



# GASPOF

NEWSLETTER, MONTH 12 DECEMBER, 2025

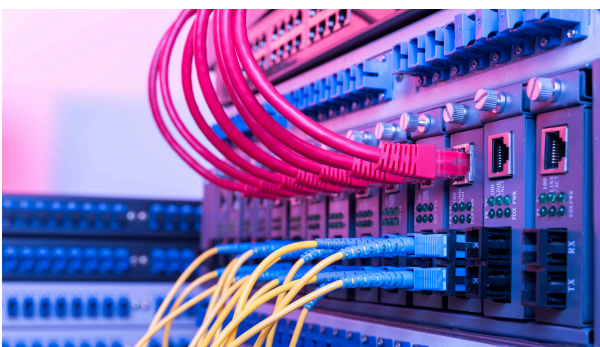
[www.gaspof.eu](http://www.gaspof.eu)

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

### Project Introduction

The GASPOF project is paving the way toward a new generation of smart, sustainable communication networks that can see, sense, and protect our environment.

By integrating advanced gas-sensing technologies directly into optical-fibre networks, GASPOF transforms the European communication infrastructure into a pervasive environmental observatory. This innovation will allow real-time detection of gases such as CO<sub>2</sub>, CH<sub>4</sub>, and CO — helping to address climate change, industrial safety, and environmental monitoring challenges.



### 🎯 Key Objectives

#### Dual-Use Optical Fibre Networks

Transform existing telecommunication fibre infrastructures into dual-use systems that can both transmit data and perform real-time gas and environmental sensing, unlocking a new generation of smart, sustainable networks.

#### Advanced Gas Sensing Technologies

Develop and integrate cutting-edge photonic techniques — Photothermal Spectroscopy (PTS), Laser Heterodyne Radiometry (LHR), and coherent OTDR — to achieve high sensitivity and distributed detection of key gases such as CO<sub>2</sub>, CH<sub>4</sub>, and CO.

#### Real-World Validation and Impact

Demonstrate GASPOF technology through four real-world use-cases (greenhouse gases, indoor air quality, volcanic gases, and pipeline leaks), while promoting standardisation, interoperability, and sustainability in line with the European Green Deal.

# PROJECT OUTCOMES

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## Fibre-Based Gas Sensing Platform

A prototype system integrating PTS, LHR, and OTDR technologies into standard optical-fibre networks, enabling real-time detection of gases such as CO<sub>2</sub>, CH<sub>4</sub>, and CO.

## Demonstrated Use-Cases

Successful field validations across four scenarios — greenhouse gases, indoor air quality, volcanic monitoring, and pipeline leak detection — proving the versatility and reliability of the GASPOF solution.

## Interoperability & Standardisation Framework

Recommendations and contributions to European standards ensuring compatibility between sensing systems and telecom infrastructures.

## Open Knowledge and Exploitation Plan

A set of scientific publications, datasets, and exploitation strategies supporting further R&D, commercial uptake, and policy innovation.

## Environmental and Societal Impact

Support to the European Green Deal by improving emission monitoring, promoting safer environments, and reducing infrastructure costs through fibre reuse.



## KEY RESULTS

- Design and demonstrate fibre-integrated gas sensing nodes suitable for telecom networks.
- Develop optical and photothermal sensing approaches and explore coherent OTDR for distributed sensing.
- Build signal-processing + AI tools to detect, classify and localise gas events in near real time.
- Validate solutions via field and lab demonstrations across urban, industrial, and environmental scenarios.
- Engage stakeholders for standardisation and exploitation pathways so the technology can scale in telecom infrastructures.



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# MORGAN MAXWELL


Founder of the First  
Technology Company

## PROJECT DETAILS:

 START DATE: DECEMBER 1, 2024

 DURATION: 48 MONTHS

 BUDGET: €3,912,593.75

 PARTNERS: 10 PARTNERS ACROSS 7  
COUNTRIES

## CONTACT US:

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