FEDERAL AVIATION ADMINISTRATION

FAA Air Transportation Centers of Excellence

Fact Sheet

Center of Excellence for Airport Technology (CEAT)

The University of Illinois at Urbana-Champaign has led the Center of Excellence (COE) for Airport Technology (CEAT) for the past 15 years. This Center was competitively selected by the FAA Administrator in 1995, through a strong working partnership with the FAA, initially focused on airport pavement issues. In 1999, the Center broadened its research to include airport safety components: wildlife hazard mitigation, anti-icing, and airport lighting and visual guidance. The COE research team was expanded to include affiliates Embry-Riddle University at Prescott, AZ, and North Carolina A&T University (NCA&T). In 2004, the FAA invited the Lighting Research Center (LRC) at affiliate university Rensselaer Polytechnic Institute (RPI) to conduct research on new LED and tungsten halogen technologies for airport visual guidance. CEAT served as an umbrella organization encompassing this work.

The FAA's National Airport Pavement Test Facility (NAPTF) located at the FAA William J. Hughes Technical Center, has provided CEAT researchers the opportunity to analyze multiple-wheel interaction effects on runway surfaces. Knowledge gained from these studies supports the FAA's development of new pavement design software in preparation for a new generation of large commercial aircraft including the Boeing B777 and Airbus A380.

In 2012, the cooperative agreement between CEAT and the FAA will end. With the expiration of this agreement, CEAT will "graduate" from the FAA Air Transportation Center of Excellence program. Over 15 years, CEAT has demonstrated the ability to conduct successful research, gain outside support and to serve the research education, and training needs of the aviation community independent of direct sponsorship from the FAA. An example of this is the continuing partnership between CEAT and the O'Hare Modernization Program (OMP). With OMP, the Center established a research initiative targeting technical issues related to the construction of new and extended runways. The joint project emphasizes active research and novel approaches to the creation of durable pavements providing for improvement and cost-effectiveness in this vital area.The CEAT/OMP research team lends expertise in the areas of concrete pavement studies, airport wildlife safety management and subgrade support and stabilization at the Chicago O'Hare International Airport.

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CEAT has sponsored summer internship programs between NCA&T and UIUC each year beginning in 2001. This outreach effort has successfully encouraged students from underrepresented groups to pursue graduate studies in airport engineering.

Over the past fifteen years, CEAT has produced over 50 Ph.D. theses, 500+ technical reports, articles and papers, and has involved over 150 students. Since its inception, the FAA investment in CEAT research has been matched by more than $18M of cost sharing contributions by the University of Illinois and CEAT industrial partners.

Technology Areas:
Pavement Research: Nondestructive Evaluation of Pavements, Structural Behavior and Modeling, Design Concepts and Procedures.
Safety Management: Avian Radars, Foreign Object Debris (FOD) Detection, LED Lighting Technology, Wildlife Hazard Mitigation.

Sponsor: Airport Technology R&D Team

Web: **http://ceat.illinois.edu/**

Center Projects Include:

Airport Safety:
o Wildlife Hazard Abatement Systems (WHAS)
o Deployment and Evaluation of Avian Radars
o Deployment and Operation of FOD Detection Systems at Airports
o Metrics and Measurement Procedures for LED Lighting Systems
o Field Evaluation of Runway Guard Lights

Airport Pavement:
o Non-Destructive Testing and Evaluation (NDTE) Technologies for Airport Pavement
o Advanced Finite Element Modeling of Asphalt Overlays
o Alternative Fatigue Cracking Modes on Airfield Rigid Pavements
o Hot-Mix Asphalt (HMA) Fatigue Characteristics for Airport Pavements
o Development and Validation of Residual Stress Test for Concrete Pavement

University Partners:
University of Illinois at Urbana-

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Champaign (lead)
North Carolina A&T University
Rensselaer Polytechnic Institute

Public Partners:
O'Hare Modernization Program
O'Hare International Airport
Chicago Department of Aviation
Port of Seattle
Seattle-Tacoma International Airport
John F. Kennedy International Airport
Providence International Airport
Rhode Island Airport Corporation

Industry Affiliates:
XSiGHT Systems
Geo-Marine Inc.
Accipiter Systems
Trex Enterprises Corp.
QinetiQ Group PLC
Stratech Systems, Ltd.

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