

Storage: A powerful asset for Lithuania's European grid interconnection and renewables transition



SUMMARY

Energy Cells Lithuania (an EPSO-G company), is deploying a 200 MW/200 MWh portfolio of energy storage projects to ensure effective active power reserve for reliable and stable operation of Lithuania's electricity transmission system.

The critical infrastructure investment includes blocks of 50 MW/50 MWh assets installed across four different strategically located sites. This project will be one of the largest of its kind in Europe and is expected to achieve Commercial Operations later this year.

This portfolio will support Lithuania's transmission system as it moves towards synchronization with the continental European grid, as well as the integration of fast-growing renewable energy sources. The Energy Cells storage portfolio (which follows a 1 MW/1 MWh pilot project deployed by Litgrid) is not only the first energy storage asset at this scale on Lithuania's transmission system, but also one of the first in the world to be directly procured by a Transmission System Operator (TSO) affiliate to demonstrate transmission-enhancing services.

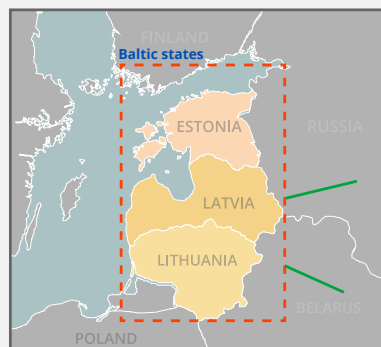
The Opportunity

Lithuania has plans to pursue energy independence as it integrates synchronously with the Continental European Synchronous Area in 2025 and hopes to expand renewable electricity from 20 percent to 45 percent by 2030, and rising to nearly 100 percent by 2050¹. However, high penetration of non-synchronous renewable generation is likely to present power system stability challenges in the areas of frequency and voltage. Securing the stable operation of Lithuania's power system during this energy transition requires further innovation and development which is why Litgrid (Litgrid is the designated operator of Lithuania's electricity transmission system) is proactively encouraging energy storage to provide critical grid stabilization and ensure greater resilience.

BALTIC SYNCHRONISATION PROJECT

The Baltic Synchronisation Project is a €1.05B effort designed to synchronise the Baltic electric power transmission system with the Continental European Network (CEN), which will create more independence from Russia and a more reliable electric power supply. Phase I of the three phase project is focused on internal transmission network reinforcements in the Baltic states. The Fluence storage systems being installed at four substations (Vilnius, Šiauliai, Alytus, and Utena) will play a crucial role in the first Phase of this project.

Grid Synchronous Mode (2022)



Russian and Belarusian interconnection

Grid Synchronous Mode (2025)



Continental European Network (CEN) interconnection

¹ IEA April 2021 Article: Lithuania is well placed to lead on clean energy and energy security in the Baltic region, according to IEA policy review

Additionally, Energy Cells received €87.6M from the EU's Recovery and Resilience Facility (RRF) fund to support installation of this 200 MW/200 MWh energy storage system.

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Fluence is pioneering cutting-edge technology for the grid

Designed for superior performance and transmission network applications

- Black start
- Emergency power control
- High reliability & availability
- Primary frequency control
- Power oscillation damping
- Voltage and reactive power control

The Solution

In December 2021, Fluence and Litgrid, commissioned a 1 MW/1 MWh pilot project near Vilnius which serves as a proof-of-concept for the use of battery storage as a transmission asset. The Fluence Storage system is operating as an integral part of the Lithuanian power transmission system – increasing grid reliability through voltage management and emergency reserve, supporting Lithuania's energy independence, advancing decarbonisation agenda, and synchronisation with CEN. The system is providing advanced controls capabilities and ultra-fast response time (<200 milliseconds) to help stabilize, strengthen, and support transmission systems as low-emission and inverter-based generation creates new system operation and infrastructure dynamics.

The expanded 200 MW portfolio will include four Fluence storage systems strategically placed at transformer substations in Vilnius, Šiauliai, Alytus, and Utena. The 200 MW/200 MWh energy storage portfolio will provide several services such as delivering power in <200 milliseconds, primary frequency control and power oscillation damping while ensuring a reliable supply of energy to the grid until other sources of power generation become operational. The project is one of the largest of its kind in Europe.

Conclusion

As more and more electricity is generated from renewables these storage systems will help integrate new sources of intermittent generation by storing power when it's in excess supply, and releasing it back to the grid when demand is highest. The battery storage system will ensure the reliability and stability of the Lithuanian electricity transmission system in a cost effective way. The storage facilities will provide additional value to the transmission system by enabling new value streams to enhance system security and resiliency during the energy transition.



About Fluence™

Fluence, a Siemens and AES company, is the leading global energy storage technology solutions and services company with a goal to create a more sustainable future by transforming the way we power our world. Fluence offers proven energy storage technology solutions designed to address the diverse needs and challenges of customers in a rapidly transforming energy landscape, providing design, delivery, and integration in over 160 countries.

Forward Looking Statements™

The information presented in this case study contains "forward-looking statements" within the meaning of the Private Securities Litigation Reform Act of 1995, Section 27A of the Securities Act and Section 21E of the Exchange Act, including but not limited to, statements regarding the services and benefits arising therefrom that Fluence storage systems will provide to the Baltic synchronisation project and the future of Lithuania's European grid interconnection and renewables transition, which forward-looking statements are subject to a number of assumptions, risks, and uncertainties, including, but not limited to those described under "Risk Factors" section in Fluence's most recent Annual Report on Form 10-K, Quarterly Reports on Form 10-Q and in other filings made by Fluence with the Securities and Exchange Commission from time to time (which are available at www.sec.gov), that could cause the actual results to differ materially from the expected results. Most of these factors are outside Fluence's control and are difficult to predict. Except as otherwise required by applicable law, Fluence disclaims any duty to update any forward-looking statements contained in this case study, all of which are expressly qualified by the statements in this section, to reflect events or circumstances after the date of this case study. Should underlying assumptions prove incorrect, actual events, results and projections could differentiate materially from those expressed in any forward-looking statements.