

NEWSLETTER

MAY 2026

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PERVASIVE GAS SENSING USING OPTICAL FIBERS, AS PART OF THE COMMUNICATION NETWORK OF THE FUTURE

Welcome to the GASPOF Newsletter!

We are delighted to bring you the inaugural edition of the GASPOF project newsletter. GASPOF — Pervasive Gas Sensing with Optical Fibers — is a Horizon Europe initiative dedicated to transforming gas detection by integrating innovative optical fiber sensing technologies directly into existing telecom infrastructures.

Over the next 48 months, GASPOF will combine advances in photonics, machine learning, environmental science, and fiber-optic engineering to deliver a safer, more sustainable, and more connected Europe.



ABOUT GASPOF

Welcome to the first official GASPOF Project Newsletter, covering activities from Month 1 to Month 18. During this initial period, GASPOF has progressed from concept definition to early system design, media visibility, real-world pilot preparations, and strong European engagement.

The central mission of GASPOF is to transform Europe's fiber-optic network into a distributed gas-sensing infrastructure, enabling real-time monitoring of greenhouse and hazardous gases by integrating innovative optical spectroscopy and distributed fiber sensing. This innovation aims to support climate action, urban safety, industrial monitoring, and natural hazard early warning systems.

From the first months, GASPOF has attracted strong visibility thanks to the societal relevance of sensing greenhouse gases, pollutants, and volcanic emissions. Public communications highlight its potential to become "a pervasive environmental guardian" embedded into telecom infrastructure.

2. PROJECT OVERVIEW

2.1 Scientific and Technical Foundations

GASPOF integrates three cutting-edge sensing technologies:

- Photoacoustic Spectroscopy (PTS): detects sound waves generated when modulated laser light is absorbed by gas molecules
- Laser Heterodyne Radiometry (LHR): analyzes narrowband gas absorption signatures with high precision
- Coherent Optical Time-Domain Reflectometry (OTDR): tracks changes in backscattered light through fiber to detect environmental influences

GASPOF is among the first global projects to combine these techniques for real-time, large-scale environmental monitoring within active telecom fibers, without affecting data transmission.



2.2 Strategic Context & Impact

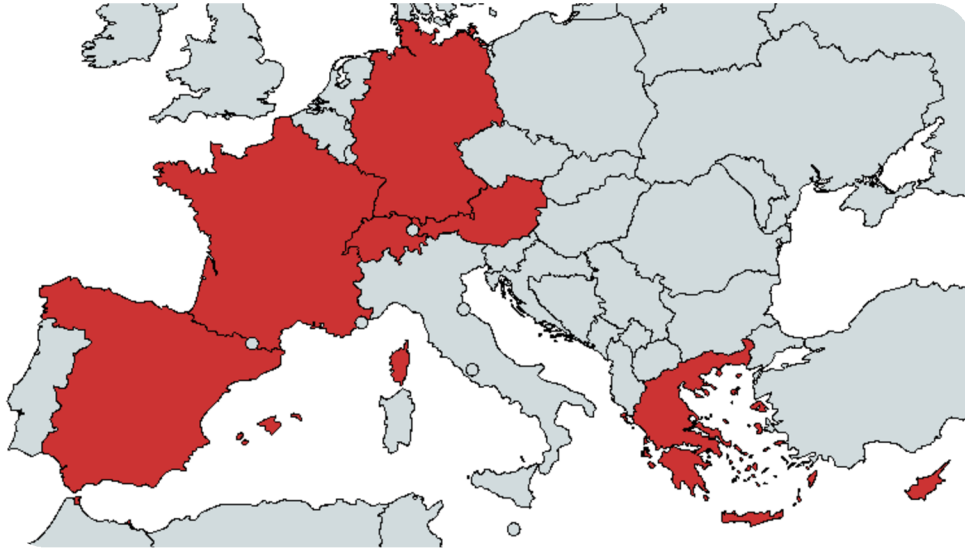
Public sources emphasize the potential of GASPOF to:

- monitor greenhouse gases (CO₂, CH₄), toxic gases, and pollutants,
- detect sulfur dioxide for volcanic hazard monitoring,
- leverage existing telecom cables to reduce deployment cost and increase scalability,
- monitor both chemical and physical parameters (vibrations, seismic activity).

