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News

Innovation and Industry

Energy storage

The Carnot Partnership Research Awards, which highlight successful partnerships between teams from the 39 Carnot Network institutes and companies, were presented on 16 October at the Palais des Congrès in Massy, France. David Teixeira, head of the Numerical Physics of Porous Media department at Carnot IFPEN Ressources Énergétiques, was awarded the Carnot Prize for research partnerships with a SME for a large-scale electricity storage project carried out in partnership with STOLECT. We caught up with the winner of the prize to find out more.



David Teixeira

What issues does this partnership address?

”This partnership addresses the issue of large-scale energy storage, which has taken on a new dimension with the deployment of renewable energies such as wind and solar power, which have the disadvantage of being variable. **The challenge is to store the surplus electrical energy produced during certain periods, and to release this energy in due course**. Several technologies are being studied, including the use of compressed air through a process such as AACAES (Advanced Adiabatic Compressed Energy Storage), and the Carnot battery, which converts electricity into heat and vice versa. The AACAES process is the subject of advanced work by IFPEN teams, while the Carnot battery is being developed by our partner STOLECT”.

How did this partnership come about?

“I had the chance to meet the STOLECT teams on several occasions, and **it turned out that our technologies were complementary and used many common components** So there was plenty of scope for collaboration. For our part at IFPEN, over the past 10 years we've developed a very broad range of skills, and we've built up our expertise thanks in particular to the support of the Carnot institutes. STOLECT, on the other hand, was working on all fronts to turn a concept into reality. **There was a natural complementarity between our laboratory-scale expertise and STOLECT's industrial issues**.

This exciting collaboration came to fruition in June 2022. STOLECT was able to benefit from our expertise, and vice versa, we learned a lot both by applying our skills to a real case and also thanks to STOLECT's feedback on the industrial aspects.”

What are you most proud of as a result of this partnership?

“This partnership has enabled us to work on **the technical and economic optimization of a joint energy storage process**, and its validation on an industrial scale through the construction of a demonstrator on an SNCF site in Rennes, ***“Electrovault 1”***, capable of restoring 1 MW of power for 5 hours.

What are the next steps in this joint adventure?

“We plan to work together over the long term, and in particular to sign a five-year strategic partnership to pursue the joint deployment of innovative massive electricity storage technologies and thus contribute to the decarbonization of energy mixes.

Following on from ***“Electrovault 1”***, STOLECT’s ambition is to deploy the new ***“Electrovault 5”*** demonstrator, which will be able to deliver five times the power and have **an energy reserve of between 50 MWh and 100 MWh**, accelerating the implementation of an industrial solution.”

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