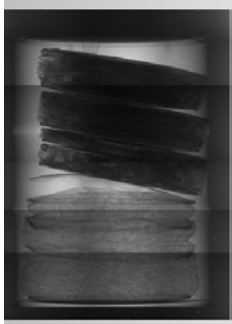




NON-DESTRUCTIVE CONTROL

Challenges & Markets

The non-destructive control enables us to deal with the economic and regulatory issues facing our society. Whether it involves the **quality control examination of parts** having a high production cost or possessing **reliability** and a **critical operation of safety**, the stages of non-destructive characterization today have become unavoidable. The major fields of targeted activities are those related to safety, the oil, railway and naval industries, to aeronautics, to the aerospace and automobile industries, to steelmaking, boilermaking, archeology, civil engineering and the construction industry.



High energy imaging on object of great dimensions or of strong intensity
CINPHONIE Plateform

Value added offer

CEA Cadarache offers industrialists:

- its **competence** in the field of acoustics and ultrasound instrumentation, high energy imaging and more generally in the implementation of experimentation for **studying/developing/qualifying instruments in varying mediums**,
- its **simulation** tools

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

- **use of the experimental equipment and techniques** from CEA Cadarache,
- achievement of **on-site characterization campaigns**,
- **design basis** of measurement systems,
- **development of innovative instrumentation** in order to deal with the new and urgent problems facing us,
- assistance involving **advice and expertise**,
- creation of new **collaborations**
- or the **licensing of a precise technology** (Patents & Know-how).

NON-DESTRUCTIVE CONTROL

Patents

CEA – Cadarache has 18 families of transferable patents in this particular area of research:

- FR2752639B1 (expires in 2016)
- EP1145249B1, EP1086387B1, EP1234166B1 (expire in 2019)
- EP1516177B1 (expires in 2022)
- EP1733205B1, FR2871896B1 (expire in 2024)
- FR2887664B1 (expires in 2025)
- FR2920537B1 (expires in 2027)
- EP2310879B1, FR2939895B1, FR2939906B1 (expire in 2028)
- FR2950703B1 (expires in 2029)
- FR2977377A1, FR2970339B1 (expire in 2031)
- as well as 3 patents pending since the end of 2011

Technical offers

- Use and development of simulation tools
- Surface characterization
 - Development of ultrasound instrumentation (high temperatures)
 - Analytical tools of development and of instrument qualification, of measurement channels and instrumental techniques in this field, in various mediums (gas, liquid and solid) and that can function at high temperatures
- Characterization through photon imaging
 - radiography et tomography
 - High energy imaging (> 500 keV / 1MeV)
 - A service is offered for imaging parts of great volume

Expertise

- Use, development of simulation tools
- Development and dimensioning of measurement systems
- Characterization by photon imaging (high energy Imaging)
- Surface characterization (Acoustics and ultrasounds)
- An activity of accompanying and providing advice and counseling

Equipment

CEA Cadarache has considerable test means / development:

- Numerical simulation and data processing
- Photon imaging (radiography, tomodensitometry) for dense and bulky objects (high energy product photons by a linear accelerator)
- Wide field detector (2D scintillating screen: dimensions 800x600 mm²)
- CdTe detector possessing a dynamic range that can reach 100 000
- Automated displacement and movement systems (5 degree arm of liberty)
- Electronics and analyzer of specific CND signals
- Multi-element sensors and associated electronics (121 channels)

Our strong point:

CEA Cadarache has several decades of expertise and a universally recognized know-how in the field of non-destructive control in terms of surface characterization and photon imaging enabling us to meet all your needs.

Key figures:

- Manpower in terms of non-destructive nuclear measurements
25 research engineers / technicians
- Manpower involved in R&D acoustic and ultra-sound instrumentation,
12 research engineers / technicians
- Accreditations
Certification ISO 9001
Certification ISO 14001
OHSAS

They have entrusted us with their work:

AREVA, ANDRA, BelgoProcess, Musée archéologique d'Arles, EDF, SONAXIS

Contact :

Olivier GASTALDI, expert in surface characterization / olivier.gastaldi@cea.fr Tel: + 33 (0) 4.42.25.37.87.
Nicolas ESTRE, expert in characterization through photon imaging / nicolas.estre@cea.fr Tel: + 33 (0)4.42.25.43.44.