



Zero emission power from green hydrogen to decarbonise temporary, back up, off-grid and supplementary power

Matt Barney, Business Development Manager, GeoPura

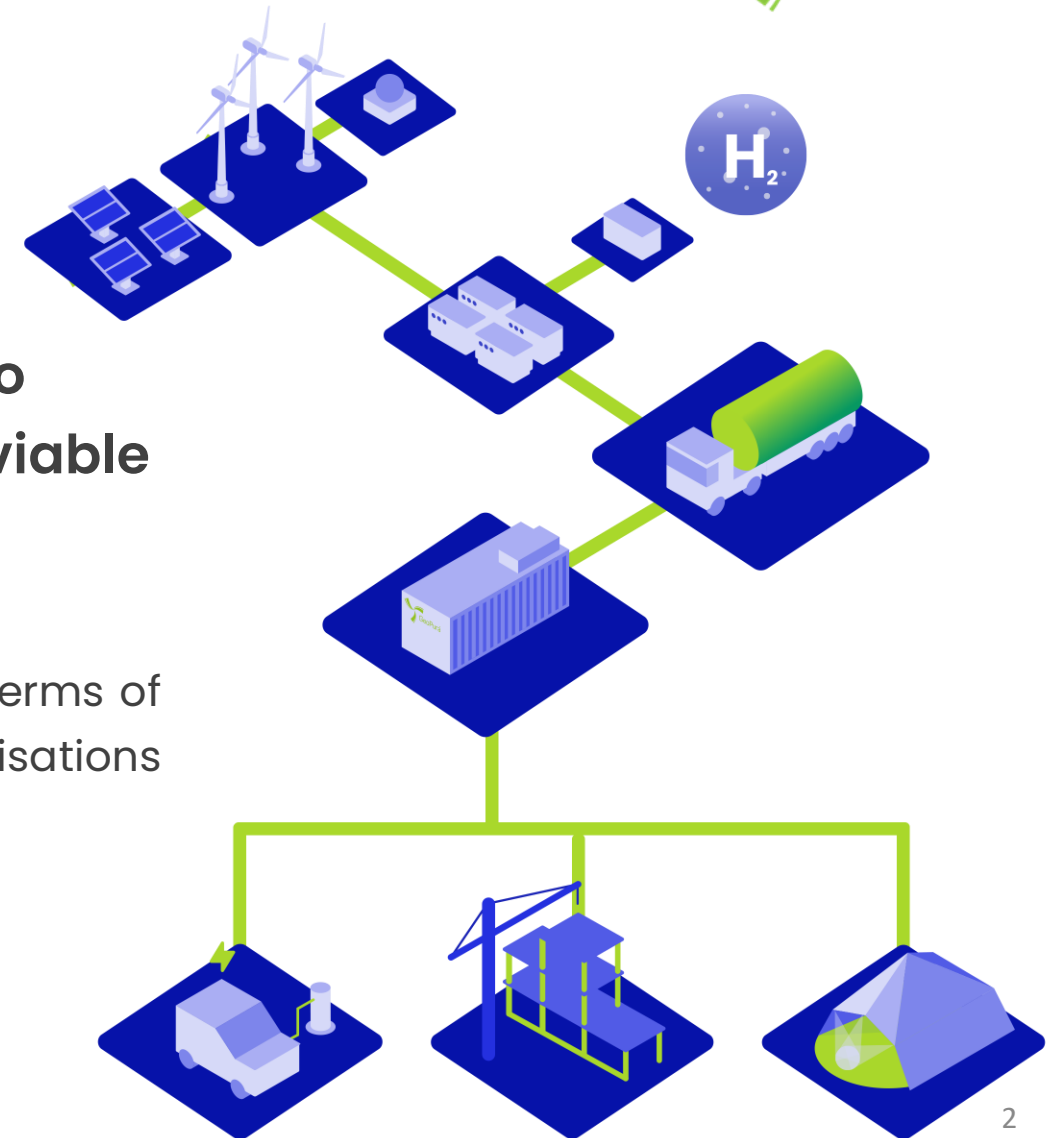
100% renewable  
**clean energy without limits**



To enable the production, transport and use of zero emission fuels with innovative and commercially viable technology to decarbonise our global economy.

We have created and are delivering a real game-changer in terms of powering our planet without fossil fuels and are enabling organisations to reduce emissions and work towards net-zero.

**Clean, Renewable, Resilient Energy as a Service.**



# The GeoPura Hydrogen Power Unit (HPU)



## High Level specification


- 20ft shipping container form factor
- 250kW maximum power output
- PEM fuel cell
- 100% zero emission
- 216kWh battery storage included in each module
- Off grid, peak shaving, and back-up power modes
- Multiple containers can be combined to provide resilient 2MW system
- Fully redundant, uninterruptible power system rated for full load
- Quiet operation (65dBA at 1m), significantly below the noise levels of an equivalently-sized diesel genset



HPUs are controlled using GeoPura software running on a standard Siemens PLC platform. HPUs are securely monitored and controlled in real time from any standard remote device.

# GeoPura – End To End Full-Service Solution



 GeoPura™ hydrogen clean energy system is 100% renewable **clean energy**.

## H<sub>2</sub> Production



GeoPura Electrolyser  
powered by green energy

## Storage



Hydrogen Storage

## Distribution



Mass distribution



High capacity trailers

## Supply



H<sub>2</sub> Supply



Electricity Supply

## Energy service contracts



Construction



EV Charging



Festivals



Data Centres



HGV



Mass Transport

GeoPura provides **clean energy as a service** to customers, including the complete upstream hydrogen supply



# The local electricity grid is fit for purpose – put not ‘all purpose’



A car requires 100kW of power which is the equivalent of approx. 300 solar panels at midday in direct sunlight.

