

TODD R. QUACKENBUSH

Dr. Todd R. Quackenbush received his B.S.E. degree in Mechanical and Aerospace Engineering (Summa Cum Laude) from Princeton University in 1980, and his M.S. degree from Massachusetts Institute of Technology in 1981. He received his Ph.D from Princeton University in Mechanical and Aerospace Engineering in October 1986, with a doctoral thesis on advanced computational methods for helicopter aerodynamics. He has been the recipient of a National Science Foundation Graduate Fellowship, three American Helicopter Society Vertical Flight Foundation Scholarships, and the Robert Lichten Award (1983) from the American Helicopter Society (AHS) for the outstanding technical paper by a new author. He is a Senior Member of AIAA, a member of AHS, and served as Associate Editor of the AHS Journal 1994-1997. He twice served on the AHS Aerodynamics Committee, first in 1991-93 and again in 2002-2004. He has coauthored technical papers honored as Best Session Paper at the AHS Annual Forum in 1997, 2000, 2004, 2008 and 2010.

Dr. Quackenbush joined Continuum Dynamics, Inc. (CDI) in October 1986, and is currently a Senior Associate. His graduate research included studies of novel methods for stall/flutter suppression using individual blade control (IBC), as well as development of improved methods for free wake analysis of rotors in low speed flight. While at CDI, Dr. Quackenbush has performed research centering on rotorcraft aerodynamic analysis and design, featuring work on hover performance, computation of vibratory airloads and acoustics, interactional aerodynamics, rotor design optimization, development of fast aerodynamics methods for helicopter simulation, and application of advanced CFD methods for ship airwake analysis. In addition, his work on aerodynamic design of real world aircraft over the past decade includes a key role in analysis of the Carson Helicopters S-61 Re-blading Project, which as led to dramatic improvements in the performance of aircraft serving the U.S. Marine Corps HMX-1 squadron as well as similar Royal Navy S-61s. He also led CDI's effort in 2002 through 2003 in support of the design of the Schiebel S100 Unmanned Air Vehicle, a rotary wing UAV now in service with several military services worldwide. He is the author of numerous papers and reports on these subjects, with a selection presented below. He has also coauthored three U.S. Patents, on aircraft wake alleviation, optimum design of tiltrotors, and advanced flow control devices for lift enhancement on wings.

Selected Publications

1. "Testing of a Stall Flutter Suppression System for Helicopters Using Individual Blade Control," *Journal of the American Helicopter Society*, July 1984.
2. "Optimization of Rotor Performance in Hover Using a Free Wake Analysis," *Journal of Aircraft*, Vol. 28, (3), March 1991 (with A.E. Kaufman and D.A. Wachspress).
3. "Rotor Aerodynamic Design Optimization in Hover and Axial Flight Using Free Wake Methods," American Helicopter Society Specialists' Meeting on Multidisciplinary Optimization, April 1993 (with A.H. Boschitsch and D.A. Wachspress).
4. "Dynamic Interface Simulation Using a Coupled Vortex Based Ship Airwake and Rotor Wake Model", American Helicopter Society 58th Annual Forum, Montreal Canada May 2002 (with R.M, McKillip, Jr., A. H. Boschitsch, J.D. Keller, and D.A. Wachspress).

5. "Aeromechanical Analysis Tools for Design and Simulation of VTOL UAV Systems," American Helicopter Society 60th Annual Forum, Baltimore, MD, June 2004 (with D.A. Wachspres and A.H. Boschitsch).
6. "Analytical and Experimental Micro Rotorcraft Design Studies," AHS International Specialists Meeting on Unmanned Rotorcraft, Chandler, AZ, January 2005, (with D.A. Wachspres , A.H. Boschitsch, and R.M. McKillip, Jr.).
7. "Tiltrotor/Tiltwing Performance Enhancement via Active On-Blade Flaps" American Helicopter Society 66th Annual Forum, Phoenix, AZ May 2010 (with D.A. Wachspres R.M. McKillip, Jr. and C.L. Solomon).