

April 2026 **PRESS RELEASE #9**

D-HYDR  **FLEX**

#MeetTheD-HYDR OFLEX Demos_No4 Monitoring Water to Green H2 Hybridization



Santiago de Compostela, SPAIN – 02/10/2026 — As part of the EU-funded **D-HYDR OFLEX** project, the Touro's HPP demo has its target in monitoring the mass water behavior to long term and check its suitability to produce green h2 through a hybridized HPP - H2 plant.

Demo Case at a Glance

Test a hybridization between a HPP and a Green H2 Production Plant

Location: Vila de Cruces & Touro. Galicia (Spain)

Lead Partners:  Tasga Renovables



ITG Centro Tecnológico Nacional



Fundación CARTIF

Demo Goals:

- **Monitoring the quality of Ulla River water** along the time.
- To deepen our **understanding of the river's long-term behaviour** and the effects that the hydroelectric power station has on the river system.



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- To **validate the water suitability to produce green H2** regarding key parameters as TDS, turbidity, temperature and ph.
- **Environmental assessment of current HPP operation and future green H2 production.**

Challenges Faced

To set up the environmental indicators program, that involves selecting the optimal tools, parameters, sensor locations, sensor defenses against flooding, frequency of sampling, and the management of data protocols.

The demo tackled key barriers such as:

- Fixing probes to dam and restitution channel allowing it to move along the water column.
- Protect the probes against flooding episodes without impeding easy access for maintenance.



Figure 1: Salto de Touro Hybrid HPP, Spain

Innovative Solutions Delivered

To overcome these, the team:

- To **design tubular aluminium protectors** with perforations at the data collection points, fixed to dam and restitution channel.
- **Provide auxiliary cables** to move the probe along the protector.
- **Provide a multiple pulley system** to facilitate the lifting of the probe upstream along 25 m of water column, supported by the auxiliary cables.



Impact & Future Outlook

Early results show, regarding HPP activity:

- HPP activity has no effect on quality waters besides the local effects associated with the head of the reservoir and linked to the intakes flow effect, that due the turbine causes a stream from the intakes upstream that hinders mixing between the water passing through the turbine and the water stored above it.

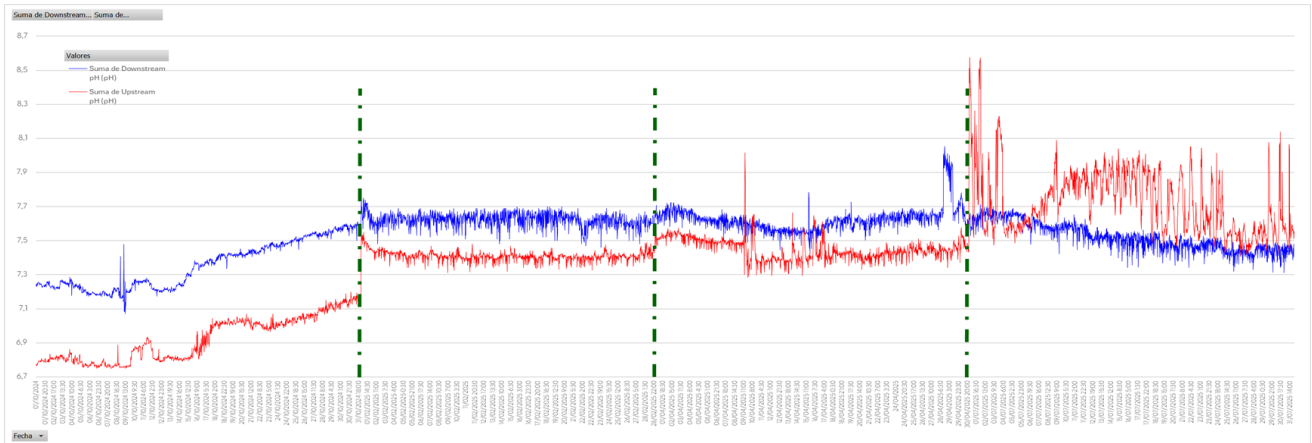


Figure 2: Ph comparison upstream and downstream

The figure 2 shows this effect taking as example the ph comparison upstream and downstream, where we can see a similar behaviour in both locations, with an offset resulting from the turbine effect described above.

Note that biological activity in the reservoir causes a reversal of the values between locations in summertime.

