



## REVEAL - Revolutionary Energy Storage Cycle with Carbon Free Aluminium

Aluminium is an excellent energy storage solution with an outstanding storage density. In fact, a one-meter cube of aluminium can store more energy than the same volume of heating oil.

Arctus is participating in an European project; REVEAL, which develops a game-changing and unique solution by using the conversion of aluminium oxide into aluminium metal (Power-to-Al) in our carbon free process to store renewable energy and produce a "renewable fuel" in the form of aluminium. The renewable energy in the form of aluminium granules can be stored over longer periods such as months or even years and then converted to hydrogen, heat and back to aluminium oxide. The alumina is recycled for producing new aluminium.

The main technology providers in the REVEAL project are the SPF Institute für Solartechnik at the Eastern Switzerland University of Applied Sciences (OST), Switzerland and the National Institute of Chemistry, Ljubljana, Slovenia. Arctus Aluminium and IceTec were invited to participate in this interesting energy project with our CO<sub>2</sub> free aluminium process and then recycle the alumina from the energy process back to aluminium granules.

Aluminium in the energy storage concept can cycle between the charging and discharging processes many times and ideally will never have to be replaced by new aluminium. Besides these technical aspects, cost and environmental impact will be decisive for the success and environmental benefit and are the key elements that will be analysed in the REVEAL project.

This ground-breaking technical solution will enable to store a large amount of energy with an unmatched energy storage density of over 15 MWh/m<sup>3</sup> at an attractively low cost, without losses and with lower environmental impact than today's solutions. The easily transportable energy source can be used for heat and hydrogen, or electricity production, wherever and whenever needed, in scalable units from a few kW to the MW range. The emerging technology of carbon-free reduction of aluminium oxide to aluminium in combination with the release of energy from aluminium storage will be important for a climate neutral Europe.

## The REVEAL project is supported by Horizon Europe and the Government of Switzerland

In July 2022, a research consortium with nine partners from seven different European countries started to develop a new revolutionary concept for storing renewable energy over longer periods even years in the form of CO<sub>2</sub> free aluminium granules and then convert to hydrogen, heat and back to aluminium oxide.

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For further information see: [www.reveal-storage.eu](http://www.reveal-storage.eu)



Representatives of the REVEAL research consortium of nine partners from seven European countries did meet in Reykjavik in July 2022 to start the development of the new revolutionary concept for storing renewable energy over longer periods in the form of CO<sub>2</sub> free aluminium.

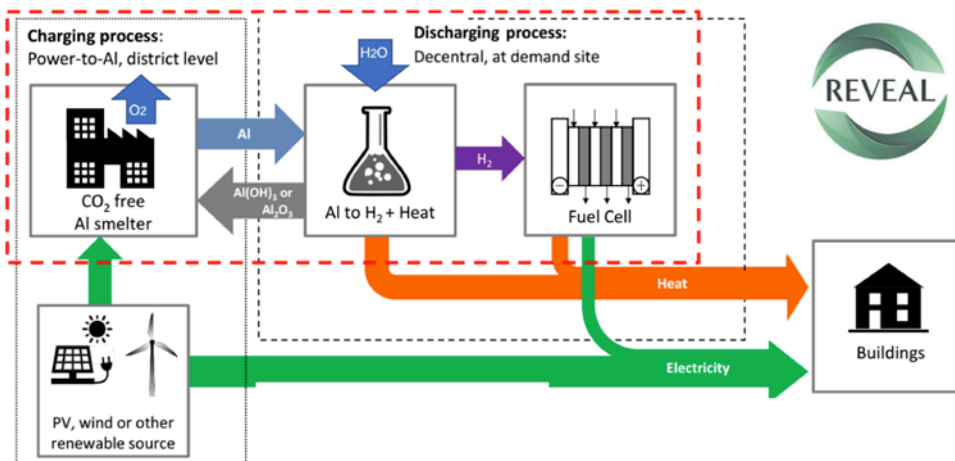


Diagram of the REVEAL revolutionary energy storage and production cycle with carbon free aluminium

