

Microgrid development estonia

Dmitri Vinnikov himself believes that 2022 was a very good year for the Power Electronics Research Group of TalTech, because normal working schedule was mostly resumed after the COVID-19 pandemic.

In addition to good scientific indicators (conference and journal publications, patents, PhDs, etc.), local and international communication efforts were made to raise the visibility of Estonian power electronics research and innovation. By developing and validating key power electronics for future-proof DC microgrids in residential buildings, the research group of Vinnikov is spearheading innovation in this field.

"Unlike conventional AC-based systems, DC-based power distribution systems have no problems with frequency stability or reactive power and the cost of the whole system is cheaper," he says, describing the essence of his research. "With DC, there are fewer energy conversion stages, so losses are lower and it is easier to manage the energy flow from solar panels to the grid. When used correctly, this can increase the energy efficiency of buildings by up to 18%."

Vinnikov adds that DC-based energy distribution can also improve demand-driven consumption and production, energy security, energy mediation, and energy flow management. This in turn can make buildings future-proof and compatible with energy transition goals.

In order to raise awareness of the promising residential DC microgrid technology, the Department of Electrical Power Engineering and Mechatronics has launched its first initiative aimed at Estonian households called "i3DC - Inform, Inspire and Innovate", which aims to connect leading Estonian researchers with Estonian green energy companies, boost innovation, and accelerate the deployment of promising DC microgrids in Estonia and other Baltic countries.

An important milestone was the launch of a series of seminars called "Estonian DC Innovation Workshop" in November 2021. Vinnikov explains that the main objective of this event, held in the form of a workshop, is to bring together academic and industry experts, market practitioners, and policy-makers, and to introduce them to and discuss with them the latest developments and innovation potential in the field of residential DC microgrids.

In 2022, two such workshops took place, attended by more than 70 experts from academic circles and industry. Energy traders active on the market and regulators were also present to lead the discussion on the innovation potential of DC microgrids for households as well as on recent developments.

Dmitri Vinnikov believes that such an event will contribute to economic development due to strong interest of the business community and will draw attention to the development of green energy and innovation in Estonia. He believes that the new technology that was introduced will help reduce costs in future energy crises. He also

hopes that these events will raise the profile of the Power Electronics Research Group of TalTech as one of the leading industry-recognised developers of DC houses in the European Union.

Looking back on the previous year, Dmitri Vinnikov declares 2022 the year of new challenges and opportunities - TalTech started to collaborate with CERN Estonia, contributing to the development of energy saving technologies based on power electronics for Future Circular Collider of CERN.

In collaboration with the Qatar Research Foundation and the Hamad Bin Khalifa University of Qatar, researchers of TalTech are developing a novel V2G (vehicle-to-grid) DC charger technology for electric vehicles that will be highly reliable at a price point that will probably be reasonable.

According to Dmitri Vinnikov, the industry and academic circles of the EU are increasingly interested in innovative solutions of TalTech. With this in mind, the Department of Electrical Power Engineering and Mechatronics has set itself a goal for the next few years of realising its breakthrough technologies within the framework of EU projects to demonstrate the feasibility of highly efficient and reliable power electronics systems in residential and commercial buildings. Efficient and secure energy use is the goal and the central point of these solutions.

It also aims to bring together partners from the academia and industry in the Baltic Sea region to participate in regional support schemes that will enable the testing of cutting-edge technologies in this area.

Contact us for free full report

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

Email: energystorage2000@gmail.com

WhatsApp: 8613816583346