These use cases resonate strongly with European climate, safety, and resilience goals.

3. CONSORTIUM OVERVIEW

- GASPOF aims to develop a new class of distributed, cost-effective, and highly sensitive gas sensors using optical fibers already deployed in telecom networks.



Core Objectives

- Develop novel optical fiber structures functionalized for selective gas sensing (e.g., methane, ammonia, carbon dioxide).
- Integrate sensing modules seamlessly with telecom networks.
- Apply advanced signal processing and AI-based gas detection algorithms.
- Demonstrate the technology in relevant real-world environments.
- Prepare for future industrial adoption and standardization.

WHO ARE THE PARTNERS

Adtran

TU
WIEN
TECHNISCHE
UNIVERSITÄT
WIEN
Vienna | Austria

UAB
Universitat Autònoma
de Barcelona

 **ICTA-UAB**
Institute of
Environmental Science
and Technology

 **ESIEE**
PARIS
Université
Gustave
Eiffel



CYRIC

**ALPES
LASERS**

uc3m

Universidad
Carlos III
de Madrid

 **CSIC**
CONSEJO SUPERIOR DE INVESTIGACIONES CIENTÍFICAS

 **LANCOM**
Data Center - Cloud - Telecom

 **aemet**
Agencia Estatal de Meteorología

4. GASPOF USE CASES EXPLAINED

CS Greenhouse gases

The optical-fiber-based LHR sensing system will be validated for the measurement of greenhouse gases (CO_2 , CH_4) as a function of altitude, enabling vertical profiling of gas concentrations along the sensing path. This vertical profiling capability allows the retrieval of concentration gradients at different atmospheric layers. Validation activities will be carried out in Barcelona (Spain) and Greece.

CS Indoor Air Quality

GASPOF will exploit SenseCity, a Facility of Excellence within UGE. Sense-City is a climate chamber that can cover two 400 m² areas. On each of these areas, a portion of territory is built on, called a Mini-City, equipped with many sensors.

CS Volcanic Activity

Measuring seismic activity in combination with monitoring volcanic gases in active volcano areas provides a more comprehensive understanding of volcanic behaviour and helps improve the accuracy of eruption forecasting. Volcanic area of the Canary Islands (Spain).

CS Gas Leakage Detection

Focus on natural gas leakage detection (CH_4 detection) using the PTS sensing method, in combination with LANCOM's fiber network.



5. DISSEMINATION AND COMMUNICATION UPDATES ON ACTIVITIES PERFORMED

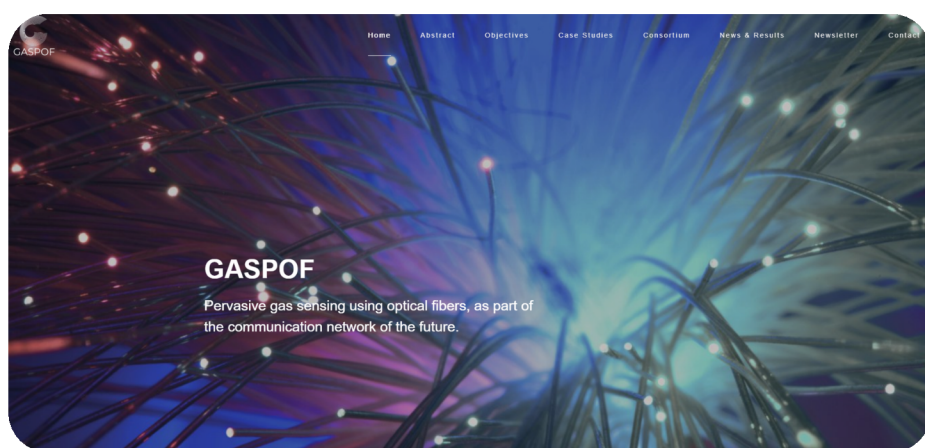
Since its launch in December 2024, the GASPOF project has implemented a structured and coordinated set of dissemination and communication activities, in line with Horizon Europe requirements, to maximise the visibility and impact of its results among scientific, industrial and societal stakeholders.

