INFRARED DETECTORS FOR GAS DETECTION

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EPIC Online Technology Meeting on Environmental Monitoring
About us

// Our strengths

› Unique technology – 30 years of innovation and continuous improvement of the company’s original concept

› Value for money – the best quality to price ratio

› Custom-fit solutions – flexibility to tailor and test solutions that respond to the most demanding customer requirements (e.g. NASA, military industry)

› R&D capabilities – world class scientific R&D expertise with access to and affiliation with major academic research institutions (e.g. MIT, Princeton, Fraunhofer, Gesellschaft)

› Research projects – coordinator and commercial partner in a number of national and EU research projects (e.g. Horizon 2020, POIR)

› The best team – highly educated and experienced staff, friendly atmosphere promoting creativity and innovation, 155 employees (1 professor, 14 PhDs and >50 engineers)

// Our products

Epitaxial wafers  Infrared detectors  Detection modules

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Environmental protection

// Air quality analysis

Emission control of greenhouse gases:
- CO₂, C₂H₆, CH₄

Emission control of car exhaust fumes:
- CO₂, SO₂, NOₓ

// Water quality control

- WaterSpy project
  https://waterspy.eu/
- AQUARIUS project
  https://aquarius-project.eu/

Leak and leakage monitoring:
- CH₄

Combustion process control:
- CO, CO₂, CH₄, NH₃, NOₓ
Gas sensing

// Gas analyzer

IR laser or incoherent IR emitter
Gas inlet
Optimized IR detector
Lens or mirror
Gas outlet
Multipass absorption cell

// Gas detector

Gas Inlet
Gas chamber
Optimized IR detector
Laser beam
Window
Gas outlet

// Gas sensor

Gas inlet
Gas chamber
Broadband source (incoherent IR emitter)
Window
Broadband IR detector
Optical filter
Gas outlet

// IR detector – VIGO recommendation

- TE cooled photodiodes and photoconductors
  - PV-xTE / PVI-xTE, PC-xTE / PCI-xTE
  - Ultra high speed „all-in-one” modules
  - UHSM series
  - Balanced / autobalanced IR detection module
    - NIPM-I- 5
  - MWIR or LWIR linear arrays

- TE cooled photodiodes
  - PV-xTE / PVI-xTE
  - Universal modules
  - UM series
  - Programmable, laboratory modules
    - LabM series

- Uncooled photodiodes
  - PV / PVI
  - Affordable MWIR detection module
    - AM series

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Antifringing technology

// Decoherence of radiation
- Wedged window
- Wedged cap
- Wedged structure

// Reduction of the reflection coefficient of the surfaces
- Anti-reflection coating at the window
- Anti-reflection coating at the active structure (MWIR detectors)

// Modification of the internal design
- No metalization on the back
- Roughened surface
- Reducing the NA of the upcoming radiation

[Graph showing etalon effect on a FTIR measurement]
Ready to match your needs!

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