

SECTORS: Construction, Off-Grid Power

Eiffage, Kier, Ferrovial Construction and BAM Nuttall Case Study

Thames Valley Viaduct and Footpath SMA9 Accommodation
Overbridge Compound - HS2 Phase 1 Project.

GeoPura hydrogen-powered generators are strategically deployed at the 'Footpath SMA9 Accommodation Overbridge Compound' and the 'Thame Valley Viaduct' sites, two critical locations in the HS2 Phase 1 project. These sites, characterised by their rural settings, presented unique logistical challenges that were effectively overcome to deliver consistent, clean and reliable off-grid power.

Following the successful initial trial demonstrating that hydrogen can significantly reduce diesel usage and emissions on construction sites, the use of hydrogen technology has been extended for the entire project duration.

Location	2 sites - Aylesbury
Dates	June 2023 - June 2024
Equipment	2 x HPU1

KEY METRICS

CO₂ saved	171,458 kg
NOx saved	898 kg
PM saved	63 kg

APPLICATIONS



Off-Grid Power



Challenges

- > Reliance on diesel generators for power.
- > No grid connection on site.
- > Long-term solution needed across several locations.



Solutions

- > **Zero Emission Energy:** Unlike diesel generators, HPUs emit no pollutants
- > **Reliable Power:** Hydrogen generators provide consistent power on site to reduce costly downtime.
- > **Hydrogen Expertise:** Experienced and knowledgeable team to advise on most efficient use of HPUs on site.



About the project



Traditionally construction sites rely heavily on diesel generators for power generation when grid access is unavailable, resulting in significant carbon emissions and air pollutants. Diesel was responsible for 12% of the UK's greenhouse gas emissions in 2018. GeoPura HPUs offer a sustainable alternative, harnessing the power of hydrogen to provide clean, efficient, and zero-emission electricity.

EKFB, a joint venture comprising Eiffage, Kier, Ferrovial Construction, and BAM Nuttall, is responsible for delivering 80 km of the HS2 Phase 1 route.

Andrea Davidson, HS2 Head of Carbon & Climate Change, highlighted, "This is an excellent example of how EKFB, through the construction of HS2, is driving the adoption of alternative fuel innovations to meet our diesel-free ambition by 2029. With no harmful pollutants, the technology brings major air quality benefits to the workforce and local communities around the construction sites, something which is vitally important across the whole of the HS2 project."

Equipped with advanced fuel cell technology, the HPU converts hydrogen gas into electricity, emitting only water vapour as a by-product. This innovative solution not only reduces the carbon footprint but also improves air quality and minimises noise pollution on construction sites.

EKFB is committed to innovative and sustainable construction practices, aligning with HS2's goal of achieving net zero by 2035 and eliminating diesel use on all sites by 2029.

As the industry continues to seek sustainable power solutions, the success of these deployments serves as an example for future projects. With more hydrogen powered generators coming to market and the increased availability of green hydrogen, HPUs play a fundamental role in the drive towards net-zero construction practices.



What our client says

"Moving away from the use of diesel and other fossil fuels is a key part of EKFB's carbon strategy, and hydrogen can play an important role in providing versatile, clean energy that reduces the carbon footprint of construction operations. As further research, development, and investment is needed to fully realise the potential of using hydrogen on construction sites, we were keen to play our part in helping to demonstrate its benefits in a live environment. The GeoPura units we have been using at our sites have been an excellent and reliable source of zero emissions power from the outset."

Alan Silverster, EKFB Carbon Manager

Find out more

Read our press release [here](#).

