

London, 19th August 2015

Highview's 5MW Liquid Air Energy Storage Demonstrator Starting Operations This Winter

GE, Heatric, BOC and Metalcraft have delivered the main components to the site in Greater Manchester as the build continues to progress. KiWi Power are engaged to commercialise the plant's interaction with National Grid.

The main components of Highview's Liquid Air Energy Storage (LAES) 5MW pre-commercial demonstrator have been delivered to the site in Greater Manchester. Recycling, resources and distributed energy partner, Viridor, is hosting the pre-commercial LAES technology demonstrator at its Pilsworth landfill gas generation site where the waste heat from the GE Jenbacher landfill gas engines will be used to convert waste heat to power.

In February 2015 the ground was broken and civils work started at the project preparing the site for the arrival of the main components. Over the summer the equipment has been delivered: the turbine and generator from GE, heat exchangers from Heatric, thermal storage tanks from Metalcraft and cryogenic storage tanks from BOC. All these components are currently being set in place and grouted on to their platforms, which marks the end of the major plant installation phase.

Alan Cumming, Capital Projects & Engineering Director for Viridor, said: "*Viridor is transforming waste and giving the world's resources new life. This exciting, pioneering project is an excellent example of the type of partnership working that is today driving sustainability, resource and energy security.*"

The project was awarded more than £8 million in funding from the British Government's Department of Energy & Climate Change (DECC) for the design, build and testing of the LAES technology system. This is the first pre-commercial scale LAES plant of its kind and the largest new energy storage technology project in the UK being built to satisfy the requirement for long duration storage.

"Electricity storage, like LAES, offers critical support to the GB system at a time when the penetration of variable generation and the loss of high carbon plant causes real system stress. The flexibility that electricity storage offers not only allows greater deployment of low carbon generation, but provides vital services, such as frequency response and inertia, to ensure a secure and stable electricity supply."
Dr Jill Cainey, Electricity Storage Network.

National Grid predicts that balancing services costs are likely to increase significantly in the coming years because of the increasing prevalence of non-synchronous generation causing a decrease in system inertia. This in turn is making the power system more expensive to manage. LAES is currently the only energy storage technology to use a clean non combustion based process to drive a synchronous generator, and hence can provide inertia without additional equipment, contributing to the resilience of the electricity system.

The project will operate for at least one year and will demonstrate LAES providing a number of grid balancing services including Short Term Operating Reserve (STOR) and supporting the grid during the winter months with peak tariff management (Triad avoidance) as well as testing for frequency regulation performance against standards required by one of the large US system operators. KiWi Power was selected to arrange the commercial aspects of the plant's interaction with the National Grid. The plant is due to be operational towards the end of 2015.

CEO and Co-Founder of KiWi Power, Yoav Zingher said: *"We are thrilled to be working with innovator Highview Power on this ground breaking initiative. As one of the first LAES demonstrators in the world it provides a unique opportunity to provide grid balancing services at a time when the UK capacity reserve margin is at an all time low. The Highview LAES will join our extensive STOR portfolio as one of a growing number of unique energy assets helping balance the grid and earn recurring revenues and energy savings."*

Highview, leaders in LAES systems, operated a grid connected 350kW/2.5MWh pilot plant in Slough, Greater London from 2011-2014 at SSE's 80MW biomass plant. LAES technology can be scaled to deliver large-scale, long duration energy storage from around 5MW output and 15MWh of storage capacity to significantly more than 50MW output and 200MWh of capacity. It can be considered as being similar to medium scale pumped hydro-electricity storage, but without the geographical restrictions of mountains and reservoirs. When scaling up LAES technology, the system will be modular and benefit from scale and convenience, an advantage when locating it to different regions and applications.

Highview's CEO Gareth Brett said, *"This is a breakthrough technology that enables a new and compelling solution for large scale, long duration energy storage. There is nothing else available right now that can be deployed at this scale and duration and at low cost. This project with Viridor will be an invaluable demonstration for the power sector to evaluate, implement, utilise and capitalise on this, a milestone in Liquid Air Energy Storage."*

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Note for editors

Highview Power Storage is a privately owned, award-winning technology company located in Central London, England. Highview has developed and owns the Intellectual Property to its proprietary, large scale long duration Liquid Air Energy Storage (LAES) system. The system can simultaneously convert low grade waste heat into power during the discharge cycle, further increasing the overall efficiency by producing additional power.

Last year Highview signed two licence agreements, the first with GE Oil & Gas Nuovo Pignone, to develop the integration of Highview's LAES technology into its peaker plant offering, and the second with Advanced Emissions Solutions Inc. through its subsidiary ADA-ES for grid connected LAES non-peaker plant storage applications covering North America (Canada, US & Mexico).

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