Hooshang Heshmat, Ph.D.
Co-Founder and President/Technical Director
Mohawk Innovative Technology, Inc. (Albany, NY)
Recipient – 2002

For his patent "High Load Capacity Compliant Foil Hydrodynamic Journal Bearings," which led to outstanding technical innovations including oil-free aircraft engines and non-contacting foil seals. With this patent, the design complexity of the foil bearing spring support structure is dramatically enhanced with angular, axial, and radial stiffness tailoring including the addition of multiple flat stiffener foils that compensate for foil wear without a degradation in bearing performance.

Dr. Heshmat is co-founder and president/technical director of Mohawk Innovative Technology, Inc. (Albany, NY), an applied research and product development company specializing in oil-free turbomachinery, gas turbine engines, gas compressors, biotechnology, nanotechnology, bearings, seals, active and passive dampers, and piston rings, including fluid film, dry lubricant and magnetic systems.

A world leader in developing foil air bearings for high-speed rotating systems, Heshmat is responsible for advances in this area including analytical and experimental research for bearing/seal design and application. His work includes the application of compliant foil bearings to high-speed turbomachinery, including advanced turbine engines, automotive gas turbines, air-cycle machinery for aircraft, turbochargers, turboexpanders, cryocoolers, pumps, compressors, and refrigerant systems. He has investigated the interaction of hybrid bearing designs and magnetic bearings for artificial heart pumps, have enabled new technologies which undoubtedly touch the lives of many.

Heshmat developed the "quasi-hydrodynamic lubrication with dry triboparticulates" principle, a friction and wear control theory for application to extreme environments, after conducting experimental tests characterizing fundamental aspects of power lubrication. He investigated the practical application of this new technology on high temperature dampers and journal bearings for high-speed, limited-life missile engines; vacuum environments; and damping of structural members, including turbine blades.

Among many other projects, Heshmat has found time to author more than 110 papers; co-author the chapter on Principles of Bearing Design for the Compressor Handbook (McGraw-Hill, 2001); and co-write a book on the tribology of interface layers, which is scheduled for publication in 2004 by Marcel Dekker.

A Fellow of ASME, Heshmat is also a Fellow of the Society of Tribologist and Lubrication Engineers (STLE). He is a member of the ASME Tribology Division's Executive Committee, and was chair of the 1994 Joint ASME/STLE Tribology Conference and the Society's Research Committee on Tribology (1999-2000). He was an invited speaker for the January

1997 ASME satellite broadcast on the Selection, Design and Performance of Bearings and Seals.

He has received the ASME Burt L. Newkirk Award (1984), STLE's Al Sonntag Award (1996), Captain Alfred E. Hunt Award (1993) and Wilbur Deutsch Memorial Award (1983); and Mechanical Technology Incorporated's Technical Creativity Award (1990).

Heshmat received his bachelor's degree in mechanical engineering from The Pennsylvania State University, University Park. He earned his master's and doctorate in mechanical engineering at Rensselaer Polytechnic Institute (Troy, NY) in 1979 and 1988, respectively. He holds 25 U.S. patents.