Regarding the key parameters to produce green H₂, the results show:

- TSS values remain stable between 50 and 70 mg/l, with lower values associated with spring and summer, clearly below the limit to be useful to produce green H₂ (500 mg/l).
- PH is very stable throughout the year, ranging between 6.9 and 7.7. Its peaks (above 8) occur between May and July, in coincidence with the period of greatest biological activity (microalgae and blue-green algae) in the reservoir waters. It means that it will be necessary to treat the incoming water occasionally to reduce the pH value below 8 ph units.
- Temperature values range between 14 and 24 °C, following the seasonal pattern, always below the limit to produce green H₂, fixed in 25°C.



- Turbidity episodes occur in rainy season, with average values around 30 NTU and peaks exceeding 100 NTU frequently. It means that in a normal situation the intake water must be treated to produce green H₂.

It means that Ulla waters are suitable to produce green H₂, but prior treatment of the intake waters will be necessary, as indicated above.

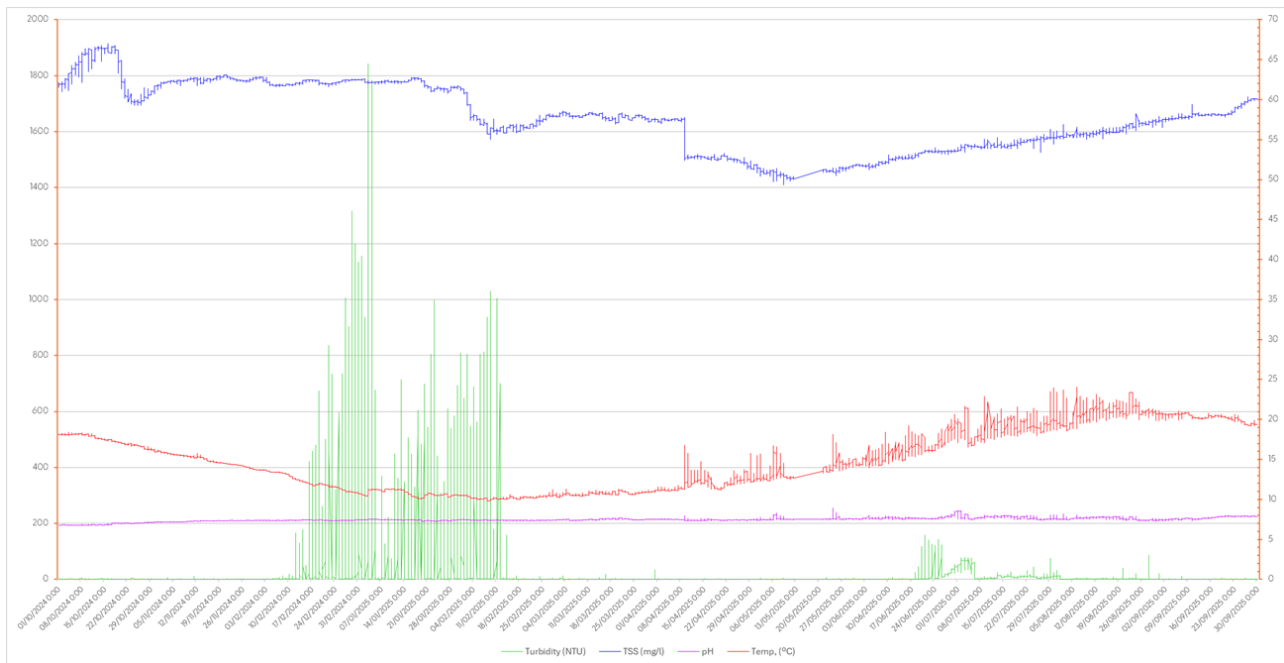


Figure 3: Turbidity, TSS, pH & Temperature upstream

Regarding other parameters, deserves to be highlighted that BGAs are present in the water body throughout the year, due the agriculture diffuse pollution in the basin.

By the other hand, oxygen concentration values range between 6 and 9 mg/l and its levels are influenced by the rainy season, when it reaches its maximum and the biological activity starting in April, when the downward trend that began at the end of winter is broken, with a wide range between the maximum and minimum values is observed every day.



