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:
