FEDERAL AVIATION ADMINISTRATION

ASCENT

Center of Excellence for Alternative Jet Fuels and Environment

The Center of Excellence for Alternative Jet Fuels and Environment (ASCENT) is a cooperative aviation research organization co-led by Washington State University and the Massachusetts Institute of Technology, in collaboration with the FAA, NASA, the Department of Defense, the Environmental Protection Agency, and Transport Canada.

ASCENT works to create science-based solutions in support of FAA's environmental and energy goals for both the Next Generation Air Transportation System and the Continuous Lower Energy, Emissions and Noise (CLEEN) program. Goals include achieving net-zero emissions by 2050, enabling a dramatic expansion of sustainable aviation fuel (SAF) production, reducing the number of people exposed to significant noise around U.S. airports, and reducing significant air quality impacts attributable to aviation. New technology development and deployment will also promote economic development and job growth. The knowledge and capabilities gained from the ASCENT's research provides the aviation industry, governmental agencies, communities, and policy-makers with new data and scientific understanding to inform decision-making on environmental issues and the future of aviation. In its eight years of existence, ASCENT and its industry affiliates have provided more than $185M for continued research into alternative jet fuels and the environment.

Some examples of current research:

- Alternative jet fuel prescreening, testing, and evaluation to support ASTM Intl. Evaluation/Qualification process
- Domestic and international alternative jet fuel supply chain analysis
- Evaluation of the economic, environmental and social sustainability of alternative jet fuels
- Development of life cycle analysis methods and sustainability criteria to enable the inclusion of sustainable aviation fuels within the International Civil Aviation Organization (ICAO) Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA)
- Development of international standards for aircraft carbon dioxide (CO_2) emissions
- Development of measurement procedures and international standards for non-volatile particulate matter (nvPM) emissions
- Development of international sonic boom standards for civil, supersonic aircraft
- Assessment of sleep disturbance and cardiovascular disease impacts of aircraft noise exposure
- Development of tools to quantify impact of aviation emissions on air quality, climate change, and the ozone layer
- Aircraft technology innovation modeling and assessment
- Development of aircraft operational procedures for reduced noise and emissions
- Development of noise abatement operational procedures for rotorcraft, Unmanned Aircraft Systems (UAS), and Advanced Air Mobility (AAM) vehicles
- Development of modeling methods to improve environmental regulatory compliance tools

Established: September 2013

Research Areas

Alternative Jet Fuels

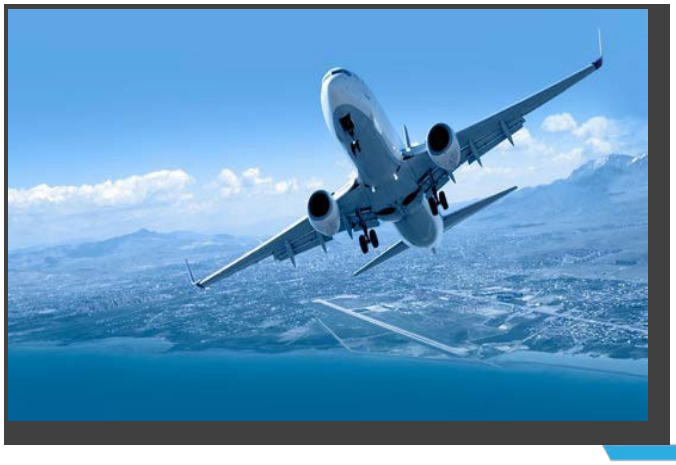
- Feedstock Evaluation and Conversion Technologies
- Regional Supply and Refining Infrastructure
- Environmental Benefits Analysis
- Aircraft Component Deterioration and Wear
- Fuel Performance Testing

Environment

- Aircraft Noise and Impacts
- Aviation Emissions and Impacts
- Aviation Modeling and Analysis
- Aircraft Technology Innovation Modeling and Assessment
- Environmentally and Energy Efficient AircraftOperations on the ground and in the air

Sponsor:
FAA Office of Environment andEnergy

https://ascent.aero



ASCENT

Core University Partners

- Washington State University (Lead)
- Massachusetts Institute of Technology (Co-lead)
- Boston University
- Georgia Institute of Technology
- Missouri University of Science & Technology
- Oregon State University
- Pennsylvania State University
- Purdue University
- Stanford University
- University of Dayton
- University of Hawaii
- University of Illinois - Champagne Urbana
- University of North Carolina – Chapel Hill
- University of Pennsylvania
- University of Tennessee
- University of Washington

Other Sponsors

- Environmental Protection Agency
- Department of Defense Agency
- Department of Defense Space Administration
- Transport Canada

Industry, Professional, and Community Affiliates

A coalition of 16 leading US research universities and over 55 private sector stakeholders committed to reducing the environmental impact of aviation, ASCENT also works in partnership with international research programs, federal agencies and national laboratories to create an all-inclusive research capability aimed at addressing the environmental impacts challenges facing the aviation industry.

ASCENT Advisory Committee

The ASCENT Advisory Committee is comprised of non-university institutions engage in environmental issues of aviation.

The purpose of this committee is to help shape ASCENT's priorities, pursue other agencies and partners for participation, and ensure the research and implementation is relevant to the overall goals of the center. The Advisory Committee works directly with the center co-directors and not with the FAA and other federal agencies. The committee does not influence agency policy.

For more information, visit:
http://ascent.aero/advisory-committee

University COE Director

Dr. Michael P. Wolcott
Washington State University
Phone: (509) 335-6392 Email:
wolcott@wsu.edu

COE Co-Director

R. John Hansman
Massachusetts Institute of Technology
Phone: (617) 253-2271
Email: **rjhans@mit.edu**

FAA Program Manager

James Hileman
Federal Aviation Administration
Phone: (202) 267-4752 (office)
Email: **james.hileman@faa.gov**

FAA AIR TRANSPORTATION CENTERS OF EXCELLENCE
Government • Academia • Industry Partnerships

Darryl Groves
Grants Officer
FAA Centers of Excellence
800 Independence Ave SW, 9th Floor, Room 929 Washington DC 20591
Phone: (202) 267 8315
Email: darryl.d.groves@faa.gov
Website: www.faa.gov/go/coe

The FAA has also established the following Center of Excellence:

- Unmanned Aircraft System (UAS) http://www.assureuas.org
- Alternative Jet Fuels and Environment (AJFE) http://ascent.aero/
- General Aviation Safety (GA) https://www.pegasas.aero/
- Commercial Space Transportation (CST) http://www.coe-cst.org/
- Joint Center for Advance Materials (JAMS) http://www.jams-coe.org/
- Technical Training and Human Performance (TTHP) http://www.coetthp.org