

Exponent® Engineering & Scientific Consulting

Matt Edwards, Ph.D., P.E.

Engineer | Mechanical Engineering Atlanta +1-678-412-4843 | mredwards@exponent.com

Professional Profile

Dr. Edwards specializes in acoustics & vibration analysis. He has expertise performing acoustic and vibration tests in accordance with national and international standards to evaluate equipment and help clients achieve compliance and meet regulatory requirements. He has experience using a variety of specialized test equipment, such as microphone arrays, accelerometers, and force transducers, to analyze complex problems and determine the root cause of unwanted noise and vibration (NVH). He has applied his expertise to noise and vibration control of earth moving equipment, gas generators, rotating machinery, air conditioners, trolleys, and other indoor rolling items.

Dr. Edwards has experience using advanced modeling techniques, such as the finite element method (FEM), transfer matrix method (TMM), and Lattice Boltzmann Method (LBM), to determine how airborne and structure-borne vibro-acoustic energy transfers through complex geometry and multilayer structures. Dr. Edwards also possesses knowledge in the characterization and simulation of acoustic materials such as porous foams, fibrous insulation, woven materials, and perforated plates. He has experience in both sample testing in order to identify the acoustic properties of a given material, as well as numerical simulation to determine a material's performance in response to a variety of vibro-acoustic excitations.

Prior to joining Exponent, Dr. Edwards spent many years living and working internationally in France and the Netherlands; encountering a variety of engineering challenges and learning to navigate complex regulatory environments. He has a deep understanding of and appreciation for different cultures, business practices, and ways of approaching problem-solving, allowing him to communicate effectively with people from diverse cultural backgrounds. Dr. Edwards is able to offer clients a unique perspective and approach to engineering solutions which draws on his experiences abroad.

Academic Credentials & Professional Honors

- Ph.D., Acoustics, National Institute of Applied Sci of Lyon, 2020
- M.S., Mechanical Engineering, Georgia Institute of Technology, 2015
- B.S., Mechanical Engineering, Georgia Institute of Technology, 2013

Licenses and Certifications

Professional Engineer Mechanical, North Carolina, #057977

Certified Vibration Analyst (CVA), Category II per ISO 18436-2

Academic Appointments

Lab supervisor, acoustics, ENTPE, 2021

Prior Experience

Research engineer, Matelys Research Lab, 2017-2023

Senior associate engineer, Caterpillar Inc, 2015-2017

Professional Affiliations

Acoustical Society of America

Institute of Noise Control Engineering

Vibration Institute

American Society of Mechanical Engineers

Languages

French

Publications

M. Edwards, R. Gonzalez Diaz, N. Dallaji, L. Jaouen, F. Chevillotte, and N. Totaro, "Preliminary rolling noise measurements toward the design of a standard rolling noise device," Building Acoustics, p. 1351010X2110192, May 2021.

M. Edwards, F. Chevillotte, F.-X. Bécot, L. Jaouen, and N. Totaro, "Development of a Prediction Model for Indoor Rolling Noise," Journal of Sound and Vibration, p. 116199, May 2021.

M. Edwards, F. Chevillotte, F.-X. Bécot, L. Jaouen, and N. Totaro, "Polynomial relations for cylindrical wheel stiffness characterization for use in a rolling noise prediction model," Acta Acust., vol. 4, no. 2, p. 4, 2020.

Presentations

M. Edwards, R. Gonzalez Diaz, and N. Dallaji, "We Have a Standard Tapping Machine: What About a Standard Rolling Machine?," presented at Forum Acusticum, Lyon, France, Dec. 2020, pp. 2681–2688.

M. Edwards, F. Chevillotte, F.-X. Bécot, L. Jaouen, and N. Totaro, "Development of an Improved Prediction Model for Indoor Rolling Noise," presented at Forum Acusticum, Lyon, France, Dec. 2020, pp. 3271–3278.

M. Edwards, F. Chevillotte, F.-X. Bécot, L. Jaouen, and N. Totaro, "Parametric Study of the Estimation of Indoor Trolley Wheel Stiffness for Use in a Rolling Noise Prediction Model," presented at ICA 2019, Aachen, Germany, 2019, pp. 514–519.

M. Edwards, F. Chevillotte, L. Jaouen, F.-X. Bécot, and N. Totaro, "Rolling Noise Modeling in Buildings," presented Internoise 2018, Chicago, IL USA, Aug. 2018.

Peer Reviews

Applied Acoustics