Synchronisation

Co-financed by the Connecting Europe Facility of the European Union

CURRENT SITUATION

The power system of the Baltic States is currently technically part of the Integrated Power System/Unified Power System (IPS/UPS) of Russia. The frequency, which is the most important parameter of a power system, is currently controlled by Russia. Taking into account the planned desynchronization of the Baltic power system, Russia has finalised reinforcement of the Russian internal transmission network (incl. the Kaliningrad region), considering the scenario of the desynchronization of the Baltic power system from the IPS/UPS system. As the Baltic States are still part of the IPS/UPS system, the Russian power system has the capability to influence physical and commercial energy flows in the Baltic States.

WHAT WE ARE DOING

The strategic goal and big challenge of the Baltic States is to disconnect their power system from the Integrated Power System/Unified Power System (IPS/UPS) of Russia and join the Continental European power grid and frequency area.

WHY WE ARE DOING IT

The transition to synchronous operation with the Continental European frequency area allows us to reduce the risk that third parties could take advantage of our dependence on the IPS/UPS and the respective frequency area.

The Baltic States as EU members are politically, legally and socioeconomically integrated with our allies; therefore, it would make sense for our power system to function as an organic part of the Continental European frequency area in the technical field. We want to be with the European partners with whom we are connecting under financial, legal and regulatory framework. Functioning as part of a larger synchronous area reduces operational risks and the associated costs.

FORMAL STEPS TOWARDS SYNCHRONISATION

The Political Roadmap for Synchronisation was signed by the Baltic States, Poland and the European Commission in June 2018. During the same year, the Transmission System Operators (TSO) of the Baltic States, Elering (EST), AST (LAT) and Litgrid (LIT), submitted an application for connecting to the Continental European frequency area. A connection agreement between the Baltic States and Continental Europe TSOs, which identified technical requirements and set out obligations for secure and stable synchronisation, was signed in May 2019. The transition to synchronous operation with the frequency area of Continental Europe will be finished by the end of 2025.

HOW IT WILL HAPPEN

The transition to the synchronous area will be unnoticeable to electricity end-consumers. In order to join the Continental Europe frequency area, the existing direct current interconnection between Lithuania and Poland – LitPol Link – will be upgraded to an alternating current interconnection, and a direct current sub-sea cable of 700 MW capacity will be constructed between Lithuania and Poland. At the same time, the Baltic States are planning to disconnect (or decommission) their existing alternating current interconnections with Russia and Belarus.

GRID REINFORCEMENT AND FREQUENCY STABILITY

The existing power grid in the Baltic States will be reinforced and the interconnection capacities of their power system increased.

To ensure frequency stability, system inertia in the Baltic power system should be provided 24 hours a day; therefore, synchronous condensers will be constructed and the protection and control systems of the grid as well as direct current links will be upgraded.

INVESTMENTS AND FINANCING

The total cost of the synchronisation process is estimated at around 1.6 billion euros. The process entails two phases. The first phase of the project consists of internal network reinforcement in the Baltic States. The €430 million phase one package was approved by the European Commission in 2019. The Commission will cover 75% of the phase one investments.

The second phase in the amount of 1.2 billion euros consists of the construction of the direct current link between Lithuania and Poland with the relevant network reinforcement in both countries, the installation of synchronous condensers in all three Baltic States as well as upgrading the existing direct current interconnectors and the protection and control systems of the grid. The application for the second phase grant will be submitted to the European Commission in May 2020.

ENERGY TRADE

Energy trading possibilities with Continental Europe will be increased after synchronisation, as the new sub-sea interconnector between Lithuania and Poland will serve commercial power flows.

Since there will be no physical connections between the Baltic States and Russia/Belarus, energy trade between those regions will no longer be possible.

SOCIO-ECONOMIC IMPACT

The synchronisation will increase security of supply for consumers and control over the energy system for Baltic societies as a whole. The economic value of increased security of supply, as the reduced risk of disruptions, greatly exceeds the cost of the synchronisation project.

The additional costs to the electricity consumer caused by synchronisation are minimal, as the necessary investments are substantially supported by the European Union.

NEW OPPORTUNITIES FOR MARKET PARTICIPANTS

New products need to be launched to ensure readiness to run the power system smoothly at all times. Electricity market participants will have the opportunity to provide system operators with a variety of electricity market services – for a reasonable price – necessary for system stability management and frequency regulation in the power grid. Such new services are, for example, frequency containment reserve and automatic frequency restoration reserve. Procurement of new reserve products will ensure that flexibility is adequately valued on electricity markets.

RISK ASSESSMENT

The timetable for the necessary preparations is extremely challenging. Therefore, high-quality public procurement and construction activities are a crucial part of the process.