



FEBUS OPTICS

Distributed Optical Fiber Sensing

FEBUS G1

FICHE TECHNIQUE

Febus Optics SAS

Technopole Helioparc - 2 av. Président Pierre Angot - 64000 Pau - France

Téléphone : +33 (0)5 24 36 45 82

Mail : info@febus-optics.com

FEBUS G1



Distributed Optical-Fiber Sensing Unit :

- Strain and Temperature Monitoring
- Optimized for harsh conditions
- Energy-less operation
- On demand module available
- Cost effective

Presentation

FEBUS G1 device provides Strain and Temperature information every 1 m along 25 km along an optical fiber deployed on the infrastructure. This system is specifically design to meet the harsh environment requirements with energy saving configuration, and single-ended connection to the optical fiber sensing cable. Furthermore, FEBUS OPTICS offers, along with its FEBUS G1, personalized services such as:

- Implementation survey
- On demand interface
- 5 years maintenance plan

How does it work ?

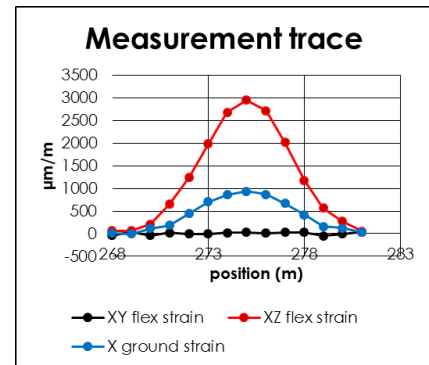
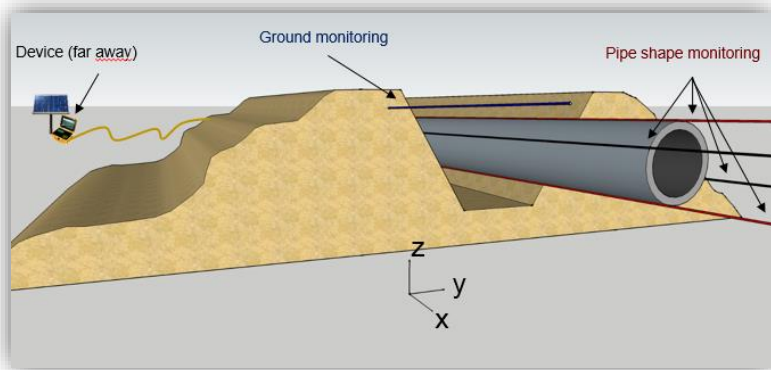
Brillouin Scattering

When light propagates along an optical fiber, a small amount of the carried energy is backscattered. The main part, called Rayleigh scattering, has the same wavelegth as incident light. A small part of energy also propagates backwards with a shifted wavelength called Brillouin Shift. This shift is temperature and strain dependent. That's how we measure both parameters.

Optical time domain localization

When a pulsed light propagates along an optical fiber, Rayleigh and Brillouin scattering occurs at any one point exactly when the pulse reaches that point. As light velocity is perfectly known in the fiber, the exact location of each scattering point can be determined. That's how we locate measurements.

Application : Pipeline Integrity Management



For environmental and economical reasons, one of the major problems faced by pipeline owners is leakage. Many systems, including distributed temperature sensing, offer leak detection potential. Using FEBUS-G1 distributed strain monitoring, facility owners can evaluate mechanical health of the pipeline as well as risks due to soil strain.

Indeed, fixing optical fiber cables along the pipelines will enable FEBUS-G1 to evaluate the exact shape of the pipe. Buried in soil, as close to the pipe as possible, another cable can be used to perform ground monitoring. Together with its client, FEBUS OPTICS defines the output data of FEBUS-G1. As shown below as an example, engineer value table or graphs are available.

Performances

Range	30 km
Strain Resolution	10 $\mu\text{m}/\text{m}$
Temperature Resolution	0.5 $^{\circ}\text{C}$
Spatial Resolution	1 m
Sampling Interval	0.1 m
Power Consumption	100 W
Optical Fiber Requirement	Single Mode Fiber
Optical Connectors	E2000/APC

