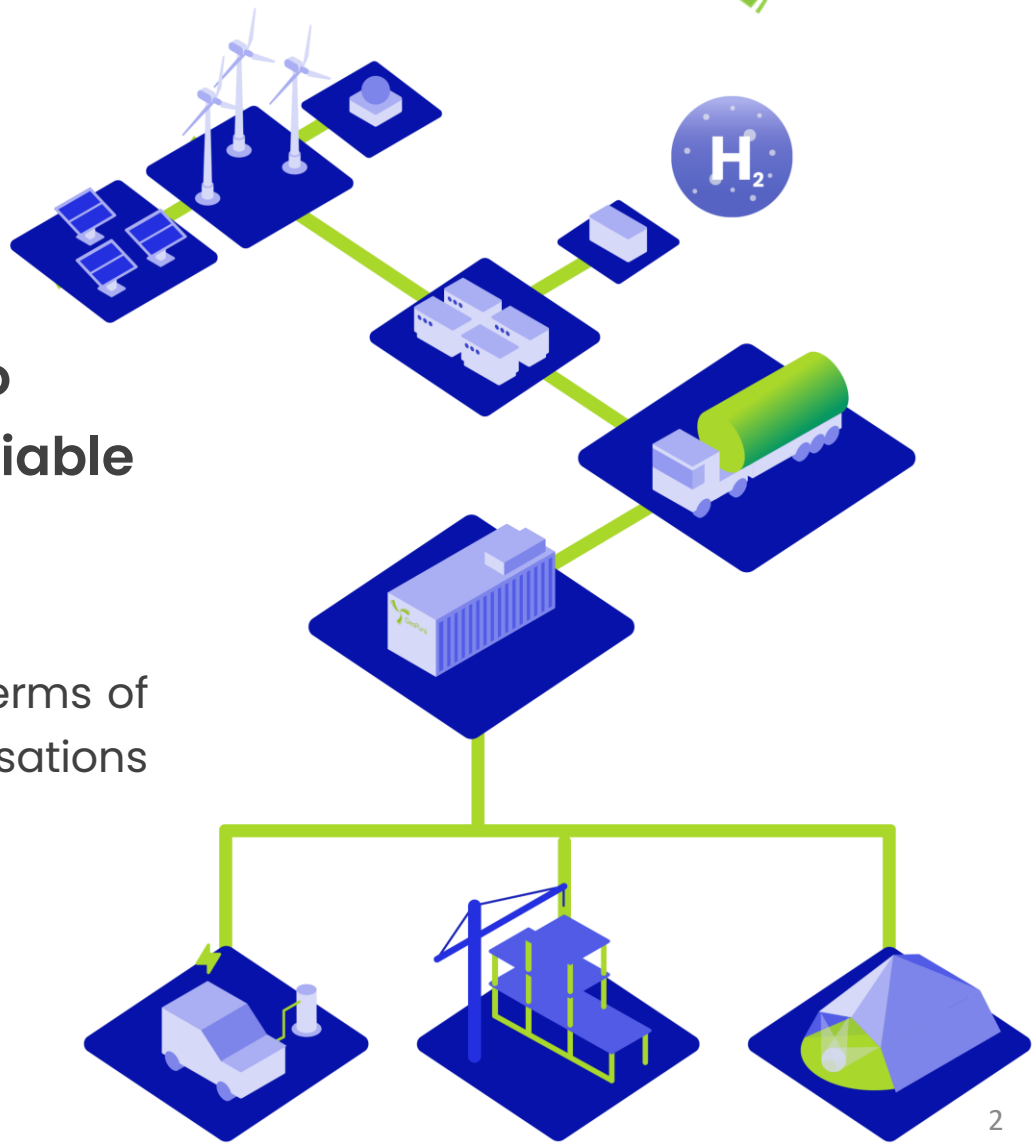
GeoPura™

Hydrogen and Fuel Cells – Fueling the Future NOW

Hydrogen for power – successful deployments, challenges and the future of zero-emission fuels.

