

# FLUVES

WE CARE ABOUT YOUR CRITICAL EQUIPMENT. WE MONITOR IT.

## PIPELINES

Fiber optic sensing technology prevents:

- **LEAKS**
- **THIRD-PARTY INTRUSION**
- **CORROSION**

## FURNACES

Fiber optic sensing technology prevents:

- **DOWNTIME OF FURNACES**
- **HOTSPOTS**
- **UNEVEN HEAT DISTRIBUTION**
- **WEAR & TEAR OF INSULATION**

## TANKS & REACTORS

Fiber optic sensing technology monitors:

- **PROCESS TEMPERATURE**
- **STRUCTURE HEALTH**
- **INSULATION DEFECTS**

## CABLE

Fiber optic sensing technology monitors:

- **DEPTH OF BURIAL**
- **INTRUSION**
- **CABLE FAULTS**
- **CABLE RATING**



REDUCE DOWNTIME  
EXTEND ASSET LIFETIME  
BOOST ENERGY EFFICIENCY  
AND INCREASE SAFETY



FLUVES

## WHY IMPLEMENT FIBER OPTIC SENSING TECHNOLOGY?

### POINT SENSORS

1 Point sensors are prone to wear and lack robustness.

2 Point sensors cannot provide complete coverage of large assets.

3 Incomplete monitoring coverage may cause delays in the detection of critical problems such as leaks, third-party intrusion or temperature fluctuation.

4 The delays in detection are causing needless replacement of damaged infrastructure and a large number of manual inspections.

VS

### FIBER OPTIC SENSING

With fiber optic sensing technology, one robust telecom fiber equals thousands of point sensors.

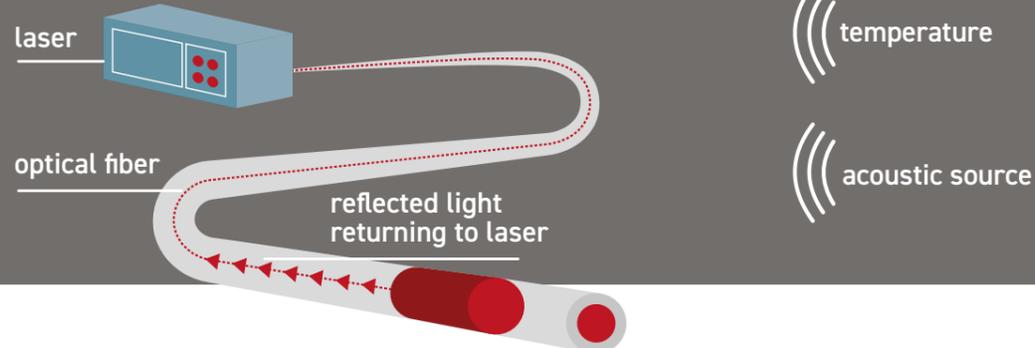
With fiber optic sensing technology we can monitor every meter, every minute.

With our technology you get an instant alert when our system detects a leak, a fluctuation in the temperature or third-party intrusion on your assets.

We can locate the problem with a one meter accuracy, so you can take immediate and precise action when a problem arises. This keeps the incidents and downtime to a minimum.



### FIBER OPTIC SENSING TECHNOLOGY:



## THE BENEFITS OF FIBER OPTIC SENSING

**SPATIALLY DISTRIBUTED:** One fiber equals thousands of sensors, enabling to monitor an entire site.

**COST-EFFECTIVE** solution for continuous long-term monitoring: Every minute a measurement over several years.

**WELL-TESTED:** Based on proven Distributed Temperature or Acoustic Sensing technology using standard fiber optic cables.

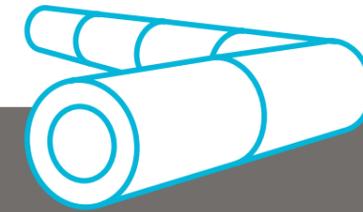
**AUTONOMOUS SYSTEM:** No site inspection visits are needed anymore. The system is independent of additional field power supply or additional communication installations. Data is sent in real-time to web portals.

**ROBUST:** Only a fiber optic cable, designed for harsh environments, is installed on the asset. All sensitive hardware is installed remotely.

**HIGHLY ACCURATE:** Fiber optic cables are insensitive to EMC. The parameters can be monitored with high precision, without any drift.

