

Ohio Center for Intelligent Propulsion and Advanced Life Management

Sponsor: Ohio Third Frontier

Reviewed by: National Academy of Sciences

Endowment: \$12.5 M to UC (7.5M), UD (2.5M) and OSU (2.5M)

Center Objective

Nearly **half** of the **\$35 billion annual revenues** generated by the United States **aircraft engine industry** are attributed to **Ohio based companies**. The objective of the center is to conduct leading edge multidisciplinary research **to sustain the State of Ohio undisputed leadership position in aircraft engine manufacturing and development**. The Center scholars have already brought to Ohio outstanding multidisciplinary expertise in **renewable engine fuels, advanced combustion systems, and superior reliability through life management** of aircraft engines.

The research scholars **strengthen** the state **aviation industry that employs 100,133 Ohioans** at more than **1,200 companies**, with an **annual payroll of \$7.6 billion** [1] and **economic impact of \$41.5 billion**.

Additionally **over 30,000 Ohioans are employed at State Federal Labs** (27,000 at WPAFB and 3,400 at NASA GRC) with **economic impact of more than \$7 billion** [2] (WPAFB \$5 billion & NASA GRC \$2 billion). **Over 1000 GE engineers have obtained their graduate education at UC since 1968** through the Advanced Engineering Program with General Electric

Economic Development and Job Creation

- The Center's three academic partners (UC, UD, OSU) play a critical role in the **development of Ohio aviation work force** whose annual **wages are 65% higher than the average Ohio manufacturing wages**.
- The research scholars have been **directly responsible for establishing over 50 jobs** at the respective institutes.
- Teams lead by the research scholar secured **external funding from industry and government agencies totaling \$30M**.
- UC recruited **Francesco Simonetti, PhD**, who is a world expert on Non-destructive Evaluation (NDE). His leading edge NDE research received external funding from GE Aviation, EPRI, and ClampOn since he **joined UC in April, 2011**. Teaming with Prof. Peter Nagy they received external funding from Rolls Royce, AFRL, etc., and they **established a corporate spinoff, Cincinnati NDE LTD**.
- UC also recruited **Jong Guen Lee, PhD**. Dr. Lee has brought an **Army MURI research award** with him to Ohio and obtained additional external **funding from GE Aviation, GE Global and Army Energy**

since he **joined UC in January, 2011**. Teaming with Professor Jeng, they received external funding for the **establishment of FAA approved Fire Testing Center at UC**.

- OSU recruited **Datta Gaitonde, PhD**, whose expertise in the computational simulations of high speed flows and plasma controlled jets enabled him to receive external support from AFOSR, USAF/AFRL and Army Research office since he **joined OSU in September, 2010**.
- Recently, UD recruited **Zhenhua Jiang, PhD** to in 2013 after their first Research Scholar **Heinz Robota, PhD**, in (2009-2013) who assumed leadership of the US Air Force Assured Aerospace Fuels Research Facility (AAFRF) left to take a position with industry. Dr. Jiang's research focus is on the design, modeling and simulation of entire electrical systems with a goal of improved system reliability, efficiency and performance.
- The **UC Research Institute** was approved in May, 2012 by the UC Board of Trustees. This action enables more effective support to **Ohio's largest exporter, GE Aviation, and solidifies a \$50 million dollar investment partnership**. More than 50% of **GE Aviation's total revenues of \$17.5 billion** in 2010 were derived from international resources.

Examples of the outstanding achievements through the center:

1. UC team: Dr. Lee and Dr. Jeng **establishing FAA approved Fire Testing Center**.
2. UC team: Dr. Simonetti and Dr. Nagy establishing **Cincinnati NDE LTD, a corporate spinoff**.
3. UD ORS Dr. Robota **securing the largest recorded award from AFRL**.
4. Expansion of UC and GE Aviation partnership through **UC Research Institute**.

References:

1. "Ohio Aerospace, Aviation & Defense: Job Retention and Creation, Federal & State Policy Agenda," Ohio Aerospace & Aviation Council, 2012
2. "The NASA Glenn Research Center: An Economic Impact Study Fiscal Year 2010," Cleveland State University, April 2011 URL:
http://www.nasa.gov/centers/glenn/pdf/602763main_FINAL%20NASA%20REPORT%20508%20COMPLIANT%20NOVEMBER%202011.pdf