100% renewable
clean energy without limits

Introduction to GeoPura



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

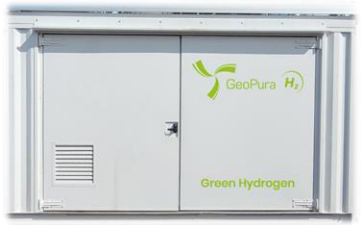
HPUs are controlled using GeoPura software running on a standard Siemens PLC platform. HPUs are securely monitored and controlled in real time from any standard remote device.

GeoPura – End To End Full-Service Solution

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

H_2 Production





GeoPura Electrolyser powered by green energy

Storage

Hydrogen Storage

Distribution

Mass distribution

High capacity trailers

Supply

H2 Supply

Electricity Supply

Energy service contracts

Construction

EV Charging

Festivals

Data Centres

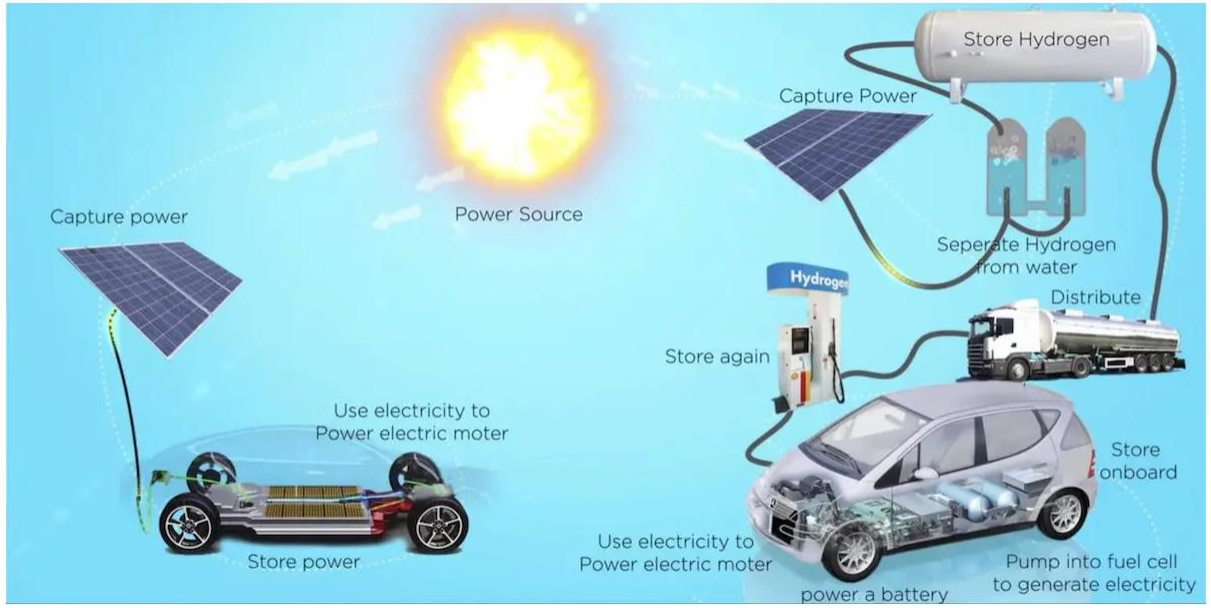
HGV

Mass Transport

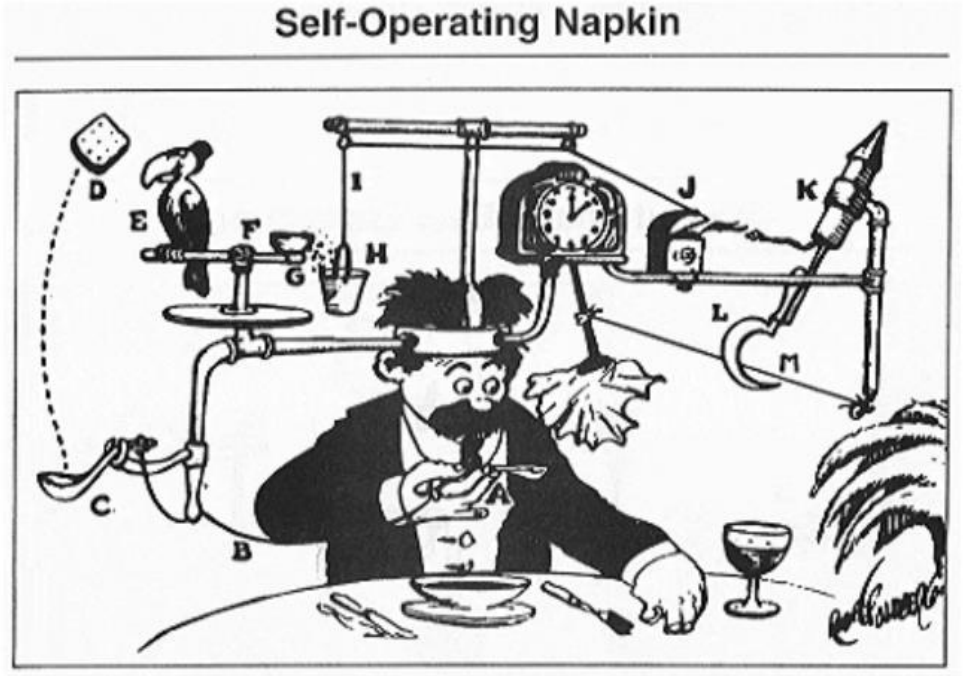
GeoPura provides **clean energy as a service** to customers, including the complete upstream hydrogen supply

Introduction to GeoPura

"It is both cheaper and more efficient to simply use renewable electricity directly, rather than adding the extra step of producing hydrogen." *The problem with Hydrogen, Global Witness, Sept 2022.*



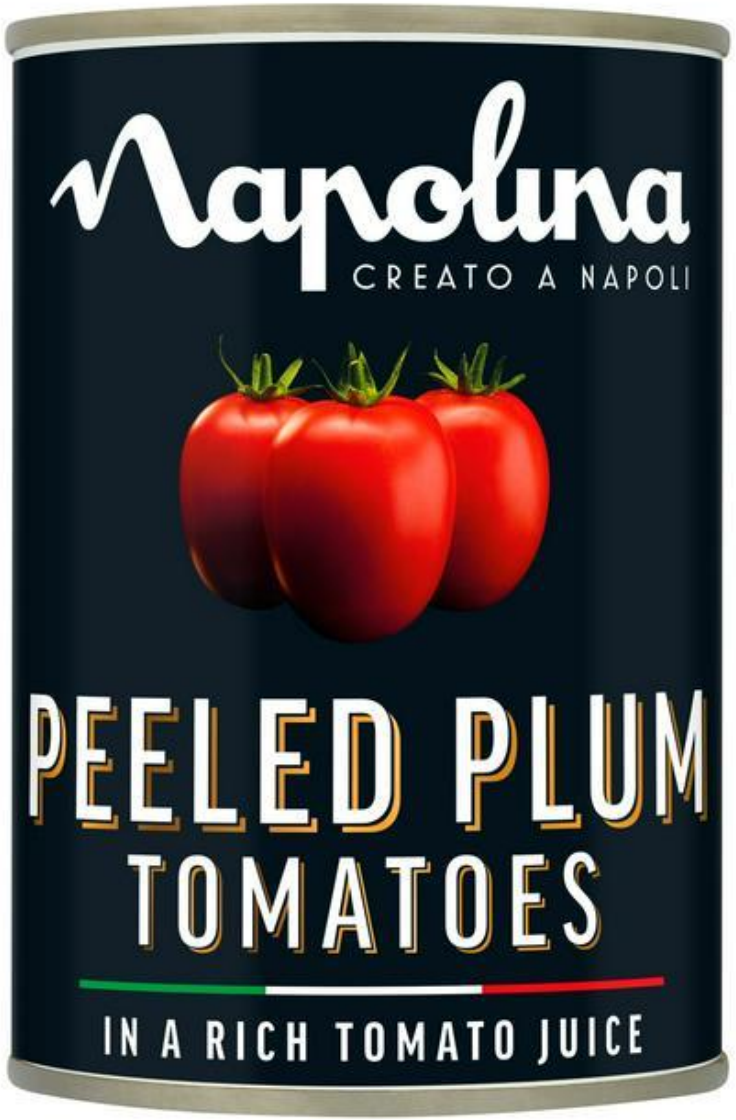
BATTERY ELECTRIC VERSUS HYDROGEN POWERED CAR.



