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Engineering & Scientific Consulting

Hamid Sanavandi, Ph.D.

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Professional Profile

Dr. Sanavandi's expertise is in mechanical engineering focusing on heat transfer, fluid mechanics, and experimental design. He applies his knowledge to complex engineering challenges across industries, from electric vehicle (EV) and fuel cell electric vehicle (FCEV) product development to thermal management systems and cryogenic applications. His technical background is complemented by EV and FCEV integration; cryogenic and high current applications safety assessment; development and testing of HVAC, refrigeration, and cooling systems; cryogenic liquids and LNG; vacuum; laser and optics; and flow visualization.

Dr. Sanavandi received his PhD in Mechanical Engineering from Florida State University where he focused on cryogenic fluids experimental flow visualization. Conducting research at the National High Magnetic Field laboratory, he designed, built setup and executed experiments to visualize and measure the velocity profile in high turbulent superfluid pipe flow. Additionally, he conducted numerical and experimental study on levitation of diamagnetic matter such as water and liquid helium. This work has been published and protected in a US national patent with his name.

Following his graduate studies, Dr. Sanavandi worked as a Lead Thermal Engineer at Nikola Corporation developing, testing, and integrating EV and FCEVs. In this role, he led several product development and testing projects in collaboration with cross-functional teams at the organization level.

Academic Credentials & Professional Honors

Ph.D., Mechanical Engineering, Florida State University, 2022

M.S., Mechanical Engineering, K.N. Toosi University of Technology, Iran, 2015

B.S., Mechanical Engineering, University of Tehran, 2012

Prior Experience

Lead Thermal Engineer, Nikola Corporation, 2024-2025

Senior Thermal Systems Development and Testing, Nikola Corporation, 2022-2024

Graduate Research Assistant, National High Magnetic Field laboratory, 2016-2022

Patents

US Patent App, 18/055,682. Magnetic levitation based low-gravity system, Florida State University Research Foundation Inc., 2023 (Guo W, Sanavandi H).

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Publications

Sanavandi H, Ziabasharhagh M. Design and comprehensive optimization of C3MR liquefaction natural gas cycle by considering operational constraints. Journal of Natural Gas Science and Engineering 2016; 29:176-187.

Sanavandi H, Mafi M, Ziabasharhagh M. Normalized sensitivity analysis of LNG processes-case studies: cascade and single mixed refrigerant systems. Energy 2019; 188:116068.

Sanavandi H, Bao S, Zhang Y, Keijzer R, Guo W, Cattafesta LN. A cryogenic-helium pipe flow facility with unique double-line molecular tagging velocimetry capability. Review of Scientific Instruments 2020; 91(5).

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Sanavandi H, Hulse M, Bao S, Tang Y, Guo W. Boiling and cavitation caused by transient heat transfer in superfluid helium-4. Physical Review B 2022; 106(5):054501.

Presentations

Sanavandi H, Bao S, Zhang Y, Guo W, Cattafesta L. Molecular tagging velocimetry study of high Reynolds number turbulent pipe flow in cryogenic helium. In APS Division of Fluid Dynamics Meeting Abstracts (pp. G11-001), November 2019.

Hulse M, Sanavandi H, Zhang Y, Cattafesta L, Guo W. Visualization study of the law of the wall in superfluid helium-4. Bulletin of the American Physical Society, 2023.

Project Experience

Power Line Induction and Ignition: Experimental study and analysis of ignition probability due to fallen power lines.

Battery Abuse Test and Oxygen Consumption Calorimetry: Thermal runaway and heat release rate measurements.

Battery Electric and Fuel Cell Electric Semi-trucks Product Launch: A full scale semi-truck product launch from beta, to gamma and to production series in less than 3 years.