

Nicholas E. Earnhart, Ph.D.

Professional Profile

Dr. Earnhart specializes in dynamics, vibrations, acoustics, hydraulics, and noise control. His graduate research theoretically and experimentally investigated the behavior and performance of noise control devices, such as Helmholtz resonators, using a compliant composite material for hydraulic systems. Dr. Earnhart has experience in areas such as:

- Experimental methods, data acquisition and signal processing
- Statics, dynamics, and classical control systems
- Analytical modeling of noise control devices and sound transmission loss
- Acoustic loudness, sound power, and sound absorption testing
- Hydraulic systems and components
- AC and DC electric motor design, production, and failure analysis

Prior to joining InSciTech, Dr. Earnhart was an engineering intern with Rolls Royce North America and an engineering co-op with GE Motors and Controls.

Academic Credentials and Professional Honors

Ph.D., Mechanical Engineering, Georgia Institute of Technology, 2012

M.S., Mechanical Engineering, Georgia Institute of Technology, 2009

B.S., Mechanical Engineering, Purdue University, 2007

Tau Beta Pi, Engineering Honor Society

Pi Tau Sigma, Mechanical Engineering Honor Society

Member, American Society of Mechanical Engineers (ASME)

Member, Acoustical Society of America (ASA)

Member, Institute of Noise Control Engineers (INCE)

Achievement Rewards for College Scientists (ARCS) Fellowship, 2011-2012

Georgia Institute of Technology President's Fellowship, 2007-2011

Distinguished Paper Award, 7th FPNI PhD Symposium, 2012

Leo Beranek Student Medal for Excellence in the Study of Noise Control, 2012

Best Poster, Georgia Tech ASA Poster Competition, 2010

Best Poster, North Carolina ASA Poster Competition, 2010

Archival Publications

Earnhart, N.E. "Modeling and validation of a microstructured composite lining for noise control devices for fluid power systems." PhD Thesis. 2012.

Earnhart, N.E. and Cunefare, K.A. "Effects of temperature and pressure on a composite lining for noise control devices for fluid power systems." International Journal of Fluid Power. Manuscript in review.

Marek, K.A., Earnhart, N.E., and Cunefare, K.A. "Analytical model for a cylindrical in-line hydraulic silencer with a solid compressible liner." Journal of Sound and Vibration. Manuscript in review.

Earnhart, N.E. and Cunefare, K.A. "Compact Helmholtz resonators for fluid power systems." International Journal of Fluid Power. Vol. 13 (2012) No. 1, pp. 41-50.

Conference Publications

Earnhart, N.E., Marek, K.A., and Cunefare, K.A.. "The role of compliance in devices for reduction of fluid-borne noise. Proceedings of the 7th FPNI PhD Symposium on Fluid Power, Reggio Emilia, Italy, 27-29 June 2012. CD Proceedings.

Marek, K.A., Earnhart, N.E., and Cunefare, K.A. "Compliant-wall methods for fluid-borne noise reduction." Proceedings of the 162nd Meeting of the Acoustical Society of America, San Diego, CA, 31 October – 4 November 2011.

Cunefare, K.A., Earnhart, N.E., Walsh, M., Erdirisinghe, R., Marek, K.A. "Noise control devices for fluid systems." Proceedings of NoiseCon 2011, July 25-27, Portland, OR, 2011. CD Proceedings.

Earnhart, N.E. Marek, K.A. and Cunefare, K.A. "Passive Noise Control in Fluid Power." 52nd National Conference on Fluid Power, Las Vegas NV, March 2011. CD Proceedings.

Earnhart, N.E., Marek, K.A. and Cunefare, K.A. "Novel, Compact Devices for Reducing Fluid-Borne Noise." Proceedings of 2011 SAE Noise and Vibration Conference, Paper No. 11NVC-0138, Grand Rapids, MI May 2011. CD Proceedings.

Earnhart, N.E., Marek, K.A. and Cunefare, K.A. "Modeling and validation of an in-line hydraulic silencer." Proceedings of the 6th FPNI – PhD Symposium, West Lafayette IN 2010. Vol. 1, p. 101-113. CD Proceedings.

Conference Publications (Continued)

Earnhart, N.E., Marek, K.A. and Cunefare, K.A. "Evaluation of hydraulic silencers." Proceedings of NoiseCon 2010, joint with the 159th Meeting of the Acoustical Society of America, Baltimore, MD, 19-23 April, 2010. CD Proceedings.

Marek, K.A., Earnhart, N.E. and Cunefare, K.A. "Model for the design of a hydraulic silencer with a dispersive liner." Proceedings of NoiseCon 2010, joint with the 159th Meeting of the Acoustical Society of America, Baltimore, MD, 19-23 April, 2010. CD Proceedings.

Earnhart, N.E., Marek, K.A. and Cunefare, K.A. "Evaluation of hydraulic silencers." Proceedings of the 158th Meeting of the Acoustical Society of America, San Antonio, TX, 26-30 October 2009.

Marek, K.A., Earnhart, N.E., Cunefare, K.A. "Numerical model for a hydraulic in-line silencer with dispersive lining." Proceedings of the 158th Meeting of the Acoustical Society of America, San Antonio, TX, 26-30 October 2009.

Other Publications

Earnhart, N.E. and Cunefare, K.A. "Cancelling noise at its source." Hydraulics & Pneumatics Magazine, August 2011.