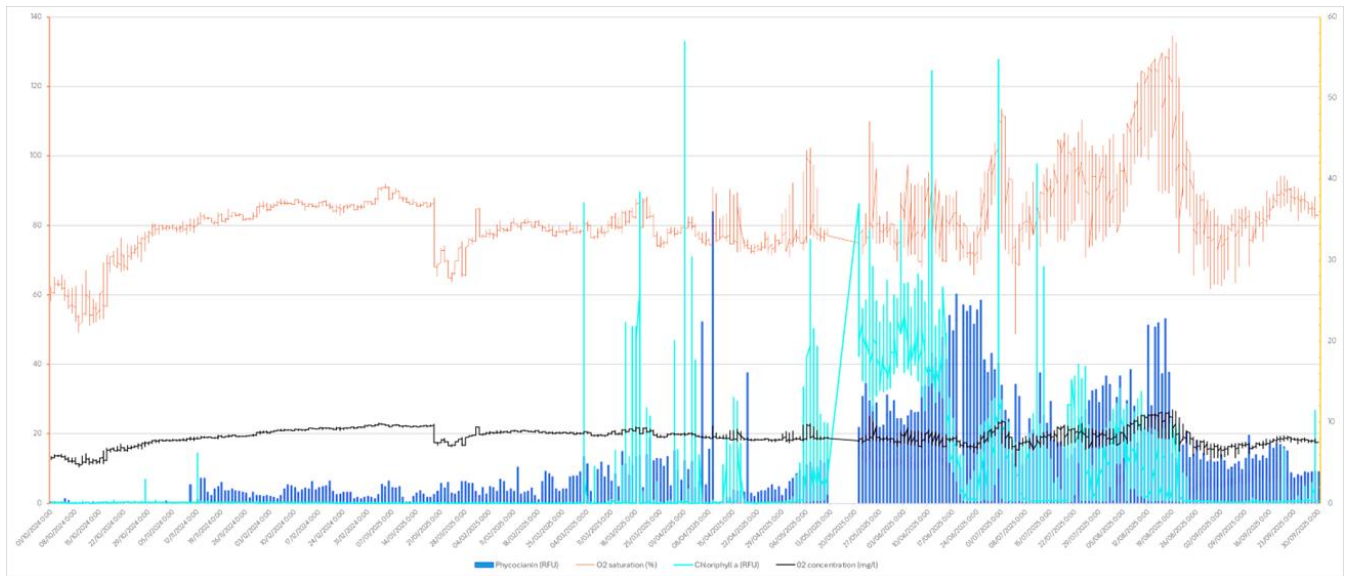


Figure 4: Other key parameters on the reservoir

About future green H₂ production, data show:

- It is highly unlikely that problems will occur under normal operating conditions, due water involves in H₂ production plant is a tiny quantity of the Ulla flow (0,0001%), and wastewater is even less (0,0006%).

As if that were not eloquent enough, the wastewater characteristics will be similar to those of the river.

PARAMETER	ULLA WATERS	WASTEWATER	UNITS
pH range	6,75 - 8,93	6,50 - 7,75	ud.pH
Temperature range	9,84 - 24,07	≤ 24	°C
Turbidity average	10,36	< 1	NTU
TDS range	49 - 67	< 65	mg/l
O ₂ concentración	4,50 - 11,59	7,00 - 10,00	mg/l



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Voices from the Demo

"The demonstration provided a better understanding of how green hydrogen production can be integrated into existing hydroelectric infrastructure, both in terms of production decisions (electricity or green H₂) based on market conditions and demonstrating the feasibility of the proposal based on an accurate assessment of its environmental impacts, which have been shown not to increase those associated with the existing facility", said Manuel Tourón. Environmental Manager at Tasga Renovables.

To learn more, please visit <https://d-hydroflex.eu/> to explore all demo sites and follow updates from the project. Follow us on [LinkedIn](#) and [Twitter](#) for the latest news and insights.

Disclaimer

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The D-HYDROFLEX is a project funded by the European Union's HORIZON Research and Innovation Action under the topic HORIZON-CL5-2022-D3-03-08/Development of digital solutions for existing hydropower operation and maintenance and responds to the Call HORIZON-CL5-2022-D3-03/Sustainable, secure and competitive energy supply. The Consortium consists of 18 partners, bringing together 5 power plant operators/energy producers (EDF, TEE, PPC, INTEX, TASGA), 6 European research institutes and universities (CARTIF, PWR, UCL, UOC, UoA, ITG) and 7 technology providers (UBI, NOVA, UBE, MINDS, FASADA, IDEA, CINT). D-HYDROFLEX will carry out 5 demonstration campaigns in 7 hydropower plants. D-HYDROFLEX is a 36-month long project started in September 2023.



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D-HYDROFLEX Consortium

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13	DIMOSIA EPICHEIRISI ILEKTRISMOU ANONYMI ETAIREIA	PPC	EL	
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