The Launch of the NW Composites Centre

An International Perspective

comments by

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Where is the State of Washington, USA?!
Where is Seattle, WA?!
Where is the University of Washington?!
• Bill Boeing founded his company in Seattle in 1916

• Aeronautical research began at the UW in 1917, when Boeing funded construction of a wind tunnel on the UW campus

The Boeing Wind Tunnel at the UW (c. 1918)
In 2006: Increasing Demand for Transport Aircraft
(Boeing estimate: 25,000 new aircraft needed over next 20 yrs)

- Smaller regional jets: 21%
- Single-aisle: 59%
- Twin-aisle: 3%
- 747 and larger: 17%

25,000 airplanes

2.0 trillion delivery dollars*

*In year 2003 dollars
Example: Compared to similarly-sized existing aircraft, the Boeing 787 Dreamliner is expected:

- To be 20% more fuel efficient,
- To be quieter, reducing noise pollution and increasing passenger comfort,
- To have an expanded range (~15,000 km for the 787-3, with 210-250 passengers),
- To have a cruising speed of ~Mach 0.85
Improvements Due to Advances in All Areas

- Systems
- Structural Materials
- Aerodynamics
- Engines
Aerospace Industry is a **Global Enterprise**

To illustrate: partial list of Boeing 787 team members
Polymeric Composite Materials Used Extensively in Boeing 787

Primary structure ~50% composites (by weight)
The FAA established JAMS in 2003, in response to increasing use of composites in general and transport aircraft.

Two lead universities:

- University of Washington: Center for Advanced Materials in Transport Aircraft Structures (AMTAS)
- Wichita State University: Center of Excellence for Composites and Advanced Materials (CECAM)
AMTAS Participants

- AMTAS currently consists of:
  - Four academic partners
  - Eleven industrial partners

- All AMTAS participants have significant presence within the USA Pacific Northwest
AMTAS Participants
Academic Partners

- **University of Washington**
  - main campus in Seattle, WA
  - 35,000 students

- **Washington State University**
  - main campus in Pullman, WA
  - 22,500 students
  - [http://www.wsu.edu/](http://www.wsu.edu/)

- **Oregon State University**
  - main campus in Corvallis, OR
  - 18,000 students
  - [http://oregonstate.edu/](http://oregonstate.edu/)

- **Edmonds Community College**
  - Lynnwood, WA
  - 11,000 students
  - [http://engr.edcc.edu/](http://engr.edcc.edu/)
AMTAS Participants
Current Industry Partners

Bell Helicopter
A Textron Company

Boeing

Composite Solutions

Cytec
ENGINEERED MATERIALS

Heatcon Composite Systems
Composite Repair Solutions

Hexcel

Intec

Stoddard International

Triumph Group, Inc.

Zodiac

Toray
TORAY GROUP
International Academic Collaboration

- The University of Washington (UW) and University of Manchester (UM) both lead composite centers of excellence and share common research interests

- UW and UM are natural collaborators and will work together to develop standards, protocols, and procedures for structural application of composites, particularly as related to
  - Design allowables and methodologies
  - Airframe and wing design
  - Manufacturing methods
  - Composite repair
  - Outreach and education
Let us work together to help insure continued development of a worldwide fleet of safe, reliable, and efficient transport aircraft

*Congratulations* on the Launch of the NW Composites Centre!