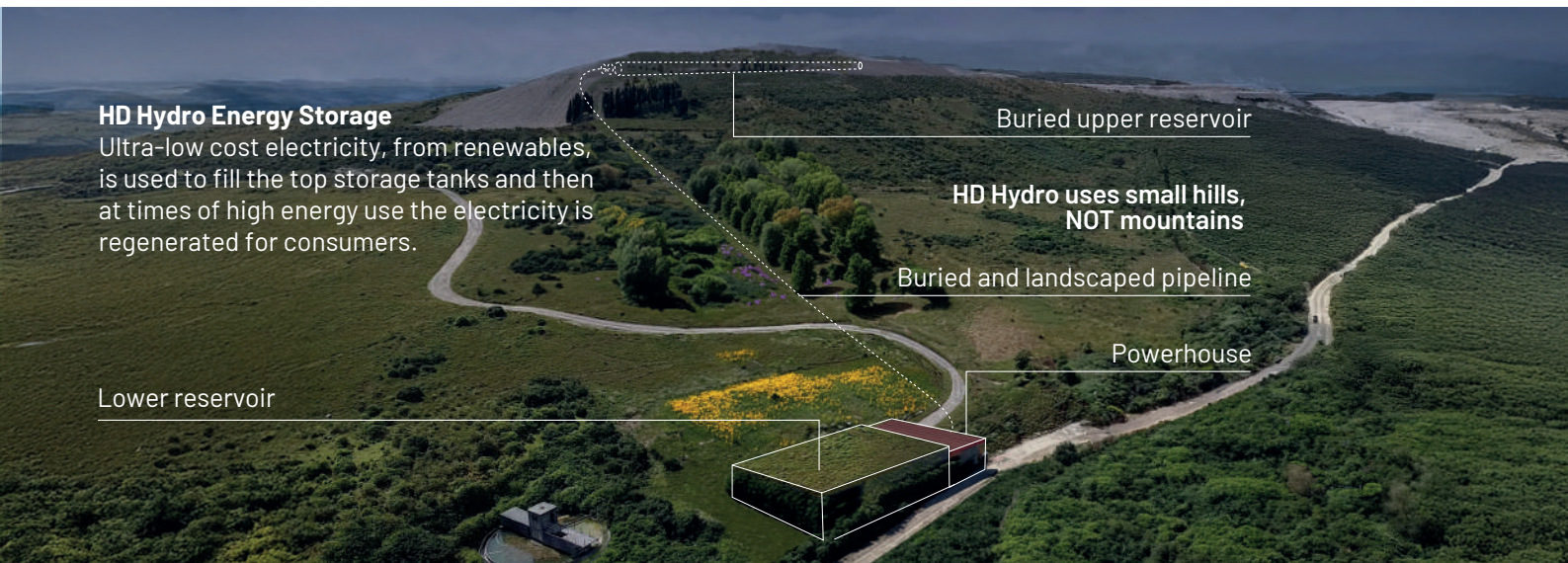




HD Hydro Energy Storage

Ultra-low cost electricity, from renewables, is used to fill the top storage tanks and then at times of high energy use the electricity is regenerated for consumers.

VISION

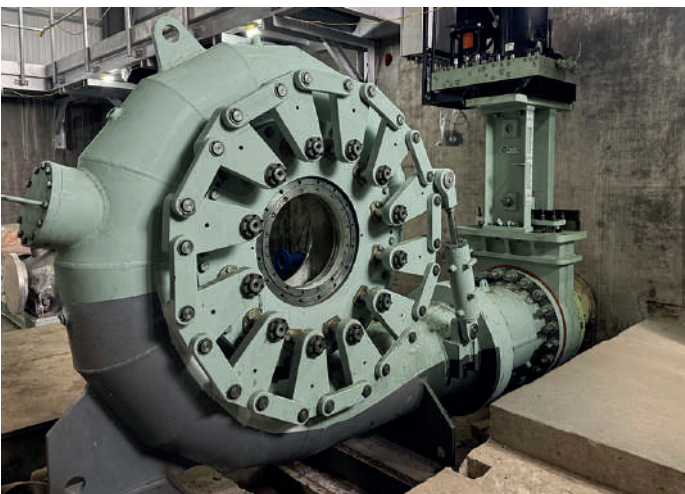
To accelerate the energy transition by enabling 100% renewables

MISSION

To provide affordable, accessible, clean energy for everyone, everywhere, by enabling integration of more renewables and eliminating the need for fossil fuels.

RheEnergise is a patented Long Duration Energy Storage solution called **High-Density Hydro**[®], which is ultra-low cost and a world-wide opportunity.

HD Hydro uses our proprietary HD Fluid R-19¹, which has **2.5x the density of water**. R-19 gives RheEnergise projects **2.5x the power or 2.5x the energy** when compared to water.



HD Hydro turbine installation

RheEnergise projects provide **10MW to 100MW** power and 4-16 hours of storage duration. High-Density Hydro advantages include:

- Projects can be installed on hills 2.5x lower than a project using water and still achieve the same power - there are many more hills at 150m than at 375m. **More than enough sites to solve the energy transition many times over.**
- Our projects are 2.5x smaller, by volume, meaning dramatically lower construction costs, faster build times and easier landscaping. Projects can be entirely hidden, meaning planning permission is simplified.

Competition

RheEnergise solves the disadvantages/constraints of other competing energy storage and grid flexibility solutions:

- At 8+ hours duration HD Hydro is half the levelised cost of battery systems.
- Land use and construction times are comparable to both gas-peaking plants and Lithium-ion battery projects and significantly shorter than the near decade-long construction associated with traditional pumped hydro.
- HD Hydro[®] avoids the CO₂ emissions and pollution associated with both gas and diesel peaked plants.
- Further, it avoids the social and environmental issues associated with traditional pumped hydro including flooding valleys.

