



REVEAL

PROJECT INTRODUCTION

REVOLUTIONARY ENERGY STORAGE CYCLE
WITH CARBON FREE ALUMINIUM

ABOUT REVEAL



REVEAL project is co-funded by the European Unions Horizon Europe Programme and the Swiss State Secretariate for Education, Research and Innovation (SERI).

The **REVEAL** project develops a new technical solution for storing large amounts of energy with an energy storage density of more than 15 MWh/m³ at low cost for the production of heat and electricity in winter.

START: July 2022

END: June 2026

DURATION: 48 months

REVEAL GOALS



SEASONAL ENERGY STORAGE CYCLE
development of breakthrough components
and solutions that are needed for an Al
electrochemical energy storage cycle



POWER-TO-AL (STORAGE CHARGING)
emission free Al-to- Energy



AL-TO-ENERGY (STORAGE DISCHARGING)
based on renewable electricity without
emissions of greenhouse gases from the Al
smelter (Power-to-Al) process



LIFE CYCLE AND ECONOMIC ANALYSIS
for better economic and
environmental performance

REVEAL CONCEPT



One of the main keys – and possibly THE main key - for a climate neutral Europe are technologies for the **storage of renewable energies over longer time** at an **attractive cost** and with an **acceptable environmental impact**.

CURRENT SITUATION

Renewable electricity and heat can be produced cheaply today and short-term storage solutions for evening out mismatches between production and demand are available at low cost. However, technologies for storing renewables for longer time-spans of months or seasons are scarce and costly and thus not widely used yet.

REVEAL SOLUTIONS



The **REVEAL** project develops a game-changing and unique solution to this challenge, using the **conversion of aluminium oxide into aluminium metal (Power-to-Al)** in an environmentally friendly way to store renewable energy and produce a "renewable fuel" in the form of aluminium.

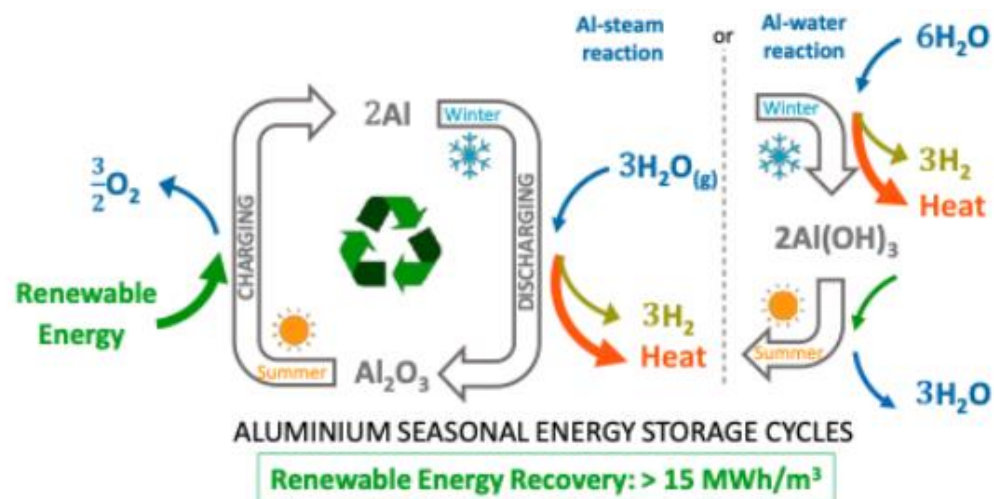
This ground-breaking technical solution will enable to store large amounts of energy with an unmatched energy storage density of over 15 MWh/m³ at an attractively low cost, without losses and with lower environmental impact than today's solutions. The easy transportable energy vector can be used for heat and electricity or hydrogen production wherever and whenever needed, in scalable units from few kW to the MW range.

REVEAL SOLUTIONS

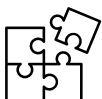


This breakthrough high-density storage solution will enable to **cover energy demands** with **flexibility** also in small units and off-grid situations

And above all - in seasons where the **demand is much higher** than local renewable production could possibly cover.



REVEAL project's energy storage cycle based on the oxidation and reduction of aluminium, with a high temperature (Al-steam) and low temperature (Al-water) discharging process.



By combining the emerging technology of carbon free reduction of aluminium oxide to aluminium and the release of energy from an aluminium storage vector, **this project will provide one of the missing pieces** of the puzzle for a **climate neutral Europe**.

