



Breaking the interrogator cost barrier:
Photonic integration as disruptive technology for large-scale deployment of FBG sensing

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EPIC Meeting (Porto) | April 19, 2023

OUR COMPANY

Founded in 2018
Silicon photonics platform for sensing
10+ people



First products launched in 2021
Production ramp-up
Outsourced manufacturing

Patented and proven technology
& 1.5M€ in research grants

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STRUCTURAL HEALTH
MONITORING

ENERGY

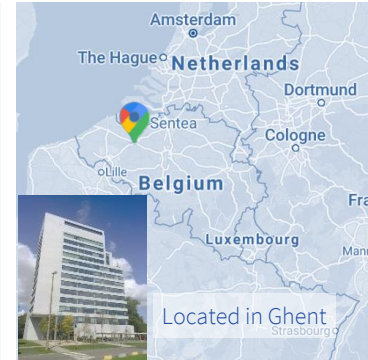
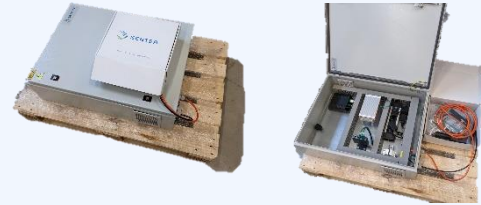
INDUSTRIAL SENSORS

TRANSPORT

MEDICAL

RESEARCH & DEVELOPMENT

Fiber optic system integration
for various industrial sectors



Partnering with solution providers
Direct to OEMs

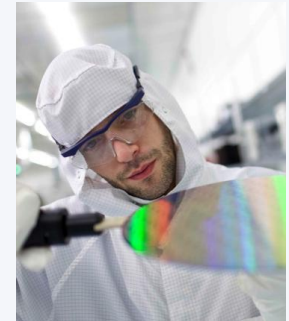
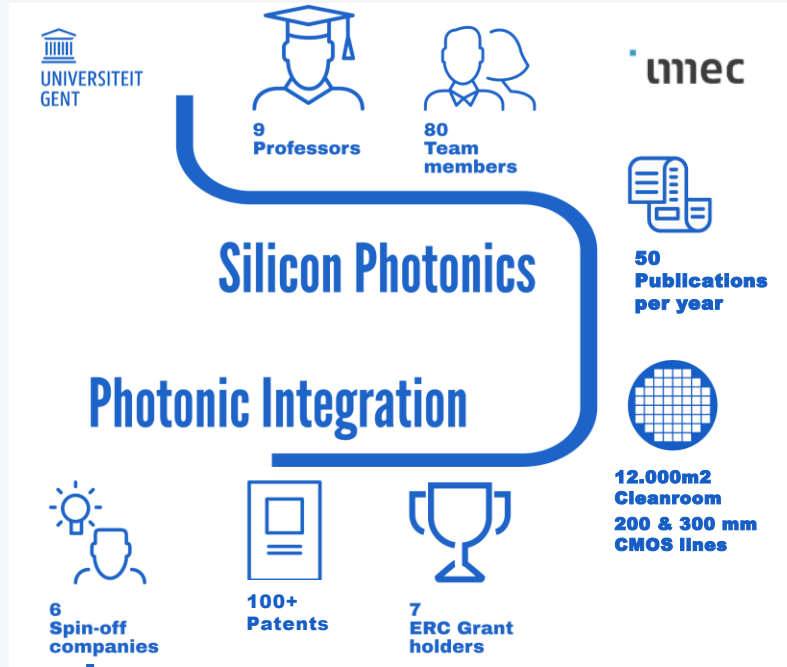
5M€ invested by consortium of corporate investors and VC's



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PHOTONICS RESEARCH GROUP



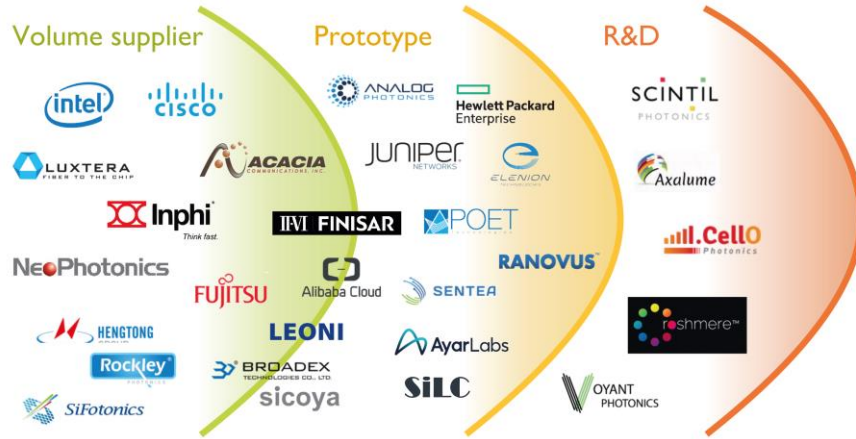
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SILICON PHOTONICS

