

Ahmad Vassel-Be-Hagh (Vasselbehagh)

Associate Professor of Mechanical Engineering,
University of South Florida¹
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EDUCATION

Postdoc	Ocean & Atmosphere Eng.	University of Delaware	US	9/2015-8/2017
Ph.D.	Mechanical Engineering	University of Windsor	Canada	9/2011-8/2015
M.Sc.	Mechanical Engineering	Ferdowsi University	Iran	9/2008-8/2011
B.Sc.	Mechanical Engineering	Ferdowsi University	Iran	9/2004-8/2008

PROFESSIONAL APPOINTMENTS

12/2023-present	Associate Professor	Mechanical Engineering	University of South Florida
8/2023–12/2023	Associate Professor	Mechanical Engineering	Tennessee Tech University
9/2017–8/2023	Assistant Professor	Mechanical Engineering	Tennessee Tech University
1/2022–12/2022	Adjunct ²	Mechanical Engineering	East Tennessee State Univ.
8/2019–5/2020	Adjunct	Mechanical Engineering	East Tennessee State Univ.

GRANTS AWARDED*Current*

1. Principal Investigator, “Deicing Condensers using a Robot-Operated CO₂ Lasers,” 01/2024-12/2024, Tennessee Valley Authorities (TVA), \$258,450.
2. Co-PI (PI: Rory Roberts, co-PIs: Bruce Jo, Michael Sumption, John Hull, Don Cao, Mohammed Akbar, John Kim, Roland Dixon, and Mike Ikeda), “CarbonLess Electric Aviation (CLEAN),” 05/2023-04/2027, NASA, \$7,999,452 (4.32% share)
3. Principal Investigator, “NSF CAREER: CAS-Climate: Understanding Thermal Transport Processes in Atmospheric Boundary Layer with Utility-Scale Solar Photovoltaic Plants,” 07/2022-06/2027, National Science Foundation (NSF), \$500,493
4. Senior Personnel (PI: Holly Stretz), “Fiber Reactor Extraction Simulations,” 08/2022-07/2024, Visionary Fiber Technologies, \$75,051 (6% share)
5. Senior Personnel (PI: Pinggen Chen, co-PIs: Joseph Ojo, Jie Cui, Steven Anton, and Nan Chen), “Second-life Battery in Mobile E.V. Charging Application for Rural Transportation (SMART),” 05/2023-04/2027, U.S. Department of Energy (DOE), \$4,531,642 (3% share)

Past

6. Principal Investigator (co-PI: Charles Van Neste), “High-Precision Heat Delivery to Partly Melt Inaccessible Ice at a Nuclear Plant’s Condenser,” 01/2023-10/2023, Tennessee Valley Authorities (TVA), \$277,975.

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Tampa, FL 33620, USA

² Taught online courses simultaneously with my Tennessee Tech lectures

7. Principal Investigator (co-PI: Satish Mahajan), “Thermal Treatment of Nuclear Plants’ Ice Condensers using CO₂ Lasers,” 01/2022-12/2022, TVA, \$250,000.
8. Principal Investigator, “Developing an Experimental Setup to Demonstrate the First and Second Laws of Thermodynamics,” 06/2021-05/2022, Tennessee Tech’s College of Engineering, \$11,000.
9. Principal Investigator, “Faculty Research Award: Understanding and Modeling of Thermal Transport Processes within Near-Ground Atmosphere in the Presence of Utility-Scale Solar,” 06/2020-06/2021, Tennessee Tech University’s Research Office, \$10,000.
10. Principal Investigator (co-PI: Satish Mahajan), “Development of a Laser-Based System for the Maintenance of Ice Condensers,” 09/2020-12/2021, TVA, \$185,000.
11. Co-PI (PI: Cristina Archer), “Advanced Wake Loss Modeling for Large Wind Farms with Variable Wind Speed and Direction,” 2019-2020, U.S. Department of Interior, \$186,244 (11% share)
12. Principal Investigator, “Investigating the Impact of Wind Turbines on Surface Fluxes using Computational Fluid Dynamics,” 2019-2020, HKF Technologies LLC, \$10,619.
13. Principal Investigator, “Investigating the Impact of Wind Turbines on Surface Fluxes using Computational Fluid Dynamics,” 2016, First State Marine Wind LLC, \$45,076.