## Energy crisis: 'We need a system upgrade to get more renewables'

By Ben Schofield & Pete Cooper  
BBC News, East

17 March



BEN SCHOFIELD/BBC  
The government wants all electricity to come from clean energy sources by 2035

Source: BBC news, March 2022

News

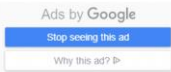
5th June

## Have your say as EDF apply for permit for 200 diesel generators at Hinkley C site

By Steven Salter



PERMIT: The Environment Agency will decide if EDF should be granted the permit for the diesel generators



**Bridgwater**  
**Mercury**

## Motorway services fear grid not ready for electric cars

Rollout of charging points held back by flaws in power network



Source: Financial Times, 4<sup>th</sup> January 2020

“

It feels like our power network at times is not fit for purpose to serve this massive charging need that is coming

Simon Turl, chairman of RoadChef

## Energy as a service

Operating an Energy as a Service model the GeoPura HPU makes the transition away from traditional diesel generators easy.

- Plug and play solution
- Set up and operated by GeoPura engineers
- Full fuel management system – including storage, delivery and refuelling
- Fully monitored and maintained to optimise performance and energy use





# Deployed Across a Range of Industries:



EV charging  
& transport



Construction



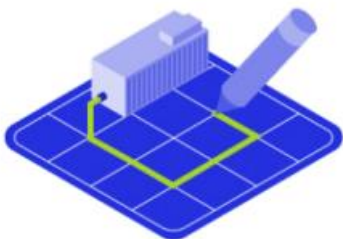
Film & TV  
production



Hydrogen  
production



Outdoor events



Bespoke  
Bespoke





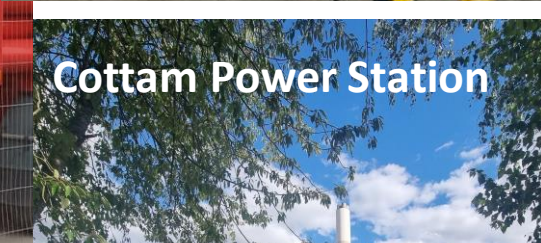
# Recent successful deployments



NetflixDitchleyPark



HS2 / SCS



CottamPowerStation



BalfourBeattyA63



NationalGrid



Netfli UX1



Netfli Troubadour



BBCSpringwatch



LowMarnham



BalfourBeattyLeeds



## Example Deployment: HS2



**Two GeoPura 250kVA hydrogen power units (HPUs) were deployed at HS2's Victoria Road Crossover Box, as a direct replacement for diesel generators to power machinery on the site.**

- ✓ Running the units for 400 hours eliminated around 51 tonnes of carbon compared to using standard diesel generators.
- ✓ Quieter than standard diesel generators and the only emission is water.
- ✓ Emission free power derived from a hydrogen fuel cell, with power capabilities ranging from 20kW through to 2MW.
- ✓ Won 'Best Use of Technology Award' at this year's Construction News Awards.



## Example Deployment: Uniper



### Deployed during a maintenance outage at Uniper's Cottam Development Centre (CDC) natural gas plant in Nottinghamshire.

- ✓ Displaced two traditional diesel generators
- ✓ Saved 94 tonnes of carbon dioxide (CO<sub>2</sub>) during the three-month outage
- ✓ Used to power the outage village, including welfare facilities and EV charging for all electric vehicles on site.
- ✓ Powered using hydrogen produced from renewable energy from approximately eight miles away.





### Low Carbon Alternatives to Standby Generators in Electrical Substations

- ✓ A ten-week trial to test a hydrogen-powered generator at National Grid Deeside Centre for Innovation, a state-of-the-art testing facility hosting a 400 kV modified substation, designed as a unique environment for development and trial of innovative technologies and practices.
- ✓ 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.
- ✓ Data currently being analysed and shared later this year.



## Other Partners

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Giants of industry, manufacturing and finance back UK green hydrogen pioneer GeoPura with £36m investment

21 February 2023

- UK company GeoPura secures £36m investment from GM Ventures, Barclays Sustainable Impact Capital, SWEN CP through its fund SWEN Impact Fund for Transition 2 and Siemens Energy Ventures
- Investment will enable the accelerated manufacturing and deployment of Hydrogen Power Units throughout the UK
- GeoPura will scale its green hydrogen business, replacing fossil fuels with zero emission alternatives in power generation applications such as construction, infrastructure, outdoor events, EV charging and back-up power

**SIEMENS**  
energy

**gm** VENTURES

**SWEN**  
Capital Partners

UK green hydrogen pioneer GeoPura has received £36m investment from global industry leaders, with the round led by GM Ventures, the investment arm of General Motors, and co-led by Barclays Sustainable Impact Capital with participation from SWEN CP and Siemens Energy Ventures to scale its green hydrogen business, which is replacing diesel-fuelled generators and enabling zero-emissions energy across the board to create a more sustainable world.



## Working in Collaboration with Siemens Energy to Scale

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# Working in Collaboration with Siemens Energy to Scale



**SIEMENS**  
energy



The HPU is already in bulk production at Siemens Energy's facility in Newcastle, UK.



[Manufacturing site video tour](#)



# The Future of Zero-Emission Fuels:



## Working collaboratively with our new strategic partners GeoPura plans:

- High density Green Hydrogen based zero emission fuels
- 5MW+ high power zero emission systems
- Highly portable systems 'HPU Agile' and 'HPU Fast' in prototype now
- High efficiency renewable hydrogen production
- Integrated zero emission refueling systems



1000kVA and Mk2 HPU's under development



250kW 'HPU Fast' deployed since Jan 2022



60kW towable 'HPU Agile' available 2023

# **clean energy without limits**

