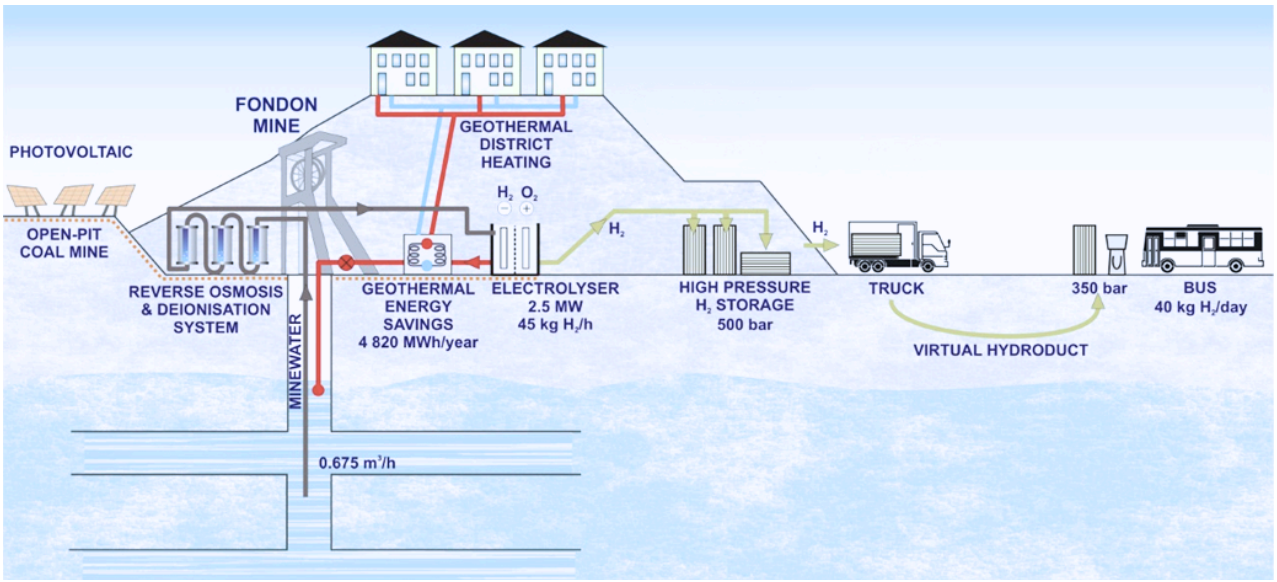
NEWSLETTER



Research Fund for Coal & Steel

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MINE-TO-H2 PROJECT: GREEN HIDROGEN FROM MINING

The Mine-to-H2 project addresses the sustainable conversion of mining infrastructure through the implementation of a 2.5 MW green hydrogen production plant (scalable to 5 MW) at the historic Pozo Fondón mine in Langreo (Asturias). This development integrates key principles of the circular economy by using treated mine water for the electrolysis process and supplying electrical energy via a photovoltaic solar plant located in a former open-pit mine, complemented by renewable energy PPAs.

PARTNERS

GIG National Research Institute

Universidad de Oviedo

grupohunosa

alsa

hyren

df

FAEN Fundación Asturiana de la Energía

RECOVERY OF MINING AREAS



Mine-to-H2 aims to demonstrate the feasibility of repurposing the **Pozo Fondon (Asturias)** coal mine to produce green hydrogen—applying circular economy principles—and integrating it into the heating sector by hybridizing the system with an existing geothermal facility.
The project involves supplying green hydrogen for the road passenger transport sector—produced via the electrolysis of mine water—using electricity from a photovoltaic plant located at a former open-pit coal mine, alongside other renewable sources secured through a PV facility.

Technical and Logistical Pillars

- Capacity: 2.5 MW electrolyzer (expandable to 5 MW).
- Storage: High-pressure cylinders at 500 bar.
- Distribution: Virtual hydrogen pipeline via trucks to hydrogen refueling stations at 350 bar.
- An operating hydrogen refueling station (HRS), and a prototype or intercity hydrogen bus (Fuel Cell Electric Vehicle).

Consortium and Funding

- Coordinator: , GIG-PIB (Poland).
- Partners: University of Oviedo (UNIOVI), Duro Felguera, HYREN, ALSA, HUNOSA, FAEN.
- Funding: Co-funded by the European Union through the Research Fund for Coal and Steel (RFCS).
- Duration: 54 months (April 1, 2024 – September 30, 2028).