RUBE GOLDBERG'S SELF-OPERATING NAPKIN (1931). SOURCE: WIKIMEDIA COMMONS

"The madness of Big Auto's push for hydrogen-powered cars"
FEBRUARY 10, 2023, The Driven.

Tomatoes


Napolina
CREATO A NAPOLI
PEELED PLUM
TOMATOES
IN A RICH TOMATO JUICE

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

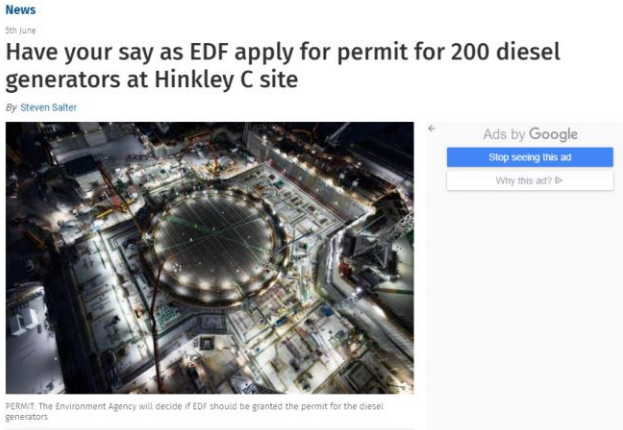
17 March

Climate change

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

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Why this ad?

Bridgwater Mercury

Motorway services fear grid not ready for electric cars

Rollout of charging points held back by flaws in power network

> **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**

Source: Financial Times, 4th January 2020

Green Hydrogen as a Fuel

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:

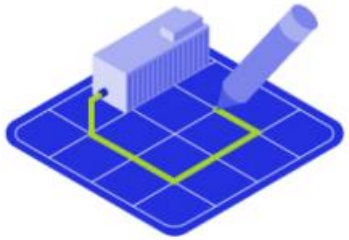
EV charging & transport

Construction

Film & TV production

Hydrogen production

Outdoor events



Bespoke Bespoke

GeoPura

uniper

NETFLIX

SIEMENS energy

BBC

nationalgrid

Balfour Beatty

Cadent
Your Gas Network

HS2

Recent successful deployments

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 (CO2) 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.

