

SECTORS: Construction, EV Charging

Uniper Case Study

Cottam Development Centre



Commissioned by power station owner Uniper, and utilised by main contractor Siemens Energy during the maintenance works, the 250kW HPU was used to power the outage village, including welfare facilities and EV charging for all electric vehicles on site.

The high efficiency, 445MW natural gas power plant in Nottinghamshire undergoes routine maintenance outages every four-to-five years, which requires a secure backup power supply when disconnected from the main power grid. Historically this has meant using multiple diesel generators.

Location	Nottinghamshire, England
Dates	6 months: June 2022 to January 2023
Equipment	HPU 1

KEY METRICS

CO₂ saved	172.31 tonnes
NOx saved	2.4 tonnes
PM saved	93.2 kg

APPLICATIONS



Back Up Power



Critical Power



EV Charging



Off-Grid Power



Challenges

- > Critical power required.
- > Sustainable alternative to diesel generators needed.
- > High power density.
- > Power for EV charging.



Solutions

- > GeoPura HPU utilised to provide zero emission power during shut down.
- > Locally sourced green hydrogen produced eight miles away from site.
- > EV charging provided as an additional benefit alongside the backup power.



About the project



The GeoPura Hydrogen Power Unit (HPU), that uses fuel cell technology to convert green hydrogen into zero-emission, critically backed AC electricity, has been utilised during a maintenance outage at Uniper’s Cottam Development Centre (CDC) natural gas plant in Nottinghamshire. Displacing traditional diesel generators, it has saved 172 tonnes of carbon dioxide (CO₂) during the six-month outage. This is approximately the same amount of CO₂ produced by a car that has driven around the world seventeen times.

The HPU is fuelled using green hydrogen, which is produced locally by GeoPura using renewable energy from a biomass facility approximately eight miles away. This is an efficient example of how new zero-emission technology can be used to minimise the environmental impact of shutdown operations.

The HPU provides zero-emission electricity for off grid, temporary and backup power applications, not only reducing carbon emissions when compared with a diesel generator, but also eliminating other harmful NOx and particulate emissions that have an impact on air quality. The only exhausts being heat and water that can be redirected for use on site elsewhere, the HPU also runs significantly quieter than traditional generators, improving the working environment for contractors on site.

What our client says



“Uniper has committed to an ambitious target to make its European power generation fleet carbon-neutral by 2035, and reducing Scope 3 indirect carbon emissions by 35% by 2035, compared to the base year 2021. To achieve this, we are committed to finding solutions to delivering this goal across all operations, and CDC are pleased to be able to play our part during the power station maintenance outage. Temporary power requirements during outages are often reliant on diesel generators, but having a GeoPura HPU fuelled by green hydrogen, has enabled us to significantly reduce the emissions associated with the maintenance works, contributing to our 2035 objective. The use and reliability of the GeoPura HPU for the first time ever during a Uniper power station outage has been very positive. The support provided by GeoPura on the installation, operation and fuelling of the system made switching to this new technology at our CDC plant, seamless for us. And Uniper will share the lessons learned from using this technology across our fleet of UK power stations.”

Tom Kavanagh, Uniper Plant Manager,
Cottam Development Centre
and Killingholme

Find out more



Watch our video case study [here](#).

