



Workshop on Advances in Aero-thermal Turbine Design and Analysis

Date: Monday, November 4th, 2013

Location: Lady Davies 640
Time: 08:30-15:45

The training activities will be open for all students, industry and academic staff. There is no cost for registration; however it is mandatory for all participants. Please reserve your spot until 24/10/2013 by contacting Dr. Beni Cukurel < beni@cukurel.org >.

Program

- ❖ 08:30 - 08:45 Registration and Introduction
- ❖ 08:45 - 10:00 Turbine Steady and Unsteady Aerodynamic Design (Prof. Paniagua)
 - Thermodynamic Cycle Analysis and Aerodynamic Design
 - Meanline Analysis and Velocity Triangles
 - 2D Aerodynamic Passage Design and Performance Considerations
 - Blade Stacking, Secondary Flows and Losses
- ❖ 10:00 - 10:15 Coffee Break
- ❖ 10:15 - 11:45 Aero-thermal Design of Hot Gas Path Components (Prof. Ekkad)
 - Turbine Thermal Issues
 - Design for Heat Transfer: Challenges / Opportunities
 - Existing Design Methodologies and Cooling Techniques
- ❖ 11:45 – 12:45 Break (Please make your own lunch arrangements)
- ❖ 12:45 – 13:30 Aero-thermal Design of Hot Gas Path Components (Prof. Ekkad) – Cont.
 - New Advanced Thermal Management Technologies
 - Manufacturing Issues and Material Selection
- ❖ 13:30 - 14:00 Discussion with Industry about AeroThermal Design Decisions
- ❖ 14:00 - 14:15 Coffee Break
- ❖ 14:15 - 15:45 Testing of Turbines in Engine Representative Conditions (Prof. Paniagua)
 - Hot/Cold & Continuous/Transient Test and Research Facilities
 - Measurement Techniques for Aerodynamic / Heat transfer Performance Assessment

Bio:

Dr. Guillermo Paniagua is Associate Professor at the von Karman Institute for Fluid Dynamics and also lectures at the Polytechnical school of Valencia. He has 16 years of experience on experimental and numerical aerothermal study of high-speed flows. His research areas comprise compact high speed turbo machinery, high speed propulsion and development of measurement techniques and data processing. Guillermo authored over a hundred technical papers, has been awarded four international prizes and a patent.

Dr. Srinath Ekkad is currently Commonwealth Professor of Aerospace Propulsion Systems; Director of Commonwealth Center for Aerospace Propulsion Systems (CCAPS); and Professor of Mechanical Engineering at Virginia Tech. He joined the Mechanical Engineering department at Virginia Tech in August 2007 after 9 years at LSU and 2 years at Rolls-Royce Allison Engine Company in Indianapolis. He has over 20 years of experience in heat transfer related research. He has published over 170 journal & conference articles, two patents and co-authored a book and a book chapter.