

INTERNSHIP S1 2022 – NDT of a natural composite material

Avions Mauboussin

Avions Mauboussin aims to enable responsible intercity/regional mobility and access to areas of interest currently closed to classic aircraft by offering clean, silent STOL to operate as close as possible to final destinations and from small-scale infrastructure. Avions Mauboussin's aircraft adopt a hybrid powertrain, quiet enough to fly over inhabited areas with greater autonomy. Furthermore, the hybrid powertrain reduces fuel consumption, consequently reducing emissions.

Institut Clément Ader

The Clément Ader Institute (ICA, CNRS UMR 5312) is a research laboratory that focuses on the study of structures, systems and mechanical processes. Our activity sectors are in the mechanical industries with a particular focus on aerospace, space, transportation and energy. Our work usually focuses on behaviour modelling, instrumentation and the study of the durability of the structures or products considered. A large part of our research focuses on natural and/or traditional composite materials, which play today an important role in structures.

Context

Keeping in mind its ecological impact, Avions Mauboussin decides to use natural materials for the main and secondary structural components of Alérion M1h, including wood, bio-based resins and natural fibres. Indeed, these innovative parts need to be inspected after manufacturing and also for maintenance / repairs. Existing NDT methods & tools need to be adapted to these new-for-aeronautics materials and processes.

To do so, Avions Mauboussin and ICA wish to develop a process to inspect this natural composite structure to ensure its integrity. The research of suitable NDT process(es) is the purpose of this internship.

Job description

The first part of this work will be dedicated to a prospection concerning the non-destructive testing methods applicable to the structures used by Avions Mauboussin. This study will be based on the methods currently used and standardized for the control of composite aeronautical parts. The results of this first study will be the subject of a synthesis and a proposal for an experimental protocol applied to the case study. The methods currently being considered are control methods based on ultrasound as well as infrared thermography. In this context, the candidate will be accompanied by researchers from the IUT of Tarbes who are specialists in these fields. A technical and experimental contribution from external partners is also envisaged in order to complete the panel of methods tested. This experimental campaign will be based on calibrated samples making it possible to realistically simulate the main defects sought. This

preparatory part for the experimental campaign will be carried out with the support of Avions Mauboussin (production of calibrated samples). The final objective of this internship is to identify the methods likely to be operational within the framework of the types of defects sought.

Skills and qualifications

You are in final year of an engineering school, in 2nd year of Master or in a gap year with a specialization related to aeronautical structures. You are autonomous and show a strong interest for aeronautics.

Location and duration

From April 2022, 5-6 months internship.

Located on the premises of Institut Clément Ader in Tarbes, Occitanie, France.

How to apply?

Send your resume and cover letter written in French or English to:

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And

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