

Vast salt caverns to store hydrogen under former Royal Navy base

Natural gas reserves will be used for emergencies to plug gap in renewables' production

By Jonathan Leake

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Vast salt caverns designed to store hydrogen are to be excavated under Britain's biggest former naval base as part of plans to bolster the country's energy security.

Each the size of St Paul's Cathedral, the 19 caverns will be dug under Portland Harbour in Dorset and filled with enough hydrogen to fuel a power station for days.

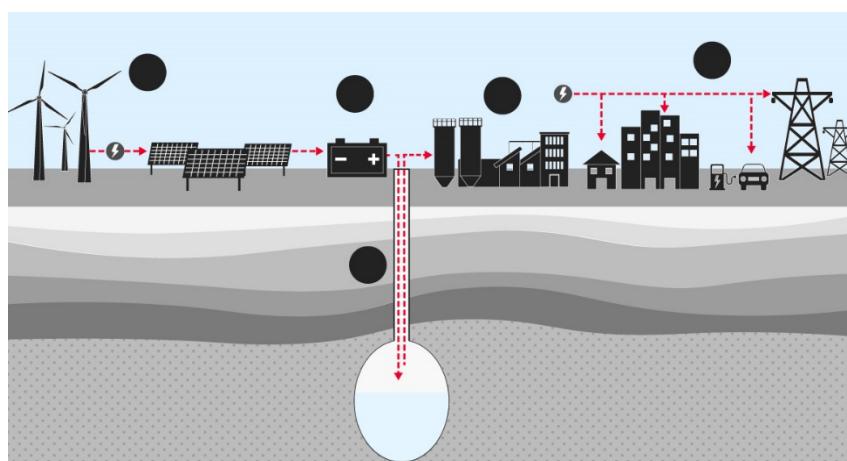
The hydrogen contained in the caverns will be reserved for emergency use and called upon when wind and solar farms are not generating enough energy to keep Britain's lights on.

Claire Coutinho, the energy secretary, is said to have not only backed the scheme but also altered the Government's hydrogen storage business policy to ensure it can secure taxpayer subsidies.

UK Oil and Gas (UKOG), the company behind the scheme, has said it will seek planning permission within months.

Stephen Sanderson, UKOG's chief executive, has said he would make the application under the Government's nationally significant infrastructure system, allowing it to bypass potential local opposition.

He said: "Portland Port is ideally situated for the construction of large salt caverns as it overlies a 450-metre thick, high-quality rock salt."



*Cavern capacity:
320,000 metres³*

1. Wind and solar farms produce excess energy under suitable weather conditions
2. Electrolyser uses excess energy to create hydrogen
3. Hydrogen stored in salt cavern until green energy production wanes
4. Stored hydrogen released into hydrogen power station

5. Hydrogen powers homes, businesses and infrastructure

Mr Sanderson added: “I have enjoyed one-on-one meetings with the three key figures from the Department for Energy Security and Net Zero, including Secretary of State Claire Coutinho, Lord Callanan, minister for energy efficiency and green finance, and Graham Stuart, minister for energy security and net zero.”

Portland Harbour lies in Weymouth Bay on England’s south coast and was first used as a naval base in the 16th century by Henry VIII.

It was massively expanded last century to accommodate new steam-powered warships, eventually becoming one of the Royal Navy’s biggest bases until it was closed in 1995.

It remains one of the UK’s largest harbours and the training centre for the UK’s Olympic sailing teams.

The harbour’s anticipated new role storing hydrogen relies on a rock known as halite or rock salt.

A massive layer of this has been found two miles beneath the surface – where it has been buried for at least 200m years.

Salt is highly soluble so the fact it has lasted so long shows the rock has no water running through it – making it highly stable and suitable for storing hydrogen.

Matt Cartwright, UKOG’s commercial director, said the caverns would be created by drilling wells into the salt and then injecting fresh water to dissolve the rock.

UK Energy Storage, a wholly-owned subsidiary of UKOG, will oversee the project.

Each cavern is set to be 85 metres in diameter and 90 metres high with a capacity of 320,000 metres cubed, which is roughly twice the volume of St Paul’s Cathedral.

UKOG is facing a series of controversies over its involvement with onshore oil and gas developments around the UK.

It currently has interests in five oil and gas fields within the Weald and Purbeck areas of southern England but its attempts to exploit them have been subject to repeated court battles.

UKOG won the right to drill in the Loxley gas field near Horsham in Surrey, with production expected from next year.

A spokesman for UKOG said the company was moving away from oil and gas and saw a much bigger future in renewable energy.