Newsletter V

Towards a wide-spread HVDC-based power system enabled by new highly efficient cable and fibre optic monitoring system

EasyDC-FOS EU Project

easydcfos-project.eu

Funded by
the European Union

Towards a wide-spread HVDC-based power system enabled by new highly efficient cable & fibre optic monitoring systems

COUNTRIES	EU GRANT	MONTHS	PARTNERS
4	~ 5.5 M€	32	12

CALL

HORIZON-CL5-2024-D3-01

TOPIC

HORIZON-CL5-2024-D3-01-15

PROJECT NUMBER

101172806

COORDINATOR

RDT-LUMIKER

TYPE OF ACTION

HORIZON Research and Innovation Actions

UPCOMING EVENTS

Enlit Europe 2026

(Vienna, Austria / 10th- 12th November)

EDITORIAL

Dear subscribers,

Welcome to the fifth issue of the EasyDC-FOS Newsletter.

As the project enters its final year, this edition brings you an overview of the technical progress presented during our third Stakeholder Advisory Board (SAB) meeting.

We also feature our "Meet the Project Partners" section, spotlighting AP Sensing and Ampacimon. Last but not least, we review our latest dissemination and engagement activities, including a joint webinar with our sister projects, the project participation at the CIGRE Session in Paris and at WindEnergy Hamburg, and the General Assembly hosted by the University of Cantabria in Santander.

We invite you to explore the updates included in this issue and to follow our progress through our website and our LinkedIn page (@EasyDC-FOS EU Project).

We hope you enjoy reading this new edition of the EasyDC-FOS Newsletter.

EasyDC-FOS project partners

Funded by the European Union

TECHNICAL PROGRESS

Third Stakeholder Advisory Board (SAB) Meeting

On 13 October 2026, EasyDC-FOS held its **third online Stakeholder Advisory Board (SAB) meeting**, bringing together project partners, system operators (TenneT, Amprion, Red Eléctrica, and EDP Networks España), optical fibre experts (DOFI), and consortium TSOs Energinet and Statnett.

Opening the session as the project enters its **final year**, Manuel Muñoz (Project Coordinator) emphasised the strategic role of HVDC transmission and digital monitoring in an increasingly stressed grid marked by rising peak demand and renewable integration. Despite raw material supply pressures affecting copper, aluminium, and germanium, partners presented **major milestones** across the project activities ahead of field qualification.

STAKEHOLDER ADVISORY BOARD MEMBERS

TenneT · amprion · red eléctrica · edp · DOFI

HVDC Cable System and Sustainability

Manufacturing and Testing

The new 525 kV HVDC cable, designed to operate at 90 °C and with integrated optical fibres, has been manufactured, **passing all AC screening, sample, and routine tests** under CIGRE TB 852.

Type Test and Diagnostics

The cable has also gone through its **type test programme**, which has provided valuable data for the **validation of the thermal models and monitoring systems** developed in the project.

LCA/LCC Assessment

Analysis of five scenarios showed that **operating conditions drive environmental performance** and that aluminium is not a climate - optimal alternative due to higher losses.

Funded by the European Union

TECHNICAL PROGRESS

Predictive Models for Ageing, Life, and Reliability

Ageing Models

A first ageing algorithm has been developed that classifies the condition of the cable through a simple **traffic-light system** based on partial discharge (PD) activity, helping operators decide when an intervention should be planned. Machine learning models trained on measurable variables have shown **very promising results**.

Thermal Models and RTTR

The thermal models of the conductor, joints and terminations are in **good agreement with the measurements** taken during testing, and real-time thermal rating (RTTR) capabilities to calculate conductor temperature and insulation temperature drop have been extended to cables of **525 kV and beyond**, supporting a more efficient and reliable operation of HVDC assets.

Fibre-Optic Sensing and Fault Localisation

Long-Range DAS and DTS

The next-generation DAS interrogator prototypes are now operational, while the DTS development already meets the project's performance targets, with both DAS and DTS **reaching more than 125 km distance**.

Vibration, PD, and Fault Localisation

The new point vibration and PD interrogators have also been presented, with the PD system able to detect injections **down to 1 pC**. Combined fault localisation has been **successfully demonstrated** in the laboratory and during cable testing, bringing the project closer to an integrated monitoring solution.

Funded by
the European Union

TECHNICAL PROGRESS

Cybersecure Edge Deployment

Security and Edge Integration

The cybersecurity framework of the project has been defined in line with the main European and international regulations and standards, and the edge platform has been validated against the **IEC 62443-4-2 Security Level 2** standard. The ageing model is **already running at the edge**, and monitoring dashboards are being completed ahead of the integration of the remaining algorithms.

