

Growing cities need smart grids

ZSD and SEPS are updating technologies co-funded by the EU

Západoslovenská distribučná, a. s. (ZSD) and Slovenská elektrizačná prenosová sústava, a. s. (SEPS) are introducing cutting edge smart technologies for automated distribution and transmission system management. In the Western and Southwestern Slovakia, smart grids are being constructed thanks to the PCI (projects of common interest) ACON and Danube InGrid, co-funded by the EU. PCI projects are key infrastructure projects aimed at interconnecting European energy systems and achieving energy and climate targets of EU. ACON and Danube InGrid focus on mass deployment of the cutting-edge smart technologies enabling the remote monitoring and management of grids, thanks to which its parameters can be flexibly adjusted, and faults managed. They also support the transition to the “new power industry” based on local renewable sources.

Both projects are focused on strengthening the cross-border cooperation between the distribution and transmission system operators. For the ACON PCI project, the foreign partner for ZSD is the Czech DSO EG.D, a.s. and the Danube InGrid is the result of cooperation between ZSD and SEPS with the Hungarian DSO E.ON Észak-dunántúli Áramhálózati Zrt.

The ACON project implementation started back in 2018 and already bears tangible results. *"Since the start of the project, 160 km of medium-voltage optical routes have been installed, and several modern MV/LV smart substations have been built. Part of the optical routes was laid underground in parallel with ground cable MV lines, especially in inaccessible forest terrains in remote border localities, as these sections were significantly faulty during each major weather disaster, especially during storms, strong winds or in cases of heavy icing. As a result of the investments made, more than 190,000 customers will experience increased customer comfort, mainly in the districts of Malacky, Senica, Skalica, Myjava, Nové Mesto nad Váhom and Trenčín, as well as other customers in the southern and eastern part of the Czech Republic. This year, the construction of the strategic 110/22 kV Borský Svätý Jur substation will be completed, which will not only increase the reliability of electricity supply, but also enable the connection of new potential customers. The substation will also contribute to the interconnection of grids between Slovakia and the Czech Republic and will become one of the important electricity hubs, especially for cases of mutual cross-border assistance in crisis situations”,* said Tomáš Turek, Chairman of the Board of Directors and CEO of ZSD.



Implementation works have also started on the Danube InGrid project as well, namely in the form of optical interconnection of substations and transformer stations in the Sered' and Vrábľe locations, constructed by ZSD. In the vicinity of Vrábľe, the optical route was installed on overhead medium voltage lines using the innovative wrapping method. The construction of optical routes on distribution lines makes it possible to prepare the infrastructure for the future deployment of automation. As a result, reliability of the distribution system will be increased and also its operation will be more efficient. In the Danube InGrid project, ZSD plans to install approximately 320 kilometres of optical routes. At the same time, the construction of 150 smart transformer stations, as well as the construction of 110/22 kV Mierovo and Vajnory substations, the implementation of IT projects focused on smart grids and the creation of a data platform for data exchange with the Hungarian distribution company E.ON Ęszak-dunántľli Āramhľozati Zrt, is planned.



Danube InGrid is a project focused on the upgrade of the grid aimed at a more efficient cooperation between the transmission and distribution system operators. The interconnection of the distribution and the transmission system shall come in the form of the newly constructed Vajnory substation. As for the transmission system, SEPS is planning to build a remotely-controlled 400 kV substation, including two new 400 kV overhead lines, which shall connect to already existing substations in Stupava and Podunajskě Biskupice. The construction of the new substation also brings an upgrade and extension of substations Stupava and Podunajskě Biskupice.

"Due to the growing number of grid users, it is necessary to actively support, implement and use smart grid technologies to prevent failures. The deployment of smart technologies will allow the development of additional modern power infrastructure necessary for fast-growing cities. The ever-increasing construction activities also mean increased stress on the grid and require the strengthening of its nodal points. This is especially noticeable in the Bratislava area, where key investments within the Danube InGrid project will be made to increase the security and reliability of the system. A new remotely-controlled power station will be built in Vajnory, which will soon be necessary to maintain a secure and uninterrupted electricity supply to Bratislava. Our goal in this project is to strengthen the electricity network to ensure its stability throughout western Slovakia", said Peter Dohun, Chairman of the Board of Directors and CEO of SEPS.

An important event took place in the first week of May, which underlines the significance of cooperation between the PCI project beneficiaries and the European Commission. Representatives

of CINEA (European Climate Infrastructure and Environment Executive Agency), an organisation managing the European Commission projects aimed at decarbonisation and sustainable growth have personally visited already implemented outputs of the ACON and Danube InGrid projects. This visit's main purpose was to introduce already existing project outputs, as well as activities planned for the future, and to inspect the efficiency and practicality of the use of European funds.



During their stay in Slovakia, CINEA representatives have visited the locations of Holíč, Skalica, Malacky, Šaštín and Borský Sv. Jur, where they visited construction sites covered by the ACON PCI project. Specifically, they visited sites, where lines in the border area are being upgraded in the area of Skalica Mlynky, optical infrastructure on reconstructed medium voltage overhead lines and newly built ground cable medium voltage lines in the location of Skalica - Zlatnícka dolina. They also inspected the modernized distribution substation in Šaštín - Stráže and the construction of the new Borský Svätý Jur substation. At the Holíč and Malacky substations, they inspected the installed hardware devices ensuring the protection and reliability of the operation of electrical equipment and IT security. IT solutions deployed within the ACON, and Danube InGrid projects were also presented at the Bratislava headquarters with the participation of representatives of the Ministry of Economy of the Slovak Republic and ÚRSO.

"The smart grid deployments showed during our visit will help to modernize the electricity grid in the three countries, increasing the security of supply and the flexibility needed to integrate RES and complement the European Energy market. The two projects proved the expected progress, as well as a great commitment to successfully complete all developments", said Ona Kostinaitė-Grinkevičienė and Eduardo Vega Fanjul, members of the CEF-Energy team of CINEA (European Climate, Infrastructure and Environmental Executive Agency).