A photovoltaic installation built on an open pit or waste dump in central Asturias area, illustrates how former industrial sites can be repurposed to support the energy transition. It will provide renewable electricity to the hydrogen production plant.

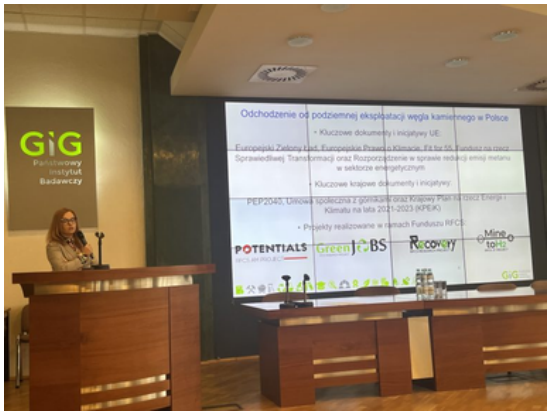


With the participation of Asturian company ALSA in the consortium, the project aims to extend the use of green hydrogen to the mobility sector. This includes the proposed integration of a hydrogen-powered bus prototype on an intercity route, demonstrating the potential of hydrogen to decarbonise public transport.

PARTICIPATION IN EVENTS



High-level RFCS Event **"European Coal in Transition: rising like a phoenix"** organised by EURACOAL and the European Commission's Research Executive Agency (REA) (Pozo Sotón, Oviedo, Spain, 8 May 2024). The event was organised at the former Pozo Sotón coal mine in Asturias to promote the RFCS research programme calls and discuss future priorities. Several EURACOAL members attended, including the acting EURACOAL president, Ing. Vladimír Budinský.



The **MINE-TO-H2 Project** was showcased at the *Polish Economic Society Katowice Branch* during the conference "**Current state and perspectives of hard coal mining in Poland**" *(Katowice, Poland, 7 November 2024)* with the presentation entitled "The Potential of Decommissioned Hard Coal Mines" delivered by Dr. Eng. Alicja Krzemień, Professor at GIG-PIB and Head of the Industrial Risk and Safety Assessment Unit, who also serves as President of EURACOAL.

The Asturian Energy Foundation (FAEN) with th Asturias Government organised the workshop on Potential of Renewable Gases for a Strategy in Asturias *(Gijón, 2 December, 2024).* Yago Somoano representing HUNOSA introduced the project Mine-To-H2 as an initiative aimed at promoting the development of renewable hydrogen and exploring opportunities to repurpose former mining sites for clean energy production.



OUR PARTNERS IN A NUTSHELL

ALSA is a leading passenger transport and mobility company founded in 1923, dedicated to offering sustainable, safe, and inclusive mobility solutions. With over a century of history, the company places continuous research and development at its core through its Innovation Center (I+D+i) located in Asturias. Operating under an open innovation framework, Alsa advances sustainable transport through internal research projects, strategic collaborations, startup pilot programs, and initiatives that foster an innovative culture to address modern mobility challenges.



The project **Hy2MARKET** stands out for the launch of Spain's first renewable hydrogen-powered urban bus operating on a permanent basis, serving Route 4 in Torrejón de Ardoz as part of the Madrid Regional Transport Consortium (CRTM) network.

ALSA's role is to operate this infrastructure and drive the decarbonisation of public transport, in line with its strategic objective of achieving zero emissions across all its urban fleets in Spain by 2035 and across its long-distance coach fleet by 2040.

The Zaragoza Airport Hydrogen Bus Line Project aims to establish a direct, zero-emission connection between the city of Zaragoza and Zaragoza Airport to enhance regional connectivity and support airport growth. **ALSA**, through its group companies Ágreda Bus and Transportes de Viajeros de Aragón, will manage and operate Zaragoza's first hydrogen-powered bus line under a 10-year contract, promoting zero-emission mobility and sustainable regional connectivity.





The **HYSTORENEW** Project aims to integrate green hydrogen into passenger transit to achieve zero-emission, energy-efficient interurban mobility. Reviewed alongside CDTI Innovación and consortium partners, the project's main headline is the presentation of the Irizar i6S Efficient H2 FCEV, a European hydrogen coach prototype with over 1,000 km of range that will be tested on Madrid's interurban routes. Within the project, ALSA's function and objectives are to lead renewable hydrogen research for bus fleets.

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Views and opinions expressed are those of the MINE-TO-H2 Project or its Partners only and do not necessarily reflect those of the European Union. Neither the European Union nor the granting authority can be held responsible.