

Project title: How2StorEnergy: One-step manufacturing process for type V braided FRP pressure tanks

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Mission Statement

In the course of efforts to increase sustainability, the use of hydrogen as an alternative energy source is increasingly coming to the fore. However, due to the low specific volumetric density of hydrogen, high pressures (up to 700 bar) are required to store hydrogen for use in the mobility sector. Today's lightweight solution for storing gases at high pressures is type IV FRP high-pressure tanks, which are produced in a three-step manufacturing process. In addition to the manufacturing costs, the high dead weight of type IV pressure tanks compared to a pure FRP solution (liner-less, with weight-reduced boss structure) represents a major challenge for the serial use of this tank generation.

Approach

Within the project How2StorEnergy the goal is to implement the one-step production of a type V pressure tank with the help of an innovative braiding and tooling concept. For this purpose, a prototype of a liner-less lightweight high-pressure tank, constructed from carbon fibre thermoplastic tapes, is being developed through an integrated braiding and consolidation process. With this technology, How2StorEnergy not only supports the reduction of emissions within the mobility sector, but also supports the overall structural change of society towards sustainability and renewable energies.

Acknowledgement

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