

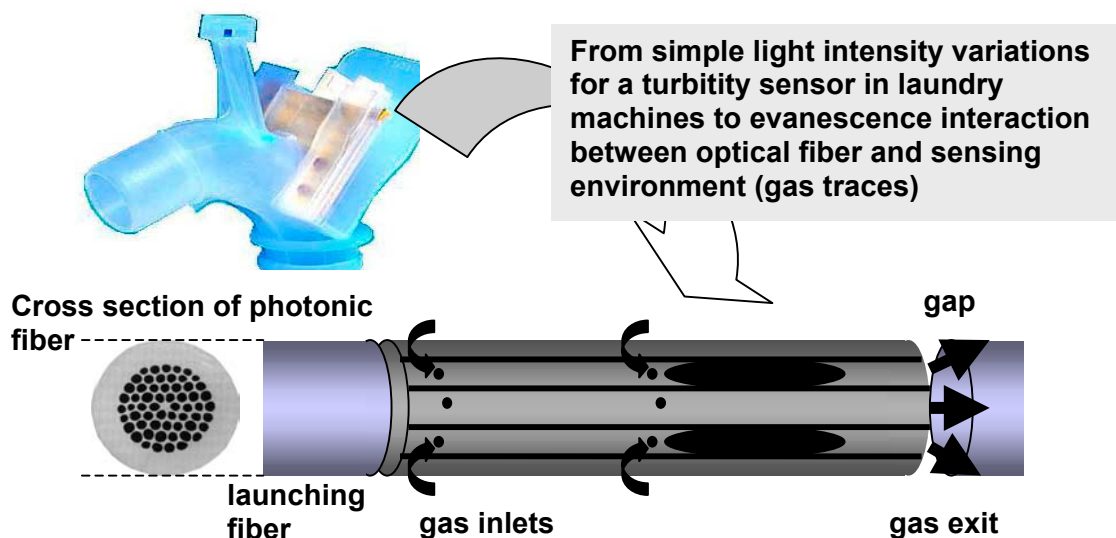
Fiber - optical Sensors & Devices

Lower cost but high performance opto-electronic components are the basis of new optical fiber sensors systems. The original handicap of translating the optical signals into processable electronic signal still remains but is compensated by lower cost systems and gains in using optical sensing. The advantages are considerable such as life time of sensing systems of 30 to 50 years, no re-calibration, high accuracy and applicable to dangerous environments (e.g. explosion hazards or lightning).

OFS-17 held in Bruges from May 23 –27, 2005 presented the latest developments of optical fiber sensors. Bragg fibers, Brillouin scattering and photonic fibers dominated many of the new application possibilities. The present Tech watch study aims at potential customers wishing to enter or expand their product portfolio though optical fiber sensors and devices. Netlab describes several examples where optical fiber sensing is the only reliable means. This has been recognized in the petrochemical industry because of explosion hazards, the building industry whenever life-time monitoring is necessary on bridges, tunnels and high rise buildings. The report covers the following technologies:

- Fabry-Perot sensing
- Bragg fibers
- Microbending
- Photonic fibers
- Light attenuation
- Electro-optical polymers

These technologies find and will find applications in numerous industrial applications ranging from LNG tank monitoring to fire alarm systems in road tunnels.



*This Tech Watch study is carried out in collaboration with **sgt Sensor Consulting Dr. Guido Tschulena**. Further Information on this report can be obtained from **Dr. Felix J. Trojer** from Netlab GmbH in Düsseldorf. Phone: + 49-211-994-5473, Fax: + 49-211-994-5476, e-mail: netlab@t-online.de*

Fiber - optical Sensors & Devices

Table of content

1.	EXECUTIVE SUMMARY
2.	OBJECTIVES AND SCOPE OF INVESTIGATION
3.	PRINCIPAL OPTICAL FIBER SENSING TECHNOLOGIES
3.1	Fabry-Perot sensors
3.2	Bragg fibers
3.3	Brillouin and Raman scattering
3.4	Microbending
3.5	Light intensity variations
3.6	Electro-optical polymers
4.	APPLICATIONS
4.1	Health monitoring of composites
4.2	Health monitoring of constructions (bridges, tunnels buildings)
4.3	Electric current monitoring
4.4	Battery, fuel cell, reformer monitoring
4.5	Boat hull monitoring
4.6	LNG storage tank monitoring
4.7	Fire detection in road and rail tunnels
4.8	Hydrogen tank and pipeline monitoring
4.9	Future applications
5.	OPTO-ELECTRONIC SIGNAL TREATMENTS
6.	MARKET FORECASTS
6.1	Prediction versus actual sales
6.2	Market prediction for niche applications
7.	CENTERS OF TECHNOLOGICAL EXCELLENCE IN EUROPE
8.	CONCLUSIONS
9.	CONFERENCES
10.	REFERENCES

ORDERING FORM

This Tech Watch study can be **ordered** by completing this form and sending it by fax or mail to:

Dr. Felix J. Trojer
Netlab GmbH
Kronen Strasse 52
D- 40217 Duesseldorf, Germany
Fax: +49 211-994-5476
e-Mail: netlab@t-online.de

Name, First Name

Organisation

ID number for Sales Tax (VAT-ID)

Address

.....

e-Mail : Phone.....

I hereby order copy/copies of the report at the price of **7,500.00 Euro plus VAT & shipping** (Germany: 10 Euro, Europe 40 Euro , other countries: 70 Euro) for the first copy. Price reduction for further copies on request.

Payment

Per bank transfer to our account
Commerzbank AG, Postfach 101137
D- 40002 Duesseldorf, Germany
Account holder: Dr. Felix J. Trojer
BLZ 400 300 00
Account Number: 1711183 00

IBAN: DE 60 3004 0000 0171 1183 00
SWIFT-BIC: COBADEFFXXX

.....
Signature *Location* *Date*