

PRESS RELEASE

Launch of the STOR-HY project, which aims to reduce the capital and operating costs of innovative pumped storage projects

Brussels, November 2024 — On the 15-16 of October 2024, STOR-HY was officially launched in Brussels, Belgium, to reduce the capital and operating expenditures of innovative pumped storage projects by increasing the lifetime and recyclability of pumped storage plant (PSP) components. It also aims to increase the operational capacity of PSPs by adapting them to unconventional storage schemes and harsh fluids in order to increase their geographical availability.

ABOUT THE PROJECT

Pumped storage hydropower (PSH) is one of the **most efficient and flexible large-scale energy storage options** available today, with up to **80% full-cycle energy recovery** and the ability to **balance the grid and expand utilities' renewable energy portfolios**. PSH accounts for around **96% of global utility-scale energy storage**. The **storage capacity** of European hydropower reservoirs **exceeds 185 TWh**, making them the **largest "batteries"** available to store energy from other renewables. **Europe's PSH** represents **20% of the world's hydropower capacity**.

As a source of bulk power positions, hydropower is a **key contributor to grid stability**. However, the surge in unpredictable renewable energy sources requires increased regulation to **balance intermittent generation, including energy shifting through storage**. This intensified demand places a **strain on the mechanical components** used to regulate power, as they must withstand an **increased number of start-stop cycles, ramping duties, and rapid transitions from energy generation to storage**.

This can result in **increased operating costs, accelerated deterioration, and unexpected damage** to critical PSP equipment. To mitigate these issues, there is a crucial **need for accurate degradation models and advanced control methods** that not only **maintain the mechanical integrity of aging hydropower infrastructure**, but also actively **reduce wear and tear** on sensitive components.

STOR-HY seeks to address these challenges by **improving the lifetime and recyclability of components and equipment** and by **defining operating strategies for unconventional schemes through sensor-based, wear and tear monitoring systems to detect early failure mechanisms, postpone unnecessary maintenance actions, avoid unplanned outages, and limit planned outages**. Using **digital tools for strategic and operational management**, it intends to **improve the efficiency,**

reliability, and availability of PSPs, taking into account energy and market demand and dynamics, variable renewable generation, and integration, while mitigating the effects of climate change and improving the flexibility and resilience of the EU energy grid.

STOR-HY also focuses on **building regional links with local stakeholders, industry, academia, and policy institutions**. Sustainability considerations include economic, environmental, circular economy, and social aspects, drawing on lessons learned from previous projects, including **local impacts, societal acceptance, ecological concerns, and life cycle costs**.

To achieve these ambitious goals over the next four years, UPC will work with an international **consortium of academic institutions, research centres, and companies from 8 countries**: Spain [**Universitat Politècnica de Catalunya (UPC), Sener Mobility, Hulleras del Norte (HUNOSA), Fundación Asturiana de Diversificación Minera (FAEN)**], France [**GE Vernova, Électricité de France (EDF), KAIZEN Solutions, Institut polytechnique de Grenoble (INPG)**], Portugal [**EDP Produção (EDPP), EDP Centre for New Energy Technologies (EDPN), Instituto de Engenharia de Sistemas e Computadores, Tecnologia e Ciência (INESCTEC)**], Switzerland [**GE Vernova, Haute école spécialisée de Suisse occidentale (HES-SO), ANDRITZ**], Germany (**vgbe**), the Netherlands (**Universiteit Twente**), Norway [**Norwegian Research Centre (NORCE)**], and Belgium (**Zabala Innovation**).

CONTACTS

Marta Rodríguez

martarodriguez@zabala.eu

Janire García

janiregarcia@zabala.eu

