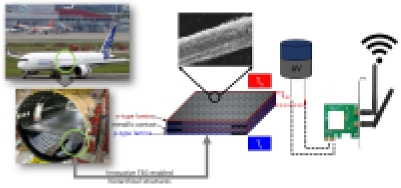
European
Commission

HARVEST
Hierarchical multifunctional composites with thermoelectrically powered autonomous structural health monitoring for the aviation industry
769140



Programme:
H2020 Transport

Topic:
MG-1-4-2016-2017

Call for proposals:
H2020-MG-2017-Two-Stages

Duration:
01/09/2018 to 31/08/2021

Funding scheme:
RIA

Total cost:
€3,999,921

EU contribution:
€3,999,921

Coordinator:
PANEPISTIMIO IOANNINON

Project website:
http://harvest.materials.uoi.gr

HARVEST aims to develop Aerostructures that will: i) increase aircraft safety and operational efficiency ii) reduce environmental impact. In order to do this, HARVEST will use unique technologies combining bio-inspired “hierarchical” ThermoElectric Energy Generating (TEG) carbon fiber (CF) reinforcements with novel thermoset matrix systems (3R Repair-Recycle-Reprocess technology). The aim of this combination is to evolve towards advanced TEG-enabled carbon fiber reinforced composites (CFRPs) for the Aeronautics sector. The hierarchical CF reinforcements will consist of fabrics of micron-scale CFs coated with efficient thermoelectric nanoparticles in a roll-to-roll coting process and impregnated in epoxy resins. This will consist in a “one run” process for prepregs (a composite with the described characteristics) manufacturing. For the first time, multifunctional TEG-enabled structural CFRPs will be developed that can store the TEG energy, acquire, and wirelessly transmit Structural Health Monitoring (SHM) signals for the composite real time in-service condition.

Innovation
and Networks
Executive Agency