Readiness of silicon photonic players

(Source: Silicon Photonics 2020 report, Yole Développement, 2020)



Silicon Photonics is gradually being adopted in all photonics applications

Telecom/Datacom ➡ Sensing/Lidar/Spectrometry ➡ Optical IO/Quantum computing

Light sources



Modulators



Filters & multiplexers



Switches



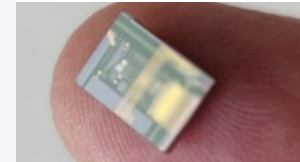
Waveguides



Detectors

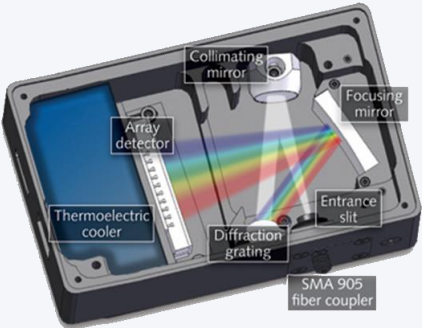


Electronics



DISRUPTIVE TECHNOLOGY FOR FBG SENSING

Bulk optics interrogators are **expensive**, limiting the use of FBG sensing to **niche applications**



Silicon Photonics makes interrogators **affordable** and enables for **high volume application**

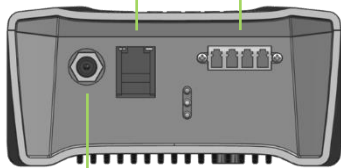


OUR INTEGRATED-PHOTONIC INTERROGATORS

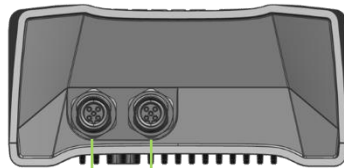


DM-4120 FBG fiber interrogator

Data transfer 1x RJ45
Optical fibers 4x LC/APC



Power supply
 1x 12V DC



Data transfer
 2x M12

Functional characteristics	SR-1080	DM-4120	DM-8120
Number of channels	1	4	8
Max. number of sensors per channel	8	10	
Max. sampling frequency	200Hz	24kHz	
Wavelength range	1530-1570nm	1525-1575nm	
Wavelength sensitivity	< 0.5pm ⁽¹⁾		
Wavelength accuracy	< 10pm ⁽²⁾		
Sensors FWHM	From 100pm to 1nm		
Light source	SLED		
Optical connection	LC/APC		
Data interface	Ethernet (TCP/UDP/MQTT) · Modbus · Trigger ⁽³⁾		
Software interface	PeakViewer™ visualization app · API for Python		

Physical characteristics

Dimensions	170 x 135 x 65mm		
Weight	1.2kg		
Operating conditions (non-condensing)	0 to +40°C	-20 to +60°C	0 to +40°C
Power supply	12V DC external · 24V DC external		
Power consumption (room temperature)	Typically 7W		

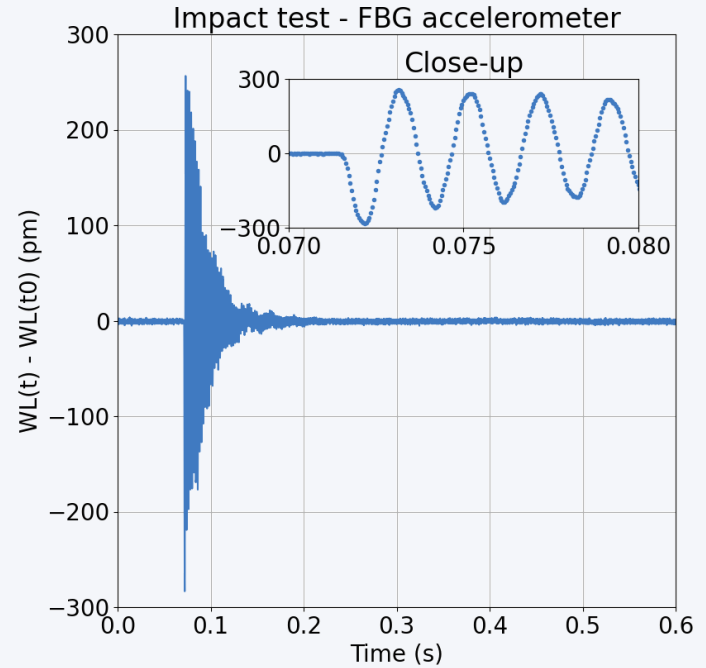
(1) Defined as standard deviation over 10 minutes | (2) Over full temperature range | (3) In development

