



AIAA

American Institute of Aeronautics and Astronautics Dayton-Cincinnati Section

Lunch 'n' Learn

Distributed Turboelectric Propulsion and Advanced Electrical Machines for High Efficiency Aircraft

Guest Speaker: Dr. Philippe Masson

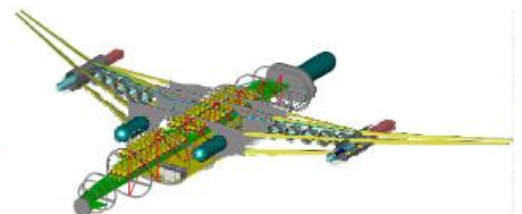
Advanced Magnet Lab - Florida

Friday, 15 April 2011



In this presentation, Dr. Masson will highlight his on-going research activities on distributed turboelectric propulsion for high fuel efficiency aircraft. This will focus on recent work where Dr. Masson and his associates at Empirical Systems Aerospace designed a prototype ~ + 70% higher fuel efficient aircraft for NASA, and a summary of 6 yrs work on developing ultra-high power density and efficient MW-class electrical motors and generators for NASA. Distributed turboelectric propulsion is a method that seeks to increase fuel efficiency ~ 60% by using wide-body high lift aircraft and reducing the aircraft boundary layer ingestion (BLI) drag by adding distribution fans along the back of wings and body. It also increases efficiency ~10% by maximizing the fan bypass ratio (FBR) to ~ 1.2 instead of 1.4 which traditional turbine-fan/engines are limited to. This is done by increasing the electrical machine weight which reduces flight efficiency ~ 3-4%. Electrical propulsion also offers variability for alternate power methods such as fuel-cell, or hybrid-battery-electric; e.g. Boeing SUGAR Volt.

Philippe Masson is a Senior Scientist for Advanced Magnet Lab. His research interests relate to advanced electrical machines for many applications including 10+ MW windmills, aerospace propulsion, and automotive hybrid-electric drives. Over the last eight years, he has worked on design of electrical machines and prototype N+3 aircraft for NASA.



Time

11:45 AM

Location

China Garden Buffet

112 Woodman Dr.

Dayton, OH 45431

Lunch

You will be able to purchase the buffet

