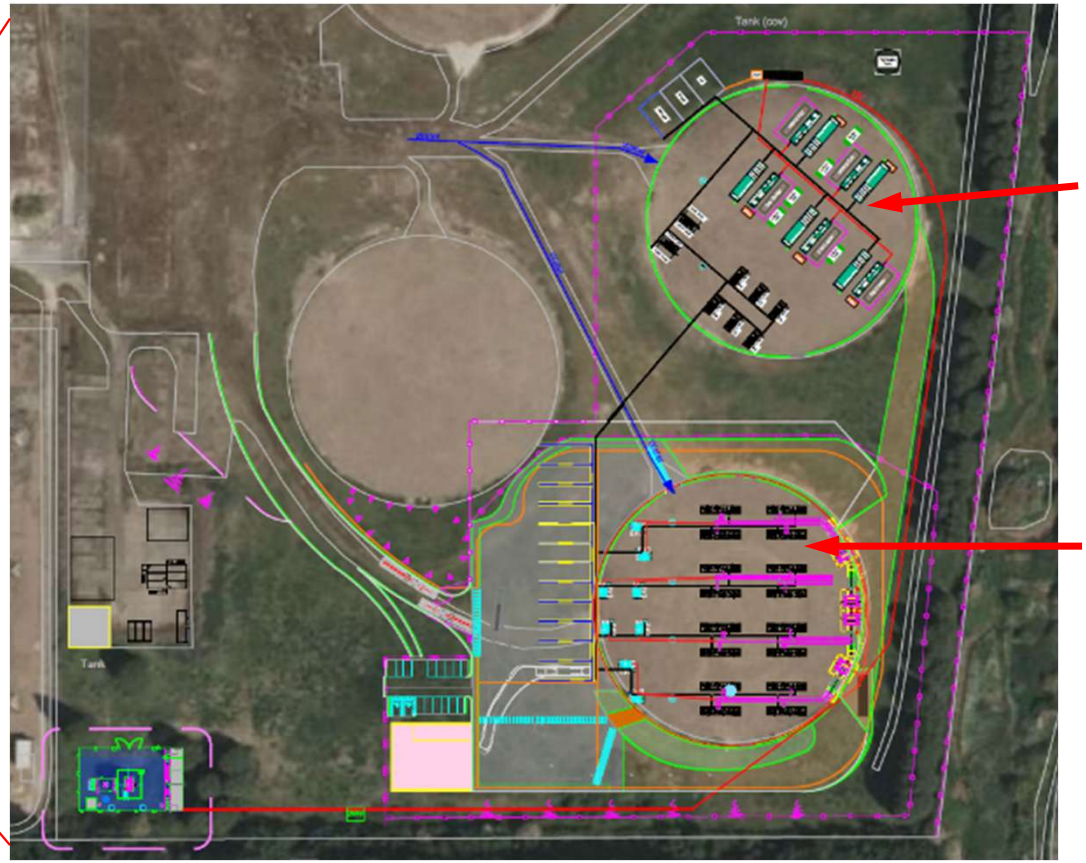
HyMarnham Power has been successful in securing a government contract via NZHF to build a 15MW electrolyser facility. The project will start to generate hydrogen this summer, and achieve full commercial operation later this year.

The High Marnham site has the electricity supply, space, and water capacity to produce over 300 tonnes of hydrogen per day.

HyMarnham Power

Case Study: Green hydrogen production 50:50 joint venture

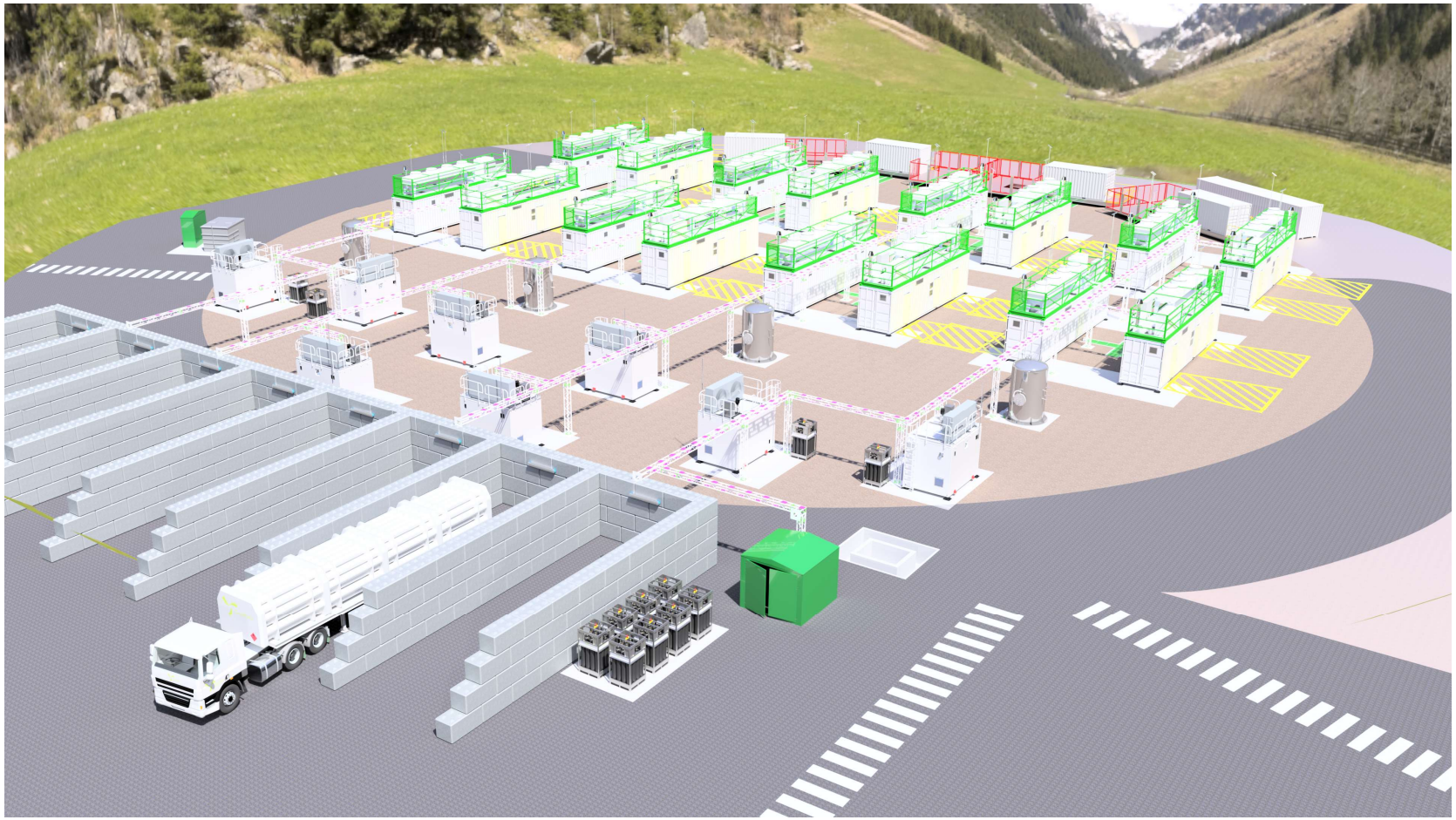
High Marnham:



HyMarnham 2
30 MW
(proposed)

HyMarnham 1
15 MW
(underway)

High Marnham:



3D render of the HyMarnham 1 hydrogen production plant (noting that the background may not be accurate!)

High Marnham:

Fixed camera for a time-lapse record (as of April 2025) of the construction phase at High Marnham, and delivery of new electrolysers.

GeoPura's journey:

GeoPura | Sustainable Power Now

Working together to provide a sustainable solution

GeoPura has raised near £115m of funding over the last 18 months to invest in zero-emission fuel and energy infrastructure.

Scaling the solution

- Feb-23: **£36m** Series A

  SIEMENS energy · gm VENTURES · SWEN Capital Partners · BARCLAYS

- Feb-24: **£56m** Convertible Loan Note

  NATIONAL WEALTH FUND · SIEMENS energy · gm VENTURES · SWEN Capital Partners · BARCLAYS

- Sep-24: **£22m** Asset-backed debt

  HSBC · BNP PARIBAS LEASING SOLUTIONS · Siemens Financial Services · Close Brothers

Plan in place to manufacture 3,600 HPUs by 2033, providing clean, low-cost reliable power, and displacing more than ten million tonnes of CO2 emissions through their operational lifetimes.

What is next for GeoPura?

GeoPura® | Sustainable Power Now

Scaling for Mass Adoption

We're investing heavily in technology development and UK-based manufacturing to bring hydrogen power into the mainstream. By expanding our fleet and hydrogen supply capability, we're making it easier for businesses to adopt zero-emission power at scale.

International Expansion

We're actively progressing opportunities in North America and the Middle East, where demand for off-grid, zero-emission power is growing rapidly across construction, events, defence and broadcast sectors.

Continued Fundraising

Delivering our mission will require the deployment of billions in capital over the coming decade. Our upcoming Series B round will support international expansion, accelerate delivery, and grow our hydrogen production and logistics network.

THE KING'S AWARDS FOR ENTERPRISE
2025
INNOVATION

Keep an eye out for more of these!

GeoPura | Sustainable Power Now

Summary

GeoPura | Sustainable Power Now

Any questions?

GeoPura®

Sustainable
Power
Now

Thank you

GeoPura Ltd C A Parsons Works, Shields Road, Newcastle upon Tyne, NE6 2YL, United Kingdom

T +44 (0)1509 882 340 E info@geopura.com www.geopura.com