SELECTED AWARDS, HONORS

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| 2023 | Wings Up 100, Tennessee Tech University |
| 2023 | Brown-Henderson Outstanding Faculty Award, Tennessee Tech University |
| 2022 | Wings Up 100, Tennessee Tech University |
| 2021 | ASME Distinguished Researcher, ASME Student Chapter, Tennessee Tech University |
| 2021 | Wings Up 100, Tennessee Tech University |
| 2020 | ASME Outstanding Advisor, ASME Student Chapter, Tennessee Tech University |
| 2016 | T&E Theorist, Turbulence and Energy Laboratory, University of Windsor |
| 2015 | Mitacs-Accelerate Internship Award (\$21,000), Mitacs, Canada |
| 2015 | Innovative Researcher, Turbulence and Energy Laboratory, University of Windsor |
| 2014 | Prolific Scientific Writer, Turbulence and Energy Laboratory, University of Windsor |
| 2013 | Graduate Student Award, 24 th Canadian Congress of Applied Mechanics, Saskatoon, Canada |
| 2011–15 | Ontario Trillium Scholarship (\$160,000), Government of Ontario, Canada |
| 2011 | Doctoral Entrance Scholarship (\$6,000), University of Windsor, Canada |
| 2009 | Outstanding Mechanical Engineering Researcher, Ferdowsi University Research Foundation |

ACADEMIC AREAS OF SPECIALIZATION

Teaching

University of South Florida
Propulsion (Spring 2024)

Tennessee Technological University

Turbulence (Fall 2021)

Atmospheric Fluid Mechanics (Fall 2022 and Spring 2021)

Fluid Mechanics (Spring 2022, Fall 2021, Fall 2020, Spring 2020, Spring 2019, Fall 2018 (two sections), Spring 2018, Fall 2017)

Intermediate Fluid Mechanics (Fall 2020)

Aerodynamics of Damaged Wings (Spring 2020 and Fall 2021)

Modeling Atmospheric Flows (Spring 2023)

Atmospheric Measurements (Fall 2022)

Thermodynamics I (Spring 2023, Fall 2022, Spring 2021, Spring 2020, and Fall 2019)

Conduction Heat Transfer (Spring 2022 and Fall 2019)

Phase Change Flows (Spring 2023 and Spring 2021)

Integrated Storage Technologies (Fall 2019)

East Tennessee State University

Thermodynamics I (Fall 2022 and Fall 2019)

Fluid Mechanics (Spring 2022 and Spring 2020)

Research

Computational and Experimental Thermal Transport Process, Computational Fluid Dynamics, Atmospheric Fluid Mechanics, Wind Energy, Aerodynamics

PUBLICATIONS

(Vasel-Be-Hagh's graduate and undergraduate students are identified with an asterisk* and a dagger†, respectively. The corresponding author's name is underlined.)

Thesis/Dissertation

David S.-K. Ting and Rupp Carriveau (Advisors). "Hydrodynamics of an Underwater Compressed Air Energy Storage Plant," Doctoral dissertation, University of Windsor (Canada), May 2015.

Javad Abolfazli Esfahani (Advisor). "Lattice Boltzmann Simulation of Flow over Circular Bluff Bodies," Master of Science thesis, Ferdowsi University (Iran), August 2011.

