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PRESS RELEASE

Estanc and the University of Tartu begin development of an innovative low-pressure hydrogen storage system

The Estonian industrial company **AS Estanc** has launched a development project in collaboration with researchers from **the University of Tartu** to create **a hydrogen storage system** that operates at low pressure. The total cost of the project is approximately 1.2 million euros.

"Current hydrogen storage solutions rely either **on high-pressure or cryogenic technologies**, **both of which are costly, energy-intensive, and pose significant safety risks**. The new solution being developed in cooperation between Estanc and the University of Tartu enables temporary bonding of hydrogen with a carbon-based material, from which it can later be released. This process takes place in a solid medium at low pressure, which significantly reduces the risk of leaks and system failure. Moreover, the use of more affordable components substantially improves the overall energy efficiency across the product lifecycle," said **Priit Haldma**, CEO of Estanc.

At the Institute of Chemistry at the University of Tartu, hydrogen storage in carbon materials has been studied since 2014 under the leadership of Professor of Physical Chemistry and Director of the Institute **Enn Lust**. "Our research has shown that the ultra-micropores in carbon materials enhance hydrogen binding. We have developed innovative synthesis methods to achieve the appropriate porosity using durable base materials. In addition to synthesis, we employ diverse analysis techniques both in laboratories and in large research infrastructures to improve these carbon materials," Lust explained.

"Our goal is to develop a solution that is safer, more efficient, and economically competitive — this is how we envision the future role of hydrogen in clean energy and green technology. Collaboration with the scientists at the University of Tartu provides a strong scientific foundation for building an industrially applicable technology," Haldma added.

The final objective of the project is to design and manufacture a prototype hydrogen storage system that can compete with existing solutions in terms of price, safety, and energy efficiency. Initial contacts have already been established with potential partners in the hydrogen supply chain.

The total cost of the project is around 1.2 million euros, 50% of which is funded by the Estonian Business and Innovation Agency (EIS) under the program "Support for applied research and subsequent product development." The project is expected to run until January 2027.

AS Estanc *is an internationally operating Estonian industrial company specializing in the design and manufacturing of process equipment, including heat exchangers and pressure vessels. The company's clients include international energy producers and companies from the chemical and hydrogen industries. Estanc follows principles of sustainability and is actively involved in innovation and the development of environmentally friendly technologies.*

The Institute of Chemistry at the University of *Tartu is a leading scientific center for hydrogen technology research and development in Estonia.*