Building Our Visibility

Since the launch of GASPOF in December 2024, a strong foundation for communication and dissemination has been established to ensure consistent visibility and stakeholder engagement.

- The official GASPOF website has been launched as the central platform for presenting project objectives, progress, and results
- A structured social media strategy has been implemented, with regular updates highlighting key milestones and activities
- Early communication actions included promotion of the Kick-off Meeting and the launch of the newsletter subscription campaign

👉 These tools play a key role in ensuring transparent communication and continuous outreach to both scientific communities and the wider public.



5.1. DISSEMINATION AND COMMUNICATION

Media & Outreach Impact

GASPOF has already achieved encouraging visibility beyond the consortium through targeted media outreach and engagement with European innovation platforms.

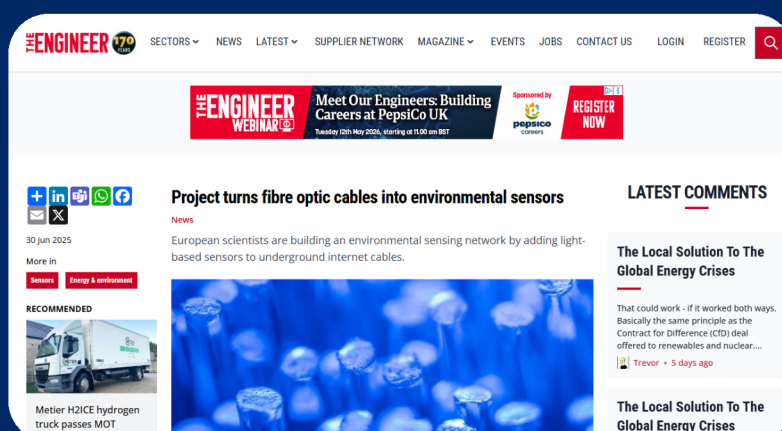
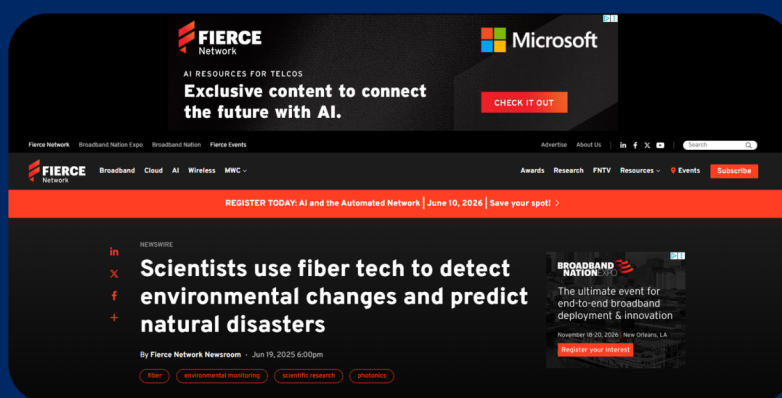
- The project has been featured in international specialised media, including The Engineer and Fierce Network

<https://www.theengineer.co.uk/content/news/gaspop-project-turns-fibre-optic-cables-into-environmental-sensors>

<https://www.fierce-network.com/newswire/scientists-are-tapping-fiber-tech-sense-environmental-changes>

- Coverage has highlighted GASPOF's potential to transform existing fibre optic infrastructure into large-scale environmental sensing systems.
- Additional dissemination has been achieved via Photonics21 and Science|Business, strengthening links with EU research and innovation ecosystems.

💡 **These actions support increasing awareness of GASPOF among industry, policymakers, and the broader innovation community.**



5.2. DISSEMINATION AND COMMUNICATION


Scientific Dissemination - initial activities 2025

GASPOF partners are actively contributing to scientific exchange through conferences, technical events, and research dissemination.

