GeoPura®

Ministry of Defence

Sustainable Power Now

SECTORS: EV Charging, Off-Grid Power

Ministry of Defence

Case Study

RAF Leeming, Merville Barracks Colchester, RAF Northolt, HMNB Devonport, HMS Excellent Portsmouth

GeoPura and the Ministry of Defence (MOD) are proud to announce the successful completion of a landmark hydrogen power trial. The trial successfully introduced and utilised hydrogen on military bases to generate electricity to recharge electric cars and vans using rapid chargers. While this energy solution is being used in the commercial environment, this is the first military application of the technology, marking a significant milestone in advancing alternative energy solutions for Defence.

Location	Various MOD sites
Dates	October 2023 - September 2024
Equipment	HPU 1 & EV charging infrastructure

KEY METRICS

CO_2 saved	30,701 kg
NOx saved	427.1 kg
PM saved	16.4 kg

APPLICATIONS

Off-Grid Power

EV Charging

Challenges

- Insufficient grid capacity.
- Highly secure locations within MOD sites.
- Off-grid power supply needed in some areas for EV charging.

Solutions

- **Zero Emission Energy:** Unlike diesel generators, HPUs emit no pollutants
- **World-leading Technology:** Hydrogen generators provide high capacity power for rapid EV charging.
- **Hydrogen Expertise:** Experienced and knowledgeable team to advise on the most suitable application.

About the project

Led by Defence Support within MOD, the trial focused on implementing an alternative Battery Electric Vehicle (BEV) charging capability using zero-emission green hydrogen-powered generators (HPUs) at five key MOD locations, including RAF Leeming, HMNB Devonport, Merville Barracks Colchester, HMS Excellent Portsmouth, and RAF Northolt.

Critical to the success of the trial was the deployment of GeoPura HPUs, which offer a highly reliable, always on, environmentally friendly source of power to support the limitless scaling of rapid electric vehicle (EV) fleet charging infrastructure. As the adoption of BEVs increases, insufficient grid capacity can impede expanding recharging needs. HPU removes these limitations, supplementing available grid power, or operating entirely off grid, enabling the MOD to meet expanding EV charging needs. The improvements that rapid charging has provided by the use of the HPUs has been especially beneficial to the MOD.

The HPUs provided a mix of AC and fast DC charging capabilities, operating at differing charging speeds to align with operational requirements, both completely off grid and supplementing existing grid capacity for long and short term durations over the course of the trial.

With approximately 120,000 miles driven in vehicles charged via the HPUs over the course of the trial, hydrogen has proven to be a robust, reliable and sustainable alternative to support increasing electricity demand within the forces.

Looking ahead, GeoPura is committed to furthering the use of hydrogen across Defence sites, understanding demand signals, developing regulations for military hydrogen use, and enhancing the training of personnel in handling hydrogen-based systems to decarbonise power use.

What our client says

"In embracing innovative solutions like hydrogen power, the Ministry of Defence has reaffirmed its commitment to sustainability and as the trial has proved, to improving operational efficiency.

This trial has demonstrated the potential of hydrogen as a key enabler of our transition to zero-emissions energy, while also addressing the current challenges posed by our expanding electric vehicle fleet."

Air Vice-Marshal Rich Pratley MOD Senior Responsible Owner for this project.

Find out more

Read our press release here.