

Highview awarded £1.5 million for new Hybrid LAES system to respond to frequency response market

- *Supercapacitors and flywheels will be added to the existing 5MW LAES Pre-Commercial Demonstrator*
- *New Hybrid LAES system will be able to respond to National Grid's EFR and FFR service requirements*
- *Faster response times of less than a second will make a hybrid LAES system competitive with batteries*

London, 00.01AM, 1st August 2017: Highview have been awarded funding of £1.5 million for a new hybrid configuration of its existing Liquid Air Energy Storage (LAES) system from Innovate UK, the UK's innovation agency.

The hybrid LAES system will demonstrate LAES's ability to respond to grid frequency events within 1 second and meet the requirements of National Grid's new Enhanced Frequency Response (EFR) service.

The funding will enable Highview to use supercapacitors and flywheel technology to create the hybrid LAES system that will respond to EFR and also Firm Frequency Response (FFR) timescales that help keep the UK grid balanced within the +/- 1% of nominal 50Hz system frequency.

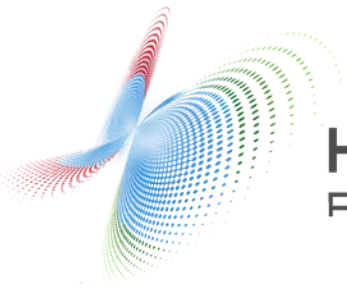
The funding was awarded for 'Frequency Response from a Liquid Air Energy Storage facility' as part of the 'First of a Kind Deployment of Innovation' competition.

Highview is the leading designer and developer of LAES, a large scale, long duration energy storage technology offering one of the only locatable technologies available at scale.

Gareth Brett, CEO of Highview said, *"A hybrid LAES system provides the powerful combination of instant start and long duration storage and is an important step for Highview as it broadens the range of services which LAES can supply and will help enhance the economic case for its adoption."*

The hybrid LAES system will be added to Highview's 5MW/15MWh Pre-Commercial Demonstration plant at project partner, Viridor's, Pilsworth landfill gas plant in Bury, Greater Manchester, UK. The project was awarded funding of more than £8 million from the Department of Business, Energy and Industrial Strategy (BEIS) in 2014 and is currently in commissioning due online at the end of the year.

LAES is a proven technology after Highview built the world's first Pilot Plant (350kW/2.5MWh) in 2011 which was connected to the grid at SSE's biomass plant in Slough until 2014. Whilst LAES can be compared to other large scale technologies such as Pumped Hydro or Compressed Air Energy Storage (CAES), it does not require specific geography and can be located at the point of demand making it a very compelling solution.



Georgina Penfold, CEO of the Electricity Storage Network said *"We are pleased to see this initiative by Highview Power, which takes a truly whole system approach to energy storage. Our electricity system requires both flexible response and longer duration energy storage. This project will address both these important topics. Battery energy storage has made the headlines recently, but other electricity storage technologies are also of high value. This Liquid Air Energy Storage solution is not only applicable to the British electricity system, but shows great potential for exporting British expertise into international markets."*

Whilst the hybrid LAES system will be designed to comply with the UK electricity market it can be transported to other markets ensuring all LAES systems can be deployed globally. The aim of the project is to test performance and economics and it will be operational by Summer 2018.

Ends

Note for Editors

Highview Power Storage is a designer and developer of large-scale energy storage solutions for utility and distributed power systems that use liquid air as the storage medium. Highview can design bespoke Liquid Air Energy Storage (LAES) plants that can deliver from 5MW/15MWh – to more than 200MW/1.2GWh to service a growing multi-billion dollar energy storage market. LAES has been developed using proven components from industry to deliver a pumped-hydro capability without geographical constraints and can be configured to convert waste heat and cold to power.

At the end of 2013 Highview signed a global licencing and technology collaboration agreement, with GE Oil & Gas, to develop the integration of Highview's LAES technology into its peaker plant offering.

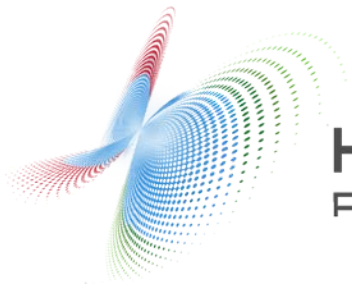
For more information, please visit: www.highview-power.com

How LAES Technology works

The technology works by taking off peak or excess electricity and using it to turn air into a liquid by refrigerating it to -196 degrees centigrade and storing it in insulated tanks at low pressure. When power is required, liquid air is drawn from the tanks and pumped to high pressure. Heat harnessed from the liquefaction process is applied to the liquid air via heat exchangers and an intermediate heat transfer fluid. This produces a high-pressure gas in the form of air that is then used to drive the turbine and create electricity.

Highview's technology draws from established processes from the turbo-machinery, power generation and industrial gas sectors. The components of Highview's processes can be readily sourced from large OEMs and have proven operating life times and performances.

Innovate UK is the UK's innovation agency. It works with people, companies and partner organisations to find and drive the science and technology innovations that will grow the UK economy. For further information visit www.innovateuk.gov.uk



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