- Participation in the Urban Greenhouse Gas Conference and Stakeholder Summit 2025 (UAB)
- Contributions to the NDACC/TCCON/COCCON Annual Meeting 2025 (CSIC, AEMET)
- Scientific dissemination activities linked to CLEO-LWP2025
- Presentation at the IEEE Photonics Conference (IPC 2025) by ADTRAN

 Featured contribution:

“CC-OTDR Sequence Shaping Enabling Joint Co-directional Sensing and Communication”

 These activities support knowledge exchange, visibility in key research communities, and alignment with ongoing developments in photonics and sensing technologies.



5.3. DISSEMINATION AND COMMUNICATION

First GASPOF video project

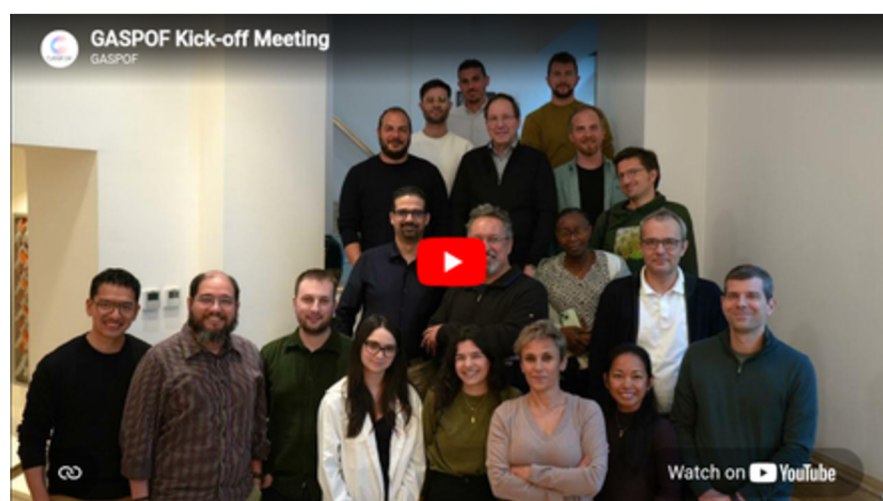
As part of the project's dissemination and communication strategy, the GASPOF consortium has released its first official video, marking an important step in raising awareness of the project's objectives and expected impact. The video provides a concise and accessible introduction to GASPOF, highlighting its core mission of advancing pervasive gas sensing through the integration of optical fiber technologies within existing telecommunications infrastructures.

It explains the societal and industrial relevance of continuous gas monitoring, particularly in areas such as environmental protection, industrial safety, and smart infrastructure.

Designed for a broad audience—including researchers, industry stakeholders, policymakers, and the general public—the video translates complex technical concepts into clear and engaging visuals and narratives. This approach supports the project's commitment to open science and effective knowledge transfer.

The publication of this first video also reinforces GASPOF's presence across digital communication channels. It has been shared through the project's website and social media platforms to maximize outreach and engagement, contributing to the visibility of Horizon Europe research and innovation actions. This initiative represents the beginning of a series of multimedia dissemination activities planned throughout the project's lifetime, aimed at communicating progress, showcasing results, and strengthening connections with relevant communities.

Check it out here:



5.4. DISSEMINATION AND COMMUNICATION

ONGOING & 2026 DISSEMINATION ACTIVITIES

In 2026, **GASPOF** significantly expands its dissemination efforts through participation in major international events, including both recently attended and upcoming conferences.

KEY EVENTS INCLUDE:

- SPIE Photonics West 2026 (January, USA)
- Analytica 2026 (March, Germany)
- SPIE Photonics Europe 2026 (April, France)
- FTTH Conference 2026 (UK)
- EGU General Assembly 2026 (May, Austria)
- ICOFS 2026 (Florence) and ISLOP 2026 (Madrid)
- CLEO Europe 2026 (expected summer, Germany)

THESE ACTIVITIES SUPPORT:

- Dissemination of ongoing project results
- Engagement with photonics, environmental, and telecom communities
- Strengthening of collaboration and innovation opportunities

 This reflects a progressive scale-up of dissemination activities at international level.



STAY TUNED

GASPOF will continue to expand its dissemination activities throughout 2026, with participation in major international events and the release of new results.

Stay connected to follow our progress and discover how **GASPOF** is advancing optical fibre sensing for environmental monitoring.

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