

January 2026

PRESS RELEASE #8

D-HYDROFLEX

#MeetTheD-HYDROFLEXDemos_No 3

Digital Twin and cyber-security threat detection foster HPPs Digitalisation process.

PPC's demonstrations features a digital twin of a hydropower plant that leverages advanced monitoring technologies to enable predictive maintenance and improve overall efficiency alongside cyber-security threat detection.



Athens, Greece – January 2026 — As part of the EU-funded D-HYDROFLEX project, the Platanovrysi Hydropower plant demo is showcasing how digital technologies can transform traditional hydropower infrastructure into a flexible, secure, and sustainable pillar of Europe's energy transition. Additionally, the Ilarionas HPP serves as one of the project's demonstration sites, to facilitate the

development of real-world cybersecurity threat detection solutions in HPP operational environment.

Demo Case at a Glance

Locations: Platanovrysi Hydropower Plant, Drama, Greece & Ilarionas Hydropower Plant, Kozani, Greece



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the European Union

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Lead Partners:



Public Power Corporation S.A. (PPC)

m Minds

METAMIND INNOVATIONS (MINDS)



UNIVERSITY COLLEGE LONDON (UCL)



UNIVERSITY OF
CAMBRIDGE

UNIVERSITY OF CAMBRIDGE (UOC)

Demo Goals:

- Implement **high-resolution laser scanning and drone-based visual inspection** to support the creation of the digital twin.
- Integrate **SCADA and sensor data** to support predictive maintenance and enhanced operational flexibility.
- Deploy and validate the HYDRO-FBOX as a cyber-threat detection system for HPPs.

Challenges Faced

The demo tackled key barriers such as:

- The submerged sections of the upstream face could not be captured due to high sediment accumulation and dense aquatic vegetation, which made underwater surveys infeasible.
- Strict safety and access restrictions during high inflow and operation periods constrained the available time for field measurements.
- Access to actual HPP network infrastructure is forbidden due to operational security rules and data protection constraints.

Innovative Solutions Delivered

To overcome these:

- **The submerged sections were reliably inferred** from the detailed dam geometry, using CAD files originating from the construction phase.
- **Terrestrial laser scanning (LIDAR) and aerial photogrammetry** were conducted to generate a high-resolution 3D surface model of the dam structure.
- **Thermal scan** for surface integrity assessment and hotspot detection **is planned to further enhance and validate the performed analysis.**
- HPP network infrastructure is emulated in the PPC lab to test the developments of HYDRO-FBOX in cyber monitoring and early warning of abnormal conditions or threats.

Impact & Future Outlook

Early results show:

- The digital twin enables precise tracking of structural changes and supports long-term asset management.
- Insights from the demos will inform PPC's wider hydropower digitalisation roadmap, expanding similar tools to other HPPs such as Kremasta.



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Voices from the Demo

“At Platanovrysi, we combine field innovation with data-driven insights. The digital twin will allow us to visualise, assess and manage the plant’s assets in real time, marking an important step in PPC’s digital transformation journey” - **Christina Papapostolou, Director EU Projects Coordination Department, PPC S.A.**

Learn More

Visit www.d-hydroflex.eu to explore all demo sites and follow updates from the project. Follow us on LinkedIn and Twitter.

Disclaimer

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About us:



















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, ENERGYLAB) 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

| | PARTICIPANT NAME | SHORT NAME | COUNTRY CODE | LOGO |
|----|---|------------|--------------|---|
| 1 | GIOUMPITEK MELETI SCHEDIASMOS YLOPOIISI KAI POLISI ERGON PLIROFORIKIS ETAIREIA PERIORISMENIS EFTHYNIS | UBI | EL |  |
| 2 | UBITECH ENERGY | UBE | BE |  |
| 3 | FUNDACION CARTIF | CARTIF | ES |  |
| 4 | TASGA RENOVABLES S.L. | TASGA | ES |  |
| 5 | FUNDACION CENTRO TECNOLOGICO DE EFICIENCIA E SOSTENIBILIDADE ENERGETICA | ENERGYLAB | ES |  |
| 6 | ELECTRICITE DE FRANCE | EDF | FR |  |
| 7 | TAURON EKOENERGIA SPOLKA Z OGRANICZONA ODPOWIEDZIALNOSCIA | TEE | PL |  |
| 8 | POLITECHNIKA WROCLAWSKA | PWR | PL |  |
| 9 | PRZEDSIEBIORSTWO ROBOT ELEWACYJNYCHFASADA SP ZOO | FASADA | PL |  |
| 10 | ASOCIATIA INOVARE SI DEZVOLTARE IN ENERGIE - IDEA | IDEA | RO |  |
| 11 | INTEX PRIM GREEN ENERGY SRL | INTEX | RO |  |
| 12 | ETHNIKO KAI KAPODISTRIAKO PANEPISTIMIO ATHINON | UoA | EL |  |
| 13 | DIMOSIA EPICHEIRISI ILEKTRISMOU ANONYMI ETAIREIA | PPC | EL |  |
| 14 | METAMIND INNOVATIONS IKE | MINDS | EL |  |
| 15 | CINTECH SOLUTIONS LTD | CINT | CY |  |
| 16 | NOVA TELECOMMUNICATIONS & MEDIA SINGLE MEMBER SA | NOVA | EL |  |
| 17 | THE CHANCELLOR MASTERS AND SCHOLARS OF THE UNIVERSITY OF CAMBRIDGE | UOC | UK |  |
| 18 | UNIVERSITY COLLEGE LONDON | UCL | UK |  |