System Integration and Use Cases

Field Demonstrations

Energinet will validate the system from **November 2026 to August 2027** on the **325 km COBRAcable** interconnector (Endrup converter station, Denmark), monitoring both terminations and the transition joint. Statnett's demonstration will be deployed at a new 4.5 km two-circuit tunnel cable site **near Oslo**.

Feedback from SAB members

The SAB members welcomed the progress achieved and highlighted the **clear benefits** that this type of monitoring can offer to **maintenance teams**, helping them anticipate problems and better understand the state of health of their cables. They also supported the project's approach of first demonstrating the value of the sensing systems in the field and encouraged the consortium to share its results within their organisations so that more decision makers get to know the benefits of these technologies.

MEET OUR PROJECT PARTNERS

AP Sensing

A global leader in **Distributed Fiber Optic Sensing (DFOS)**, building on over 40 years of Hewlett-Packard heritage in optical measurement. It provides DAS, DTS and DTSS solutions to monitor underground and subsea power cables and other critical infrastructure.

Within EasyDC-FOS, AP Sensing leads the development of long-range DFOS technologies for HVDC cables. Its next-generation DAS interrogator prototypes and DTS systems reach **more than 125 km distance**. It also extends its Real-Time Thermal Rating (RTTR) algorithms to 525 kV HVDC cables and supports fault localization and the TSO field demonstrations.

Ampacimon

An international provider of grid monitoring sensors and AI-driven software that helps TSOs and DSOs unlock grid capacity and manage ageing assets. It focuses on **Dynamic Line Rating (DLR), Partial Discharge (PD) monitoring** and fault detection.

Within EasyDC-FOS, Ampacimon develops the **PD Analyzer** and signal processing tools for continuous HVDC insulation diagnostics. Integrated with the optical PD interrogator, it detects and classifies PD patterns down to the **picocoulomb level**, providing key inputs for early degradation warning and predictive ageing models.

Funded by the European Union

DISSEMINATION AND ENGAGEMENT ACTIVITIES

CABLEGNOSIS Webinar - Sister Projects // June 2026

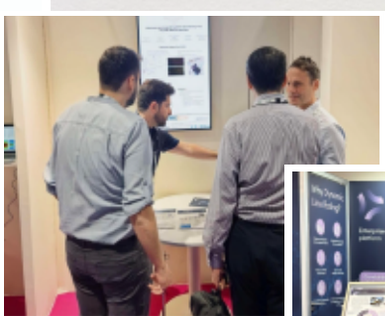
On 30 June, EasyDC-FOS took part in the **first session of the CABLEGNOSIS webinar series**, "Introducing the Sister Projects on Cables", together with the Horizon Europe projects CABLEGNOSIS, DCDYNAMIC and SCARLET.



Project Coordinator Manuel Muñoz (RDT Lumiker) presented how EasyDC-FOS combines a **525 kV / 90 °C HVDC cable prototype** with distributed optical sensing, predictive algorithms and cybersecure edge computing, laying the groundwork for **future collaboration** across European grid research projects.

CIGRE 2026 Paris Session // August 2026







From 23 to 28 August, EasyDC-FOS participated in the **CIGRE 2026 Session in Paris**, the premier global event for power systems. In the Poster Session on Insulated Cables, partners presented **two peer-reviewed papers**:

- "Novel passive signal acquisition system for PD monitoring of very long cables based on optical fibre" (RDT Lumiker, Ampacimon and UVa).
- "Predictive Modelling of XLPE Cable Systems Using Real-Time Monitoring via Distributed Sensing and Edge Integration in the EasyDC-FOS Framework" (Statnett, Energinet, RDT Lumiker and AP Sensing).

