Ground segments Transversal competencies



POSITHÔT – la Manufacture d'Antimatière – offers services and equipment's for non-destructive defects measurement with a nanometer scale resolution. Based on positron annihilation spectroscopy, this nondestructive analysis technique is efficient on any kind of materials, metals, ceramics, polymers, semi-conductors. POSITHÔT has a unique technology of positron production by a nonradioactive way.

## **COMPETENCIES & CAPABILITIES**

POSITHÔT has a unique technology of positron production by a nonradioactive way. Using it POSITHÔT develops services in defect characterization, and equipment for materials development, surface analysis and non-destructive testing. The ultimate resolution of these systems is in the range of the transmission electron microscopy technique, but with a non-destructive technique. It gives information of the dislocation and vacancy density, prior to the appearance of cracks and vacancy clusters.

The positron spectroscopy is effective on any kind of materials, metals, ceramics, semiconductors, polymers, composites, thin films and layered structures. Analysis has to be adapted to each material.



# POSITHÔT

### **PRODUCTS & SERVICES**

POSITHÔT offers nondestructive testing equipment's based on nonradioactive positron generators, and their installation on the customers premises. These equipment's are designed following the customer specification and adapted to the requirement of the part to be analyzed. The equipment definition is made after R&D phases to validate the effectivity of the technique to fulfill the key issues of the specification.

In order to validate the testing sequences and measurement procedures, POSITHÔT also offers services in defect and defect density analysis. Eventually long-term contracts for maintenance repair and overhaul activities can be considered.

#### **MAJOR SPACE PROJECTS & REFERENCES**

Ongoing studies done by POSITHÔT covers the following fields:

- Early-stage damage appearing in fatigue in metallic structures. This is done under the CNES challenge R&D "launchers for the future" contract; It highlighted the initial damage appearing in the first 50 nanometers near the surface of the material for a solicitation corresponding to half of the mechanical strength. Similar works are carried out for aircraft parts and materials;
- Identification of ageing consequences in solid propellants for rocket engines.

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