Grid connected battery energy storage system

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A battery storage project developed by TagEnergy is now connected and energised on the electricity transmission network, following work by National Grid to plug the facility into its 132kV Drax substation in North Yorkshire.

Works included extending the busbars - which enable power flows from generation source on to power lines - upgrading busbar protection and substation control systems, and installing an operational tripping scheme, all of which helps keep the network stable and operating securely.

Owned and operated by TagEnergy - with Tesla, Habitat Energy and RES as project partners - the newly-connected battery will help exploit the clean electricity potential of renewable projects in the region, storing and releasing green energy to power homes and businesses and also helping to relieve any system constraints.

National Grid"s adjacent Drax 400kV substation already hosts the connection for Drax power station - the UK"s largest biomass facility - and will also connect the Eastern Green Link 2 electrical superhighway when it starts importing clean energy from Scotland in 2029.

Mark Brindley, portfolio director for northern regions at National Grid Electricity Transmission (NGET), said: "Battery storage technologies play an essential part in delivering a net zero energy system in Britain, so connecting Lakeside BESS to our transmission network is a key moment in the pursuit of those clean energy targets.

"Our Drax substation originally connected a coal plant in the seventies, and is now playing an important role in the energy transition - connecting not only the country"s biggest battery, but also its largest biomass power plant. As the transition progresses, connecting a diverse mix of renewable technologies will be crucial in supporting the UK"s bold net zero ambitions."

Franck Woitiez, chief executive officer at TagEnergy, said: "For a while, Lakeside will be the largest transmission connected BESS project in the UK and it is an important project that truly moves the needle for the energy transition.

"We"re proud to have delivered the project efficiently, energised and connected onto National Grid"s transmission network without significant delays or operating issues. That is exactly what is needed to speed the transition.

Grid-scale storage plays an important role in the Net Zero Emissions by 2050 Scenario, providing important

system services that range from short-term balancing and operating reserves, ancillary services for grid stability and deferment of investment in new transmission and distribution lines, to long-term energy storage and restoring grid operations following a blackout.

pumped-storage hydropower is the most widely used storage technology and it has significant additional potential in several regions. Batteries are the most scalable type of grid-scale storage and the market has seen strong growth in recent years. Other storage technologies include compressed air and gravity storage, but they play a comparatively small role in current power systems. Additionally, hydrogen - which is detailed separately - is an emerging technology that has potential for the seasonal storage of renewable energy.

The total installed capacity of pumped-storage hydropower stood at around 160 GW in 2021. Global capability was around 8 500 GWh in 2020, accounting for over 90% of total global electricity storage. The world"s largest capacity is found in the United States. The majority of plants in operation today are used to provide daily balancing.

The grid-scale battery technology mix in 2022 remained largely unchanged from 2021. Lithium-ion battery storage continued to be the most widely used, making up the majority of all new capacity installed.