Lithuania school energy storage

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Audrius Baranauskas, head of innovation at Lithuanian TSO Litgrid, talked Energy-Storage.news through its 200MW storage-as-transmission BESS units, deployed by system integrator Fluence.

The four battery energy storage systems (BESS), 50MW/50MWh each, have been handed over by Fluence and are now providing services to Litgrid, the transmission system operator (TSO) in Lithuania. They followed a smaller, 1MW/1MWh pilot project to test the use case back in 2021.

The project, which is owned and operated by state-owned firm Energy Cells for Litgrid, is largely to enable the Baltic state grids – Lithuania, Latvia and Estonia – to stand on their own after disconnection from the BRELL Ring (Russia, Belarus and Baltic grid) electricity network, which will occur in 2024. They will then join the Continental European Synchronous Zone in 2025.

In this Q& A interview, which took place at theEnergy Storage Summit Central Eastern Europe 2023 in Warsaw, Poland, Baranauskas discusses exactly what the four projects will be used for and what they could potentially do in future as well as the TSO’s broader approach to energy storage.

The storage-as-transmission or ‘Grid Booster’ concept has also taken off in Germany, where three out of four TSOs have announced large-scale projects, with Fluence enlisted for two out of three of those.

Audrius Baranauskas: We as Litgrid have a 1MW/MWh pilot battery storage as a transmission system asset and we use it to implement the grid booster concept in three different ways.

Another way is to react to the voltage. If the voltage drops, you can reduce the charging at that moment, or even start to generate from the battery in order to increase the voltage. So it’s a frequency and voltage dependence grid booster.

And the third one we have implemented is a separate signal from the separate system to send the command directly to the storage, just to start to generate or charge the battery. For example, if you lose one existing physical line, from the relay protection you can send the signal directly to the battery to start to generate or consume depending on the need of the grid. So we have already implemented this. We have 10 different inputs here.

We have four sites with 50MW/MWh each, in four different parts of Lithuania. The German case is a point-to-point, north-to-south energy storage setup where they can imitate the physical transmission line.

In Lithuania we can implement this virtual grid concept with six virtual lines going between the four locations.

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I"ve never actually heard of this concept before and I really want to start this idea as an innovation pilot in Lithuania to demonstrate that we can control the grid, control the congestion, not only with redispatch of power on generator"s side but also using storage as a virtual grid to increase the capacity.

For us, our national strategy is to have 100% renewables in the total energy balance by 2050, for electricity even sooner. To reach that goal we need flexibility. To build new lines would take at least six years but storage systems allow us to integrate more renewables sooner.

What we"re doing right now – we changed our law in Lithuania where we now don"t limit the connection capacity for solar and wind generators, we allow those resources to connect to up to 200% of the transmission line capacity, because the two will overlap only a small percentage of the time.

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