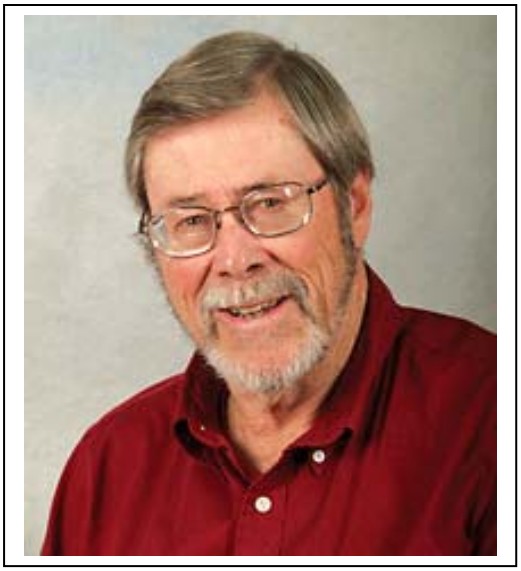
Roger EA Arndt



Profile

Dr. Arndt is a Professor Emeritus, University of Minnesota. His major research interests are in the area of fluid mechanics with emphasis on turbulent shear flows and vortex flows; cavitation; aeroacoustics including jet noise and turbomachinery noise; alternate energy with an emphasis on hydropower and wind turbine technology; and aeration technology with a view towards developing cost effective environmental remediation techniques. His research experience includes cavitation in pumps, turbines and marine propellers; supercavitation, investigation of noise radiation mechanisms in turbulent shear flows, bubbly flows and helicopter and jet noise. The principles of bubble formation in turbulent shear flows are being applied to the design of more efficient aeration equipment and ventilation of supercavitating vehicles. His experience in the design of research facilities for cavitation and hydroacoustics has lead to the design responsibility for three major hydroacoustic research facilities in the US, Germany and Korea, one of which is the World's largest water tunnel. His industrial experience includes underwater rocket propulsion, high-speed marine vehicles and waterjet propulsion. He served as Director of the St. Anthony Falls Hydraulic Laboratory for 16 years and as program Manager of the Fluid Mechanics and Hydraulics Program at the National Science Foundation for 3 years. Dr. Arndt continues his research at the St. Anthony Falls Laboratory of the University of Minnesota where he is working on wind turbine aerodynamics and supercavitation. He is a Life Fellow of ASME, Fellow of the American Physical Society, and Associate Fellow of AIAA.

Education

BCE	City College of New York
SM	Massachusetts Institute of Technology
Ph.D.	Massachusetts Institute of Technology

Honors And Awards

Charles W. Britzius Distinguished Engineer (2002)
Japan Society for the Promotion of Science Fellowship (2001)
ASME Fluids Engineering Award (1993)
Alexander von Humboldt Senior Scientist Award (1989, 1994)
Lorenz G. Straub Award (1968)
George Taylor Teaching Award (1978)
AIAA Outstanding Faculty Advisor Award (4 awards 1971-1974)
First Theodor Ranov Distinguished Lecturer (1978)
Fellow, American Physical Society
Life Fellow, American Society of Mechanical Engineers
Associate Fellow, American Institute of Aeronautics and Astronautics

Consulting Activities

3M Company; AI Signal Research (NASA-Huntsville); Army Air Mobility Research Laboratory, Ames Directorate; Atomix; Australian Maritime Engineering CRC Ltd; Babcock and Wilcox Company; Bell Aerospace Company; Boeing Corp.; Bolt, Beranek and Newman, Inc.; CH2M-Hill (Office of Naval Research); Dorsey and Whitney LLP; Graco, Henkel Corporation; Honeywell Corporation; Indeco, Inc.; Illinois Institute of Technology Research Institute; Maritime and Ocean Engineering Research Institute, Korea, Medtronics Inc.; Metals Selling Corporation; Netherlands Ship Model Basin; Northrup-Grumman, Office of Naval Research-London; Richards of Rockford; SciMed, Inc.; St. Jude Corp.; Thermal Systems, Inc.; United Nations; US Bureau of Reclamation; Warzyn Engineering; Wylie Laboratories; White & Williams LLP; Yarway Corporation

Topics include: Cavitation in Fluid Machinery, High Performance Marine Vehicles, and Hydraulic Structures, Diffusion Processes in an Artificial Lung, Coating Processes, Viscoelastic Flow Phenomena in the Manufacture of Woven Products, Performance Improvement of a Wide Range of Hydraulic Machinery in the Pollution Control, Paper Making and Hydropower Fields as well as in Rocket Engines, Hydroacoustic and Aeroacoustics Problems, Medical devices and Forensic Analysis

Selected Publications (Over 200 Total)

1. Balas, G.J., Bokor, J.,Vanek, B. and Arndt R.E.A., ``Control of high-speed underwater vehicles," *Control of Uncertain Systems: Modeling, Approximation, and Design*, B. Francis, M. Smith and J. Willems Editors, Springer-Verlag, Berlin 2006
2. Arndt, R.E.A., Kawakami, D. and Wosnik, M. "Measurements In Cavitating Flows" *Handbook of Fluid Mechanics Measurements*, Springer-Verlag, Berlin, December 2007
3. *Hydraulic Modeling Concepts and Practice* ASCE Manuals and Reports on Engineering Practice No. 97, with (R. Ettema, Chair and Editor, P. Roberts and T.Wahl), 2000
4. Arndt, R.E.A "Cavitation in Vortical Flows" *Annual Review of Fluid Mechanics*, (JL Lumley, SH Davis and HL Reed, Eds.) Vol 34, 2002 pp 143-175
5. Arndt, R.E.A "Hydraulic Turbines" Chapt. 8.4, *Handbook of Mechanical Engineering*, F. Kreith, ed. CRC Press, 2004
6. "Hydraulic Turbines," Section 73 in The *Engineering Handbook*, R. Dorf, ed., CRC Press, 2004 pp. 73-1 - 73-18
7. Kopriva, JE, Amromin, EL, Arndt REA, Wosnik, M and Kovinskaya, S, "High Performance partially cavitating hydrofoils" *Journal of Ship Research* September 2007
8. Kopriva, JE, Arndt REA, and Amromin, EL, "Improvement of Hydrofoil Performance by Partial Ventilated Cavitation in Steady Flow and Periodic Gusts" *Journal of Fluids Engineering*,.**130**, No.3 March 2008
9. Kawakami, DT, Fujii, A, Tsujimoto, Y and Arndt, REA , An assessment of the influence of environmental factors on cavitation instabilities, *J. of Fluids Engineering*, **130**, No.3 March 2008
10. Arndt, REA., Hambleton, WT, Kawakami, E and E.L. Amromin, "Creation and maintenance of cavities under horizontal surfaces in steady and gust flows" *J. Fluids Engineering* **131,** November 2009, 111301-1-9
11. Arndt, REA., Hambleton, WT, and E.L. Amromin, " Cavitation inception in the wake of a jet-driven body" *J. Fluids Engineering* **131,** November 2009, 111302-1-8