AHS San Francisco Bay Area Chapter
Technical Seminar

"Helicopter Noise Prediction and the Challenges of Noise Abatement"
By
Kenneth S. Brentner
Professor of Aerospace Engineering,
The Pennsylvania State University

Synopsis:

This seminar will provide a review of the key rotor noise source mechanisms, their fluid mechanics origins, and an assessment of the state-of-the-art of current noise prediction approaches. Rotorcraft noise is comprised of several components that originate from distinct physical mechanisms, which must generally be treated separately. Furthermore, these distinct noise mechanisms each have unique acoustic radiation patterns that are important to understand the resulting noise of the vehicle. These noise sources are generally well understood and the individual noise sources can be computed with a range of prediction approaches ranging from semi-empirical approaches to first principles methods. Noise prediction is essential for the design of new rotorcraft which will reduce the noise at the source. The challenge in using prediction tools for reducing rotor noise through both design and abatement is twofold: 1) choosing the level of fidelity that captures the important physics with enough accuracy; and 2) reducing both the learning curve to use the tools and the computational power required by the noise prediction system to make the prediction tools accessible to both aircraft designers, operators, and land use planners. This presentation will also briefly address the application of very fast (e.g., real-time) rotor source noise predictions for noise prediction in design and noise abatement planning.

When: 2pm, Thursday, June 23rd, 2016
Where: NASA Ames Research Center,
Building N-245 (Space Sciences Auditorium)
Light refreshments will be served

Biography:

Professor Brentner has been a faculty member for the past 15 years in the Department of Aerospace Engineering at The Pennsylvania State University. His research interests focus on rotorcraft and aircraft

aeroacoustics, computational aeroacoustics, fluid mechanics, computational fluid dynamics, and high performance computing. Professor Brentner and his research team has developed the rotorcraft noise prediction code PSU-WOPWOP which is able to predict noise from a rotorcraft with multiple rotors in both steady and maneuvering flight. In recent work, they have demonstrated that real-time prediction of rotorcraft noise with first principle methods is feasible. Prior to joining Penn State, Professor Brentner was a Senior Research Engineer at the NASA Langley Research Center for 17 years.

Professor Brentner has a B. S. in Aeronautical and Astronautical Engineering from Purdue University, a M.S. degree in Aeronautics from The George Washington University, JIAFS, and a Ph.D. degree in Acoustics from the University in Cambridge, England. He has authored or co-authored over 135 technical publications, and is the recipient of numerous awards. Professor Brentner is an Associate Fellow of the AIAA and a past Editor-in-Chief of the Journal of the American Helicopter Society.

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