**ATEX PROOF:** No electricity involved. Only light is sent through the fiber.





## UNDERGROUND PIPELINE MONITORING

### LEAKS & INTRUSION

Leaks or intrusions in **underground** pipelines can be extremely hard to detect. By combining the newest Distributed Sensing technologies with our expertise on flow physics, we can detect the smallest leaks in pipelines.

Fluves joined forces with *Vigotec*, a supplier of innovative pipe systems. Together, we engineered **DALI®**.

**DALI® stands for Distributed Acoustic sensing for Leakage and Intrusion.**

It's an all-in-one solution for underground pipeline monitoring, that can be installed without ground works.

***“Dali has a high potential to detect leaks and intrusions in our transport pipeline network in real time and at affordable cost”***

WIM JACOBS innovation manager at FARYS

- ▶ ROI < 2 years.
- ▶ You prevent damage due to leakage
- ▶ You save massively on maintenance cost.
- ▶ Instead of having to replace large sections of underground pipelines, only the affected pipeline meter needs repairing.

#### **HOW DOES DALI® WORK?**

Every leak creates a sound, which is measured by the fiber.

**Fluves' algorithms** detect the typical sounds for different type of leaks and intrusions. Our web portal shows the condition of every meter of your pipeline in real time, controlled by an easy-to-use graphical interface.

- ▶ DALI® enables to precisely locate the leak along your pipeline, in the earliest stage.
- ▶ DALI® provides a vibration and acoustic sensor every meter in your pipeline for 50+ km.





## FURNACE MONITORING

### OPTIMISE THERMAL MANAGEMENT

Our experience shows that fiber optic monitoring technology significantly reduces downtime and maintenance costs of large industrial furnaces.

#### CASE STUDY: APERAM

Aperam, a global player in stainless steel manufacturing, operates large industrial furnaces, which cannot be monitored using standard inspection techniques such as thermal cameras.

By applying Distributed Temperature Sensing (**DTS**), we measure temperature on every m<sup>2</sup> of the outside of the furnace, during its operational heat cycles.

Our technology can quickly delimit the areas where the thermal insulation of the furnace needs replacement.

**ATEX PROOF:** No electricity involved. Only light is sent through the fiber.

▶ When the temperature increases abnormally during the heat cycles, the thermal insulation failed on these locations.

▶ Raw DTS measurements are converted to a user-friendly heat map of the furnace, displayed in a web portal for the operational team.

▶ In the case of the Aperam furnace, our technology could confirm that most parts of the furnace were in perfect condition, only a small section of the furnace needed repair.

▶ Our technology also prioritizes the locations according to the remaining lifetime of the thermal insulation.

▶ This knowledge results in a significant reduction of maintenance costs.

***“The expectations we had of the Fluves monitoring system were largely exceeded.”***

— ERIK INDESTEEGE supervisor repairables and instrumentation at APERAM



## GET TO KNOW FLUVES

### WE CARE ABOUT YOUR CRITICAL EQUIPMENT. WE MONITOR IT.

Once an engineering start-up of five employees, Fluves is now a market leader and key innovator in the monitoring industry.

What about your company?  
Is all your critical equipment  
adequately monitored?

Better call Fluves.

We provide monitoring services for  
flow and thermal processes in industry  
and utilities.

As experts in innovative Distributed  
Fiber Optic Sensing technology, we  
create new measurement possibilities  
for a range of industrial facilities that  
are otherwise hard to monitor.

The real value of this technology  
comes when our in depth analytics  
software converts the raw data  
- such as leaks - into relevant and  
understandable metrics. They are  
presented in a real-time dashboard  
that notifies you instantly with an  
automatic alert when a problem arises.

### CONTACT US



[www.fluves.com](http://www.fluves.com)



T. +32 9 346 85 30



[sales@fluves.com](mailto:sales@fluves.com)



Kerkstraat 106  
9050 Gentbrugge  
Belgium



#### SOME OF OUR FLUVES CLIENTS





## FLUVES

Here you see two of our engineers, Thijs and Douwe, setting up the hardware that is connected to the fiber on your assets.

After the installation is done, the process is completely autonomous. There is no need anymore for manual site inspections.

# FLUVEIS



[www.fluves.com](http://www.fluves.com)



T. +32 9 346 85 30



[sales@fluves.com](mailto:sales@fluves.com)



Kerkstraat 106  
9050 Gentbrugge  
Belgium