



"Sustainability 2015"



"Spin Your Sustainability Idea" Student Challenge Competition

Do you have a game-changing idea that will shake up the helicopter and airplane industry? The AHS Sustainability 2015 Conference is inviting creative and curious minds to come up with innovative ideas that will challenge the industry. More specifically, we are looking for ideas in the area of Environmental Sustainability in Air Vehicle Design and Operations of Helicopters and Airplanes. Ideas under any of the following conference themes are welcome:

1. Innovative Air Vehicle Eco-design Concepts

- a. New material technology developments*
- b. Aerodynamics advancements*
- c. More electric aircraft*

2. Eco-design Tool Developments

- a. Enhanced design tools and methodologies (including CAD/CAM)*
- b. Optimization techniques (MDO) for sustainability*
- c. Aviation Life-Cycle Analysis (LCA) methodology improvements*

3. Environmentally-friendly Manufacturing & Green Supply Chain

- a. Manufacturing technology developments*

- b. Management of manufacturing and chemical waste (recycling)*
- c. "Green" as a Lean (economic) enabler*
- d. Greener aerospace supply chain (forward & reverse logistics)*

4. Powerplant Advancements

- a. Propulsion technology developments*
- b. Challenges to retrofitting the existing fleet for sustainability*

5. Alternative Fuels & Sustainable Operations

- a. Operational best practices for sustainability*
- b. Environmental aspects of Maintenance/Repair/Overhaul (MRO)*
- c. Route optimization technology*
- d. End-of-service life issues (Recycle/reuse/remanufacture/safe disposal)*
- e. Greener fuels*

6. Noise in the Community

- a. Psychoacoustic aspects of helicopter noise*
- b. Noise abatement lessons learned from the fixed-wing community*

Free-form Subject Proposals

Do you have a proposal for a sustainability project that does not fit neatly into one of the above areas? No problem, as long as the idea is related to aviation sustainability then feel free to propose it !

Competition Objective

With this Student Challenge Competition, we're asking one question:

HOW CAN YOU MAKE A POSITIVE IMPACT ON THE ENVIRONMENT THROUGH BETTER DESIGN, MANUFACTURE AND OPERATION OF HELICOPTERS, AIRPLANES OR THEIR ENGINES?

Project Idea Requirements

In complying with the rules of the competition each student team shall perform original technical work, carrying out the following tasks:

1. Devise a sustainability-related project which investigates a problem aimed at making a positive impact on the environment through the improved design, manufacture and operation of helicopters, airplanes or their powerplants.
2. Provide a clear definition of the sustainability-related project they propose and state how this project, if successful, would make a positive impact on the environment. Clearly define what is in-scope and out-of scope for the project (i.e. what are the project's 'boundaries'?)
3. Define 'SMART' objectives for the proposed project: what are the end goals or targets? What are the key performance parameters that are pertinent to the project?
4. Who would be the relevant industrial/governmental/societal etc. stakeholders for the proposed project?
5. When the project is successful what impact will it have on the business (and non-business) stakeholder(s)?
6. What existing or novel tools, techniques and methods would have to be utilized to solve the problem?
7. Each team must produce the following deliverables by the project deadline:
 - a) An executive summary report on their project proposal covering the above points (15 pages)
 - b) A proposed business case (feasibility study) for the project (stating rationale and assumptions) (3 pages)

- c) A proposed project plan (i.e. required timescale, resources) (2 pages)
- d) A brief risk assessment (1 page)
- e) A project poster summarizing the team's work: all the members of each team will be expected to contribute to explaining their project to the competition judges during a special "Poster Session" during the conference program of events.

Project Rewards

(Provided a minimum of 5 student teams participate in the competition)
The following prizes will be awarded:

- First prize: \$600 to the winning team, to be shared among the team members (The winning team's prize will also include carrying out their proposed technical project, subject to the agreement of their home university, as an AHS Montreal-Ottawa sponsored project during the academic year 2015-16. The sponsorship will take the form of the AHS offering some technical advice/guidance during the subsequent project activity.)
- Second prize: \$400 to the second placed team
- Third prize: \$200 to the third placed team

If the winning team's project proposes a helicopter-related sustainability idea (i.e. any project which, in the opinion of the judges, could be applied to rotorcraft) then they will be eligible, upon successful completion of their project, for entry into the 2016 AHS Montreal-Ottawa Lichten Prize competition (NOTE: this offer applies to Canadian-based academic teams only).

Universities/students interested in entering the project must make their interest known to the conference administration team at the following email address:

sustainability@vtol.org

Key dates

- Universities/colleges to register their student team (or teams): by the 30th of June 2015. A minimum of 2 students per team.
- Final submittal of student team project deliverables by 12 noon on Monday the 14th of September 2015