OUR UNIQUE ADVANTAGES



High-speed acquisition

- ✓ Up to 24kHz

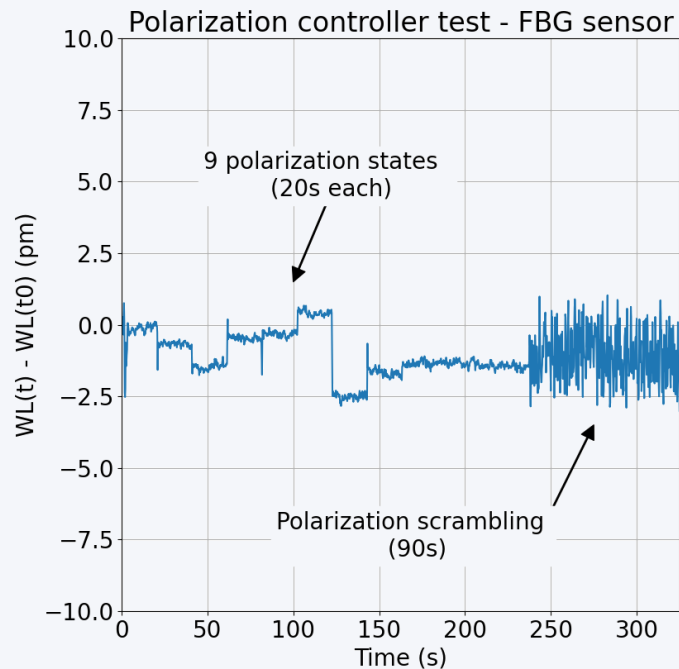


OUR UNIQUE ADVANTAGES



Reliable measurements

- ✓ Low polarization sensitivity
- ✓ Temperature stability (-20°C to +60°C)
- ✓ Long-term stability

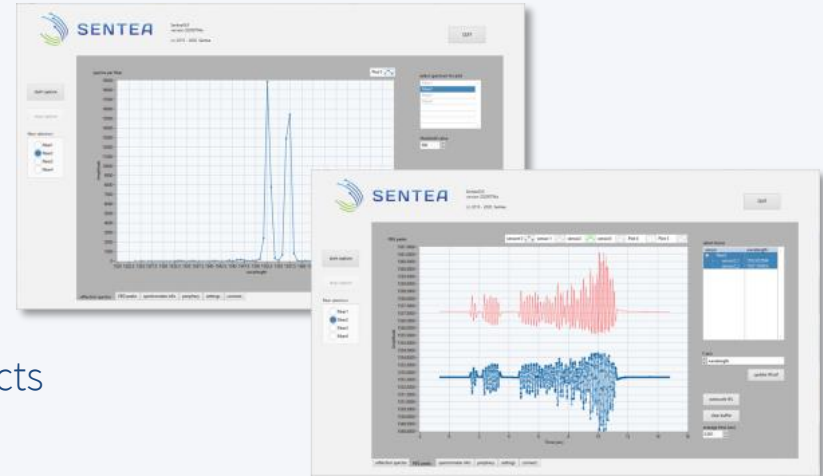


OUR UNIQUE ADVANTAGES



Seamless system integration

- ✓ PeakViewer software
- ✓ Python API library
- ✓ Embedding computing
- ✓ Interoperable with most FBG products



OUR UNIQUE ADVANTAGES



Cost-effective

- ✓ List price starting at 3,450 EUR
- ✓ Highly degressive pricing
- ✓ Tailored for large-scale deployment



WHAT IS NEXT?

Further integration and cost reduction,
accompanying production ramp-up

Continued collaboration with the fiber optic
sensing community to serve current and future
industry needs:

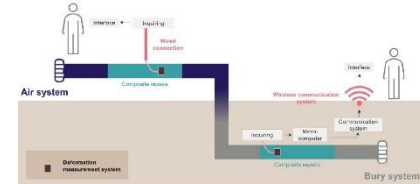
- Sensor manufacturers
- System integrators & solution providers
- OEMs

Interested? Contact us! info@sentea.com

*Overhead
crane
monitoring*



*Gas pipeline
repair
monitoring*



*Gearbox
monitoring for
wind farm
optimization*



