

Research position
in the frame of the EU-ITN-project
NDTonAIR
at Brussels Airlines
Zaventem, Belgium

**Non-invasive detection of the location and amount
of ice and water in the fuel tank of aircraft**

Highly motivated applicants are invited for a 3-years research and training position in the field of non-destructive testing (NDT) and structural health monitoring (SHM) of aircraft, potentially leading to a PhD degree from KU Leuven (University of Leuven). In addition, the applicant will follow an extended training in Aircraft Maintenance according to the EASA rules, part 66.

The research and training activities are part of the EU-funded International Trainings Network (ITN) "Training Network in Non-Destructive Testing and Structural Health Monitoring of Aircraft structures (NDTonAIR www.ndtonair.eu).

Major research objective: Condensation inside the fuel tanks during aircraft cycles or when filling aircraft tanks with kerosene, relevant amounts of water will collect in the fuel tanks that potentially leads to misreadings of fuel meters or at certain aircraft types will partially block the suction mouth of fuel feedtubes to the engines from the tanks due ice blocks. It furthermore enables microbial corrosion inside the tank that even harm the structural elements of the tank, resulting in large and costly repairs with long aircraft grounding times. As there is up to now no generally accepted "non-invasive" method available to determine the moment when "water draining" has to be performed or to determine if after the draining the maintenance can ensure all water is drained and no ice blocks or water is still present inside the tank. This information could be used to optimize the draining procedure or time to drain, or could deliver the aircraft OEM's important data to redesign the draining concept to be more efficient in draining water from the fuel tanks.

The detection of the "damage mode" water/ice in the tank is an ideal field of application for diverse advanced acoustic, ultrasonic and thermal NDT methods which would be an excellent tool to increase the performance of maintenance operations.

The research objectives thus include: Detection of water in the tank including an estimate of its volume as well as estimates to apply including an economic analysis on feasibility.

As the research topic is situated in the field of diverse fields of non-destructive testing and/or materials and mechanical engineering, applicants require to have an excellent proven background in related natural or engineering sciences, including profound knowledge on signal processing as well as on the respective hard- and software. Moreover, appropriate skills in English speaking and writing are mandatory.

The work will be performed in the facilities of Brussels Airlines and when related to the PhD, in the group of "Non-destructive Testing and Materials Engineering" at the Department of Materials Engineering as well as the group of "Acoustics and Thermal Physics" of the Department Physics and Astronomy at KU Leuven, including short-term research and training stays at international project partners. As a part of an International Training Network (ITN) of the EU, candidates must prove to fulfil the respective eligibility criteria for this position: (i) not residing in Belgium for at least 24 months in the last 3 years, and (ii) having not more than 4 years of research experience (working as researcher after obtaining your master's degree). Please submit your complete application until the 1st of December, 2016.

Contact:

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