Northern cyprus compressed air energy storage

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Large-scale long-duration energy storage (LDES) projects have been launched near Cyprus and in the UK, using technologies from BaroMar and RheEnergise that are an iteration of established LDES technologies.

LDES technology BaroMar has enlisted consultancy Jacobs to develop the preliminary design for an underwater, large-scale pilot project with 4MWh of energy storage capacity using its technology off the coast of Cyprus.

The 4MWh project would store compressed air in large rigid tanks ballasted on the seabed, making it a form of compressed air energy storage (CAES), one of the more commercial mature LDES technologies.

‘Unmatchable low construction costs’ can be achieved by BaroMar’s solution thanks to the negligible difference in relative pressure between the compressed air and the surrounding water, the use of traditional machine construction and installation methods, and a design that almost eliminates the need for underwater maintenance, it said.

"This project requires extensive geophysical, geotechnical and bathymetric surveying, investigation, feasibility studying and permitting for tank installation at deep depths for onshore mechanical and electrical equipment needs," says Jacobs VP Fiachra ? Cl?irigh.

Long-duration "hydro-energy storage" developer RheEnergise has agreed to build its first-of-a-kind system demonstrator at Sibelco"s mining operations at Cornwood, near Plymouth.

Mining company Sibelco"s Cornwood site produces kaolin, mainly for sanitary ware, ceramics, tiles and industrial applications. RheEnergise"s 500kW so-called "high-density" pumped hydro energy storage (PHES) project will support the organisation in decarbonising its operation.

RheEnergise has developed ahydro-energy storage solutionthat can operate on low hills rather than just mountains, which creates an opportunity an order of magnitude greater than traditional pumped hydro.

Key to the solution is the use of the company"s High-Density Fluid R-19, which is 2.5x denser than water. Because of the fluid"s high density, projects can not only be constructed in areas with less elevation but can also be up to 2.5 times smaller than traditional pumped hydro projects for the same energy, the company claimed.

The project is being supported via the UK government"s Longer Duration Energy Storage (official acronym LODES) Demonstration Programme, and Devon County Council has provided permission for its

development.

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The zero-carbon energy grid of the future looks remarkably complex. Solar, wind and other renewable energy sources will all contribute power when they can - but this won"t match up with demand, so energy storage and release measures will be critical. And these will be needed for a range of different time scales. Some will need to smooth out daily peaks and troughs. Others will operate between days and weeks, filling in when overcast weather makes for a couple of days of poor solar output.

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