



RADIATION MEASUREMENT

Challenges & Markets

The measurement of radiation enables us not only to detect and to quantify the radioactivity present in objects (waste, environmental samples, material samples...) but also to determine the doses and the dose rates of radiation in nuclear facilities so that we can operate and monitor them efficiently. The radioactive measurement—even in the state of traces—associating the identification of the radionuclides and their corresponding activities is currently one of the most important sanitary and environmental issues. Furthermore, it constitutes an industrial and scientific problem as much for the nuclear industry as for the medical industry and all research facilities.



**Measurement channel patented
for the detection of high energy neutrons**

Value added offer

The DEN offers industrialists its competence in the field of radiation measurement and in the elaboration of radiation detectors.

The objective of CEA/DEN is to meet the needs expressed by the industrialists in terms of:

- Use of instrumental means of radiation measurement
- Development of instrumentation or of instrumental techniques
- Licensing of a precise technology (Patents & Know-how)



Fission chambers
(Diameters: 1.5mm, 4mm, 8mm)

RADIATION MEASUREMENT

Patents

CEA – Cadarache has 10 families of transferable patents in this particular area of research:

- EP0715186B1 (expires in 2014)
- FR2802305B1 (expires in 2019)
- FR2815132B1 (expires in 2020)
- FR2925750A1 (possible protection until 2027)
- EP2225588B1, EP2225590B1 (expires in 2027)
- EP2338157B1 (expires in 2028)
- FR2950704B1 (expires in 2029)
- EP2393087B1 (expires in 2030)
- FR2943142A1 (possible protection until 2029)

Technical offers

- R&D (design, development and qualification of the measurement channels and associated treatments)
- Design Basis / Design of devices, fission chamber systems and radiation sensors
- Development and improvement of methods and radiation measurement techniques
- Design and manufacturing of fission chambers

Expertise

- Mathematical demonstration of how the radiation sensors operate
- Development of simulation tools enabling us to characterize the radiation interactions / matter Detector modeling
- Manufacturing of sensors that can withstand extreme mediums
- Dosimetry
- Metrology

Equipment

CEA/DEN has highly substantial, large-scale test means and considerable development at its disposal:

Devices enabling us to qualify instrumentation

Operation of the MADERE platform accredited COFRAC (Gamma and X spectrometry measurements)

A workshop specialized in the production of fission chambers

Platform Instrumentation (assembly, optimization e, reactor mockups: EOLE, MINERVE, test reactors: OSIRIS)

Our strong points:

The DEN has a whole range of test facilities and recognized expertise in the field of radiation measurement enabling us to meet your needs

Key figures:

- Manpower
13 R&D engineers and experts
- 10 families of patents
protect this activity

They have entrusted us with their work:

PHOTONIS, THERMOCOAX,
AREVA, EDF

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