



AXINT SAS :

Detectors for ionizing radiations.

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Tel +33(0)6 29 85 94 53

RCS Villefranche sur Saône 500 916 804 – SIRET 500 916 804 00023 – TVA intracommunautaire FR 40 500 916 804



ABOUT AXINT :

- AXINT is a spinoff from Lyon 1 University, LPCML laboratory.

-Axint was created in 2007.

-Main activity : Developing radiation detectors, mainly based on SiPM photodetectors. (PMTs also). Monte Carlo simulation.

-AXINT develops standart products for markets, and custom products for specific applications.



AXINT MARKETS :

-Medical field : Process and safety control during isotope production (mainly 18 FDG) :

- Detectors for production cells, HPLC and UPLC lines, fumes exhausts control, ambient activity, syringe calibration etc....

-Industrial radiotracers

- 1 inch BGO detectors, 2 inches NaI detectors, custom tomography systems



AXINT MARKETS :

-Nuclear Fuel : Radiometric ore sorting, nuclear enrichment control, Nuclear fuel rod array quality control etc....

-Etc...



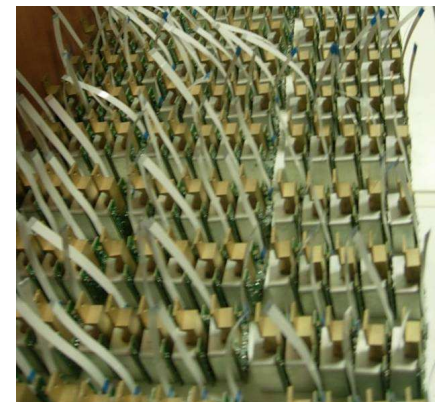
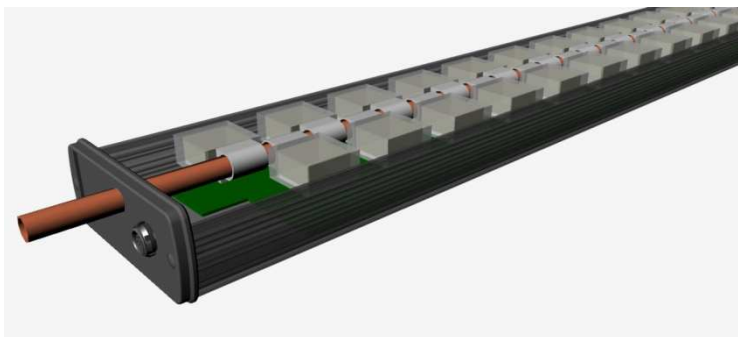
PRODUCTS EXAMPLES

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Radiometric uranium ore sorting



Detector installed in a 70T/h sorting machine

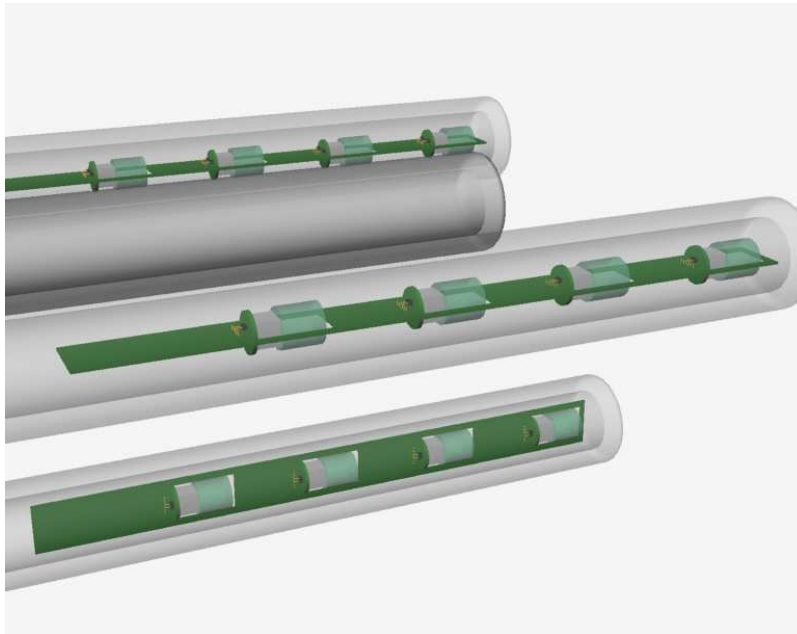
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In-situ detection of ^{22}Na in underground clay layer (ANDRA)



Specific PCB assemblies
developped

Timing coincidence between
tubes

Experiments began in 2011

Target : developping an in situ
gamma imager



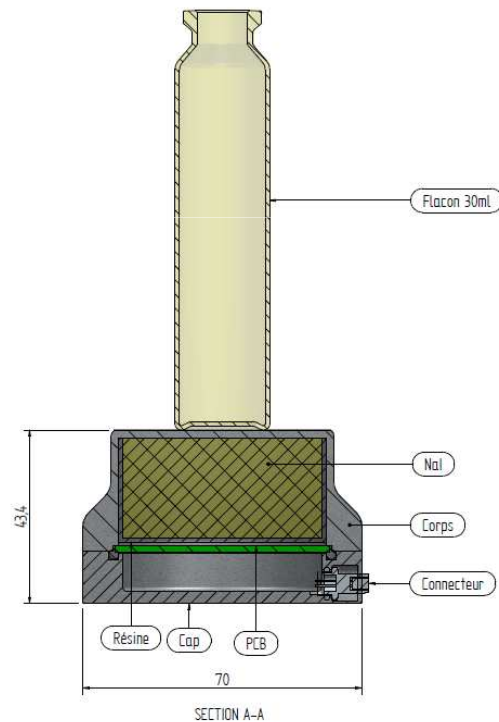
In-situ detection of ^{22}Na in underground clay layer (ANDRA)



Detectors installed for 10 years continuous operation at -400m (Bure, ANDRA research laboratory)



Positron detector



OEM detector for positron emitting tracers (like ^{18}F or ^{11}C)

Users : ^{18}F FDG and other TEP tracer synthesis.