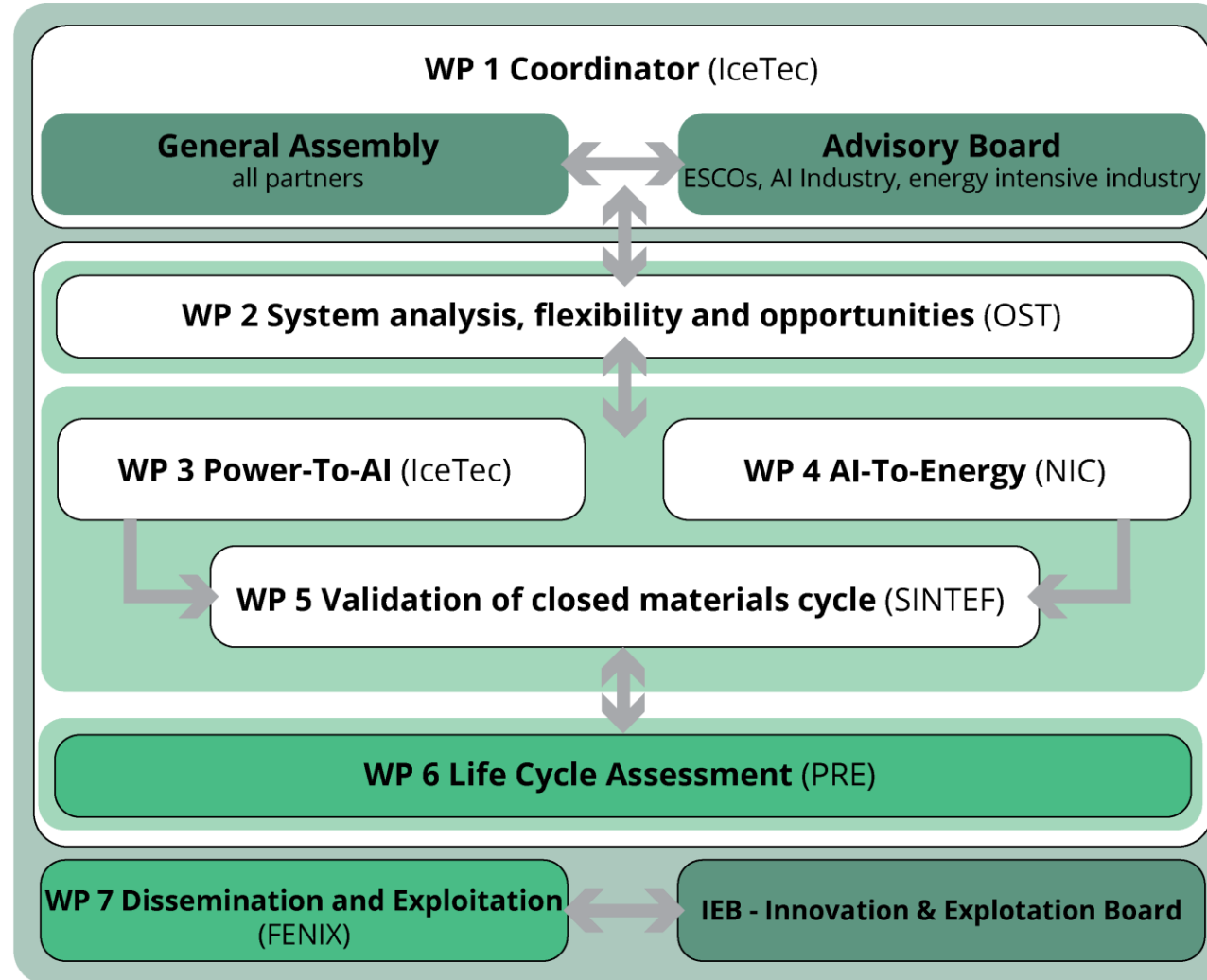
PARTNERS

Cooperation of **9 partners** from
7 European countries.

Iceland, Slovenia, Norway,
Netherlands, Czech Republic,
Germany and Switzerland



WORK PACKAGE STRUCTURE



SOCIAL MEDIA



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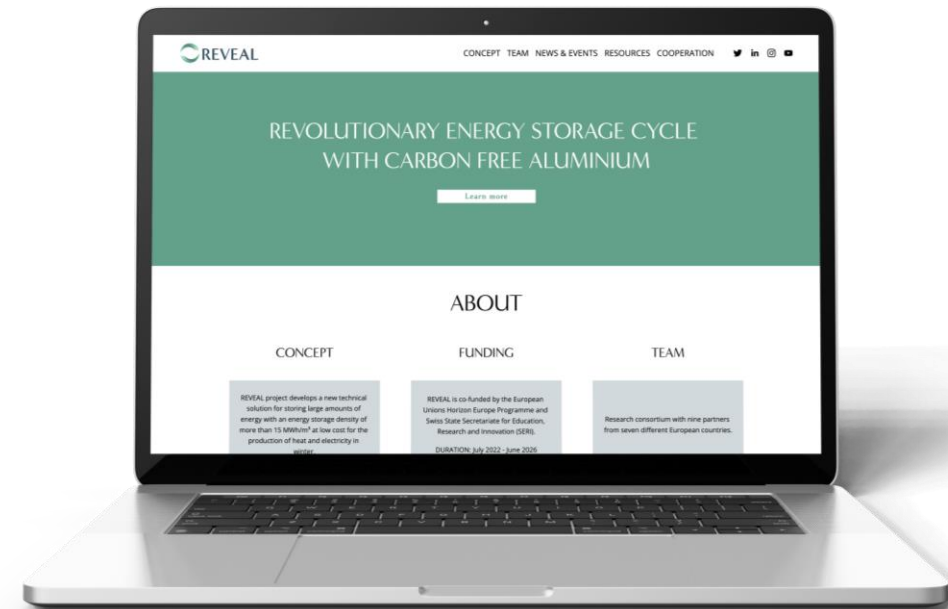
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THANK YOU FOR YOUR ATTENTION!