¹ R-19 is environmentally non-toxic, non-corrosive and non-reactive. It is a suspended solid in water. An additive is used to stabilize the suspension.

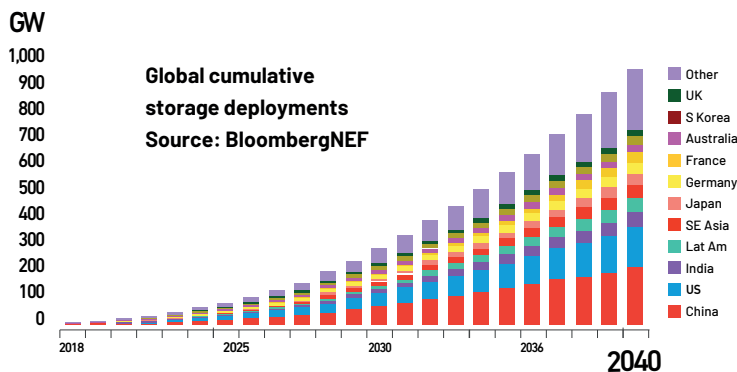


The Problem

Energy systems need to decarbonise to prevent dramatic climate change. The deployment of renewables is accelerating as wind power and solar PV now generate electricity at significantly lower cost than fossil-fuels. However, renewable sources of energy are intermittent; there is a mismatch between the variability of supply from renewables and consumer demand.

The Opportunity

Energy storage addresses this mismatch. The advent of low-cost renewables and rising electricity demand from electric vehicles, heat pumps, and new data centres is creating a vast market. As renewable penetration deepens, an increasing proportion of storage will need to be long duration. According to McKinsey/L-DES Council, the energy system will require 400x today's long duration energy storage capacity (LDES) by 2040, creating a \$4tn opportunity. Of this opportunity, system models show a majority (2/3 according to Aurora Energy Research for GB) of required capacity is for durations of 4-16 hours.

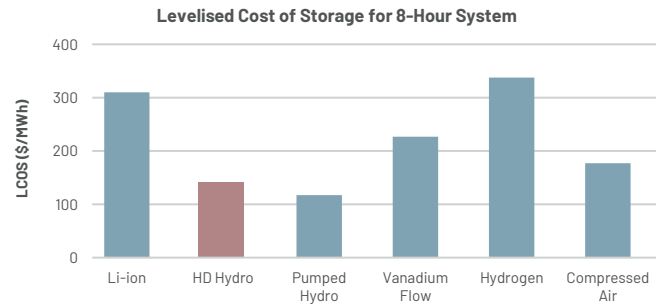


The Solution

RheEnergise's HD Hydro® excels on costs, longevity and environmental impact for this market need. Short-duration battery energy storage systems are deploying strongly to serve functions such as frequency response and short-term balancing but are less economic for longer duration energy shifting. On a levelised cost of storage basis, HD Hydro's modular 20 MW systems are competitive with GW-scale conventional pumped hydro and have a market leading cost profile among emerging technologies according to BloombergNEF.

On environmental impact, HD Hydro's closed-loop, sealed system avoids the disruption to ecosystems and communities of conventional pumped hydro and has 42% lower CO2e impact than lithium-ion batteries, 50% less than hydrogen, and 95% less than gas. HD Hydro® projects also lead on longevity, with a predicted life of 60 years: a true infrastructure asset.

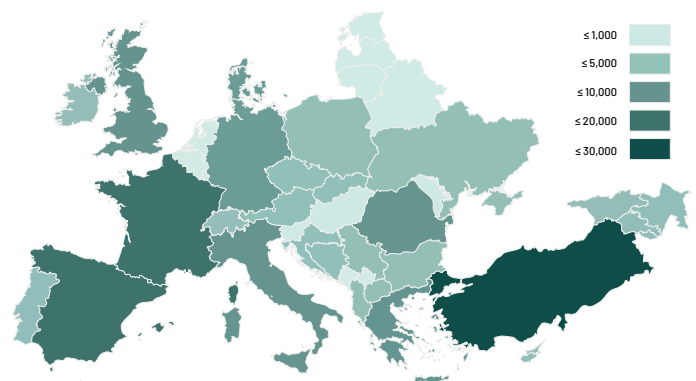
RheEnergise's GIS analysis shows that there are over 1 million sites available worldwide. Projects are faster to build, easier to permit and can be installed in hot, arid areas, without the drought risk of conventional pumped hydro or the cooling load for battery systems.



How RheEnergise pumped energy storage works

At times of low energy prices, non-toxic HD Fluid R-19 is pumped up a small hill to an upper reservoir using abundant, low-cost renewable energy. As demand rises, the HD Fluid is released from the top (buried) storage tanks and electricity is regenerated via a specialised HD Turbine and supplied to the grid for consumers to use. Round-trip efficiencies are ~80%.

Number of sites within each mapped country with potential heads of 100m or greater



Summary

HD Hydro® inherits the technical fundamentals and best-in-class economics of conventional pumped hydro, today's dominant solution, which comprises 95% of energy storage capacity. However, its scalability is unlocked with smaller and faster to build projects, giving an order of magnitude more available sites. HD Hydro® stands out as a solution that can cost-effectively meet the vast incoming requirements for 4-16 hour energy storage, created by the deployment of low-cost variable renewable energy.

