



Exponent[®]
Engineering & Scientific Consulting

In Young Hur, Ph.D., P.E., CFEI

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Professional Profile

Dr. Hur specializes in the engineering analysis of equipment and processes involving fluid dynamics, thermodynamics, rotor-dynamics and mechanical vibrations. He applies his expertise in the analysis of gas turbine engines, motor vehicle components, and other fluid and heat transfer equipment.

Dr. Hur is a member of the American Society of Mechanical Engineers (ASME), the National Association of Fire Investigators (NAFI) and ASTM International.

Dr. Hur has performed thermal-mechanical characterization and failure testing involving various consumer products including battery systems. Dr. Hur has performed computational fluid dynamics (CFD) simulations using STAR-CCM+ involving consumer electronics to evaluate their heat transfer characteristics. Dr. Hur has also investigated failures of gas turbines and turbomachinery for power generation and Oil and Gas facilities including LNG terminals.

Prior to joining Exponent, Dr. Hur was a Ph.D. candidate in the Gas Turbine Laboratory at the Massachusetts Institute of Technology. At MIT, he developed a novel forced-response system identification methodology for measuring rotordynamic damping in a full gas turbine aero-engine. During this process he developed a reduced-order modeling framework that captures the full engine dynamics to simulate realistic conditions and characterized the approach using statistical analysis. He devised and proposed guidelines for designing and executing forced-response experiments for aero-engine rotors. He also designed and commissioned an experimental facility for testing a commercial turbofan engine. Dr. Hur's experience also includes wind tunnel testing and experimental analysis of heat sinks for turbo-electric aircraft application.

Prior to graduate school, Dr. Hur was a research engineer at STI C&D in South Korea, where he developed optimal flow patterns in molten metal die-casting of various automobile components using computational fluid dynamics (CFD). He also has experience in analyzing and improving molten steel transport and discharge processes.

Academic Credentials & Professional Honors

Ph.D., Aeronautical and Astronautical Engineering, Massachusetts Institute of Technology (MIT), 2022

B.A., Aerospace Engineering, University of Cambridge, England, 2013

M.Eng., Aerospace Engineering, University of Cambridge, England, 2013

Licenses and Certifications

Professional Engineer Mechanical, California, #41653

40-Hour Hazardous Waste Operation and Emergency Response Certification (HAZWOPER)

Certified Fire and Explosion Investigator (CFEI)

Prior Experience

Research Engineer, STI C&D, 2013-2016

Professional Affiliations

American Society of Mechanical Engineers (ASME)

ASTM International

National Association of Fire Investigators (NAFI)

Languages

Korean

Publications

Hur, I., and Spakovszky, Z. S. (September 2, 2022). "Forced Response System Identification of Full Aero-Engine Rotordynamic Systems for Prognostics and Diagnostics." ASME. J. Eng. Gas Turbines Power. October 2022; 144(10): 101008.

Hur, I., and Spakovszky, Z. S. (September 2, 2022). "Forced Response System Identification of Full Aero-Engine Rotordynamic Systems for Prognostics and Diagnostics." ASME. J. Eng. Gas Turbines Power. October 2022; 144(10): 101008.

Hur, I., and Spakovszky, Z. S. (September 2, 2022). "Forced Response System Identification of Full Aero-Engine Rotordynamic Systems for Prognostics and Diagnostics." ASME. J. Eng. Gas Turbines Power. October 2022; 144(10): 101008.

Presentations

Hur I, Spakovszky ZS. Forced Response System Identification of Full Aero-Engine Rotordynamic Systems for Prognostics and Diagnostics. GT2022-84058. ASME 2022 Turbo Expo, Rotterdam, The Netherlands, 2022.