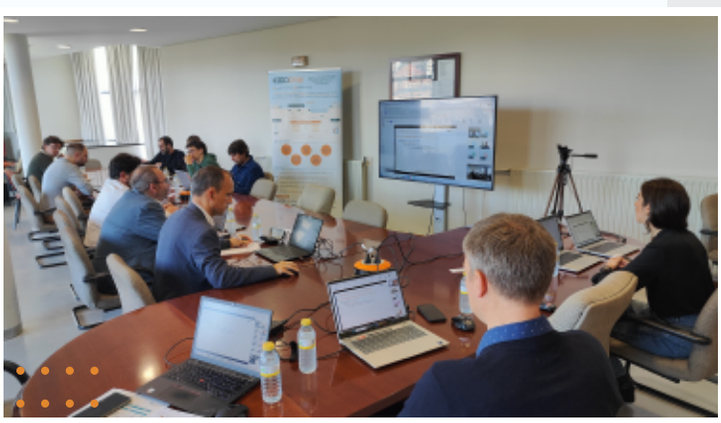
DISSEMINATION AND ENGAGEMENT ACTIVITIES

WindEnergy Hamburg 2026 // September 2026

From 22 to 25 September, the project was featured at **WindEnergy Hamburg 2026**, the leading international wind industry fair, with over 1,600 exhibitors and 43,000 professionals. Hosted within the **"Wind Energy Basque Country" pavilion coordinated by BASQUENERGY Cluster** alongside 11 Basque organisations, EasyDC-FOS showcased how its HVDC cable and monitoring solutions support the reliable integration of offshore wind into the European grid.



4th General Assembly in Santander // October 2026



On 29 October, the 12 consortium partners met in Santander, Spain, for the project's **General Assembly**, hosted by the **University of Cantabria (UC)**. As EasyDC-FOS enters its final year, the meeting allowed work package leaders to review technical achievements, coordinate the upcoming system integration and TSO field validation campaigns with Energinet and Statnett, and align the next steps in exploitation and communication.

Coordinator

Partners

RDT Lumiker

RDT

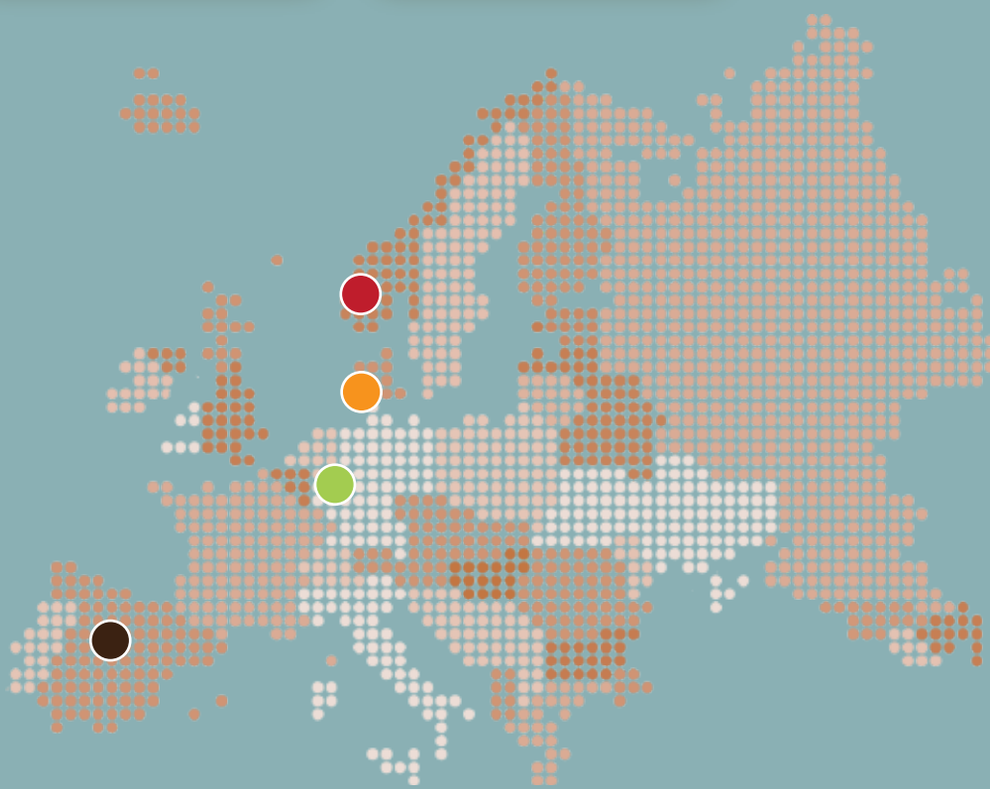
UVa

zabala INNOVATION

barbara

Ampacimon

UC Universidad de Cantabria



BASQUENERGY CLUSTER

APSENSING.

GREENDELTA

ENERGINET

Nexans ELECTRIFY THE FUTURE

Statnett

Funded by the European Union

EasyDC-FOS EU Project

easydcfos-project.eu

This project has received funding from the European Union's Horizon Europe research and innovation programme under Grant Agreement 101172806

Views and opinions expressed are however those of the author(s) only and do not necessarily reflect those of the European Union. Neither the European Union nor the granting authority can be held responsible for them.