Example Deployment: National Grid

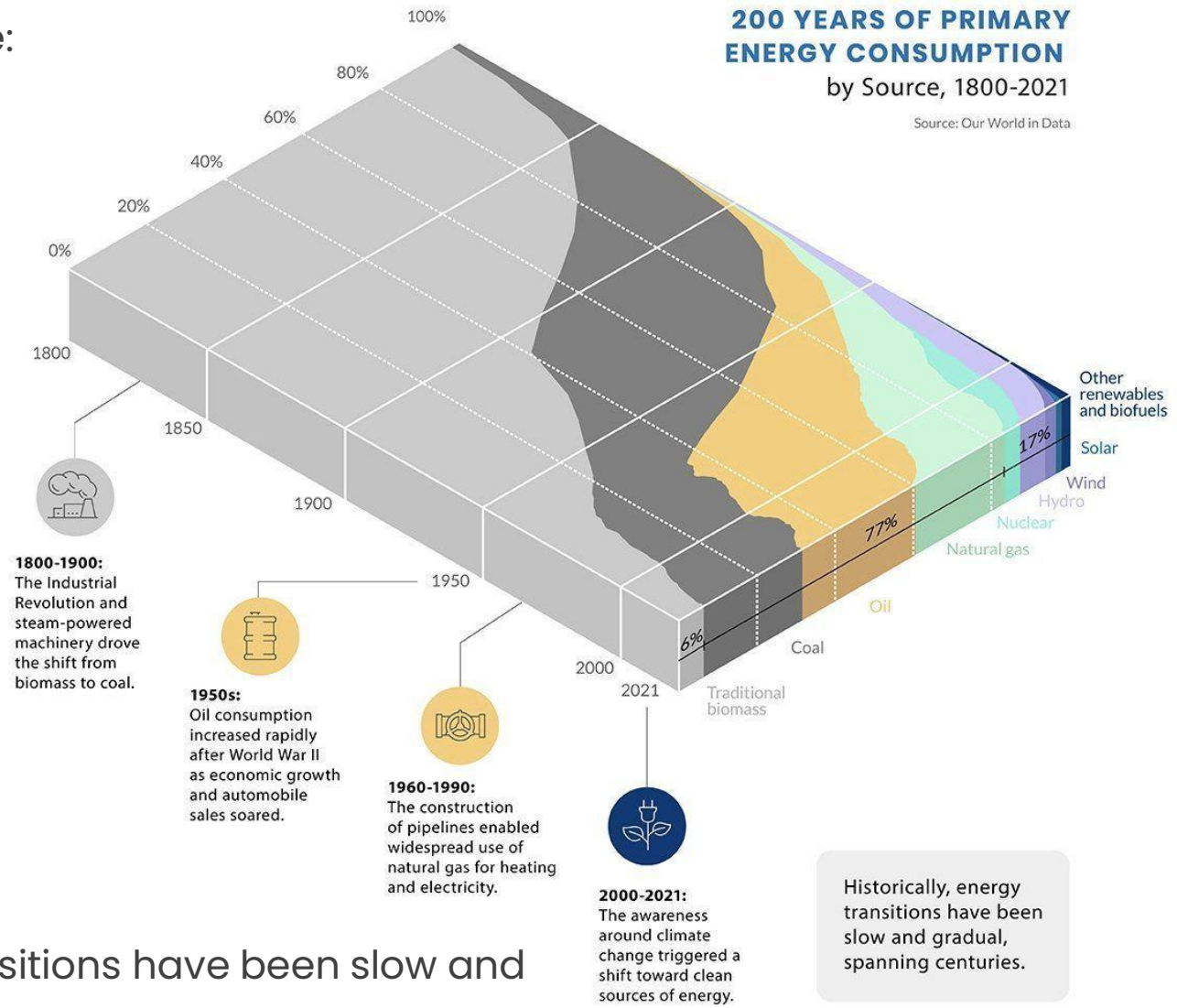
Low Carbon Alternatives to Standby Generators in Electrical Substations

- ✓ 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.

Challenges Faced:

The main challenges we have faced so far, include:

- Supply chain
- Availability of hydrogen
- Infrastructure
- Skills / recruitment
- Enabling mass production
- Customer adoption of new technology



Previous energy transitions have been slow and gradual, we don't have decades to wait!

Working in Collaboration with Siemens Energy to Scale

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

‘Hot off the press’ photos of HPU-Agile prototype.

1000kVA and Mk2 HPU’s under development

250kW ‘HPU Fast’ deployed since Jan 2022

60kW towable ‘HPU Agile’ available 2023

clean energy without limits

UK HFCA