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ventilation shaft detectors



Detectors



> 60m cables in data
cables pathways

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ventilation shaft detectors

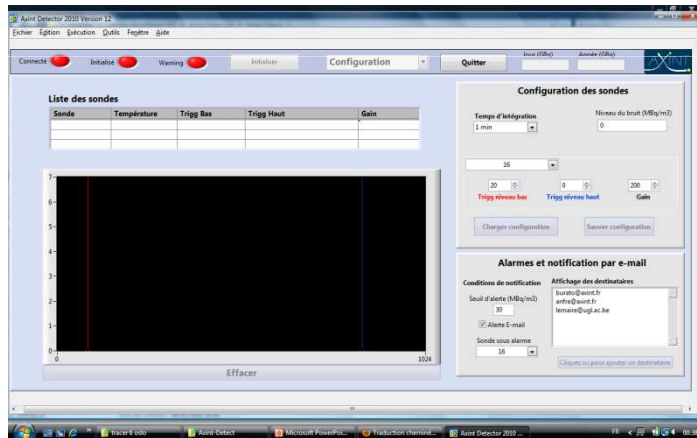
Highly developed software :

-Detectors under alarm (automatic emails)

-Semi automated calibration module

-Automated daily, monthly reports

- ^{18}F decay (2h) automated detection module : identifies ^{18}F decay and generates automated reports. Helped to identify sorbtion issues in the ventilation system.



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SiPM TECHNOLOGY :

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SiPM TECHNOLOGY :

-Most of the AXINT developments include SiPM photodétector.

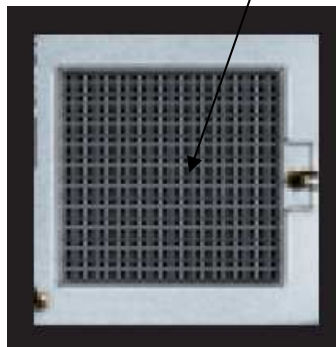
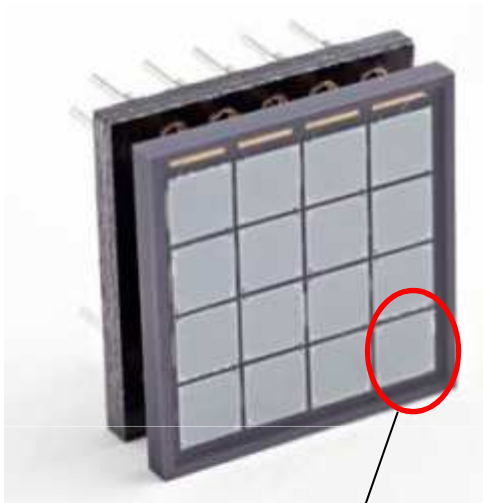


What is a SiPM ?

- This is NOT a PIN diode
- This is Not an avalanche photodiode (APD)
- It is a « Geiger mode operated micro APDs matrix »
- It is a photodétector with shape and easy use like a diode, and signal like a PMT.



SiPM TECHNOLOGY :



10 000 uAPD cells

-Each uAPD can be fired by 1 photon, yielding to $\approx 10^6$ electrons

-n detected photons lead to $n \times 10^6$ electrons pulse

-Detector speed > PMT speed

→ SiPM give output signals very similar to PMT signals.



Why using SiPMs ?



| | SiPM | APD | PMT |
|--------------------------------|---------|--------|---------|
| Bias | 30V | >300V | >1500V |
| Size | Small | Small | Large |
| Price | Low | High | medium |
| Gain | $>10^6$ | 10^2 | $>10^6$ |
| Sensitivity to magnetic fields | NO | NO | HIGH |



Why using SiPMs ?



| | SiPM | APD | PMT |
|---------------------|------|------|-------|
| Long time stability | Good | Good | Bad |
| Power | <1mA | <1mA | >10mA |



AXINT TECHNOLOGIES

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WHICH BENEFITS ?

Compared to other manufacturer products, AXINT SAS detectors offer the following strength :

- Detectors easily compatible with industrial environment (no sensitivity to magnetic fields, no high voltage used)
- Long term signal stability much better than PMT detectors.
- Very high design flexibility du to low size of photodetector : geometry of the detector can be much better adapted to the best detection configuration.



WHICH BENEFITS ?

Compared to other manufacturer products, AXINT SAS detectors offer the following strength :

- Due to the small business structure of the compagny, very high flexibility is offered to the customers in order to match at best their applications.
- Due to lower cost of SiPMs, very competitive price can be offered to customers.
- Due to our extensive experience in MCNP6 monte Carlo simulation, we provide very high level of interpretation of all the measurement we provide.



CONTACT

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Or visit our website : www.axint.org

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