

Helsinki flywheel energy storage

In addition to stabilizing the grid, the storage system also offers active support to the local Luna wind energy park. Here it acts as a short-term damper to prevent imbalance in the output of the turbines and prevent curtailment of production. S4 Energy's aim for this pilot project is to demonstrate that the net revenues of wind energy can be significantly improved by incorporating an energy storage system, in turn making wind energy projects less dependent on subsidies.

Each KINEXT unit contains a flywheel with a high mass (5,000 kg) and large diameter (around 2.6 meters), which spins relatively slowly with a peak speed of around 1,800 rpm. The ABB motor and drive takes excess electrical energy from the grid and uses it to speed up the rotation of the flywheel, so it is stored as kinetic energy. When a fast injection of power is needed to maintain frequency stability, the regenerative capability of the drive converts the flywheel's kinetic energy back into electricity within milliseconds.

"The Heerhugowaard facility is our latest energy storage system, but our first to actively support a wind park. We are now set to accelerate our business and expand our services, and ABB's expertise in pairing flywheels with drives and motors has been critical in helping us to achieve this position," said Dominique Becker Hoff, Director of Projects, S4 Energy.

"This project with S4 Energy is a great example of ABB's commitment to helping decarbonize power utilities," said Marcel Zevenbergen, Sales Manager, System Drives at ABB Motion Netherlands. "The combination of flywheels and batteries offers the best of both worlds with good potential to further increase the viability of renewable energy projects such as wind and solar. Moreover, flywheels are a great solution in many other electrification and industrial applications."

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Web: <https://sumthingtasty.co.za/contact-us/>

Email: energystorage2000@gmail.com

WhatsApp: 8613816583346