Books

1. Vasel-Be-Hagh, A., & Ting, D. (Editors). 2021. “Utility-scale Wind Turbines and Wind Farms,” The Institution of Engineering and Technology (IET), London, UK. [10.1049/PBPO171E](https://doi.org/10.1049/PBPO171E)
2. Vasel-Be-Hagh, A., & Ting, D. (Editors). 2020. “Environmental Management of Air, Water, Agriculture, and Energy,” Routledge, Taylor and Francis, FL, USA. <https://doi.org/10.1201/9780429196607>
3. Vasel-Be-Hagh, A., & Ting, D. (Editors). 2019. “Advances in Sustainable Energy,” Springer, Switzerland. <https://doi.org/10.1007/978-3-030-05636-0>

Published Chapters

4. Hosseini, A., Cannon, D.T., Vasel-Be-Hagh, A. (2023). Chapter 11: Real-Time Optimization of Yaw Angle and Tip-Speed Ratio for a Six-Turbine Plant of NREL 5-MW Wind Turbine. In: Ting, D.S.-K., Vasel-Be-Hagh, A. (Eds.), *Engineering to Adapt: Springer Proceedings in Energy* (pp.217-226). Cham, USA: Springer. https://doi.org/10.1007/978-3-031-47237-4_11
5. Hackler,* M., Vasel-Be-Hagh, A., & Ting, D. (2021). Chapter 1: The Current Status of Wind Power. In: A. Vasel-Be-Hagh & D. Ting (Eds.), *Utility-Scale Wind Turbines and Wind Farms* (pp. 1-15). London, UK: The Institute of Engineering and Technology. [10.1049/pbpo171e_ch1](https://doi.org/10.1049/pbpo171e_ch1)
6. Unser, † L., & Vasel-Be-Hagh, A. (2021). Chapter 3: Scaling Utility-Scale Wind Turbines. In: A. Vasel-Be-Hagh & D. Ting (Eds.), *Utility-Scale Wind Turbines and Wind Farms* (pp. 39-47). London, UK: The Institute of Engineering and Technology. [10.1049/PBPO171E_ch3](https://doi.org/10.1049/PBPO171E_ch3)
7. Unser, † L., & Vasel-Be-Hagh, A. (2020). Chapter 10: A Preliminary Evaluation on the Performance of Diffuser-augmented Vertical Axis Wind Turbines. In: A. Vasel-Be-Hagh & D. Ting (Eds.), *Complementary Resources for Tomorrow* (pp. 163-174). Switzerland: Springer Nature. [10.1007/978-3-030-38804-1_10](https://doi.org/10.1007/978-3-030-38804-1_10)
8. Long,* C.S., & Vasel-Be-Hagh, A. (2020). Chapter 6: Storage-Integrated Energy Harvesters. In: A. Vasel-Be-Hagh & D. Ting (Eds.), *Environmental Management of Air, Water, Agriculture, and Energy* (pp. 119-140). Boca Raton, FL, USA: Routledge. [10.1201/9780429196607](https://doi.org/10.1201/9780429196607)
9. Vasel-Be-Hagh, A. (2017) Chapter 3: Optimization of wind farms for communities. In: A. Vasel-Be-Hagh & D. Ting (Eds.), *Wind and Solar Based Energy Systems for Communities* (pp. 27-61), London, UK: The Institute of Engineering and Technology. [10.1049/PBPO130E_ch3](https://doi.org/10.1049/PBPO130E_ch3)

Published Peer-Reviewed Journal Articles

10. Nouri,* R., Vasel-Be-Hagh, A. (2024). “Deciphering unknown upstream conditions and downstream turbulent flow evolution via neural networks,” *Ocean Engineering*, 297, 116977. <https://doi.org/10.1016/j.oceaneng.2024.116977>
11. Ma, Y., Archer, C.L., & Vasel-Be-Hagh, A. (2022). “The Jensen wind farm parameterization,” *Wind Energy Science*, 7, 2407–2431. [10.5194/wes-7-2407-2022](https://doi.org/10.5194/wes-7-2407-2022)
12. Ma, Y., Archer, C.L., & Vasel-Be-Hagh, A. (2022). “Comparison of individual versus ensemble wind farm parameterizations inclusive of sub-grid wakes for the WRF model,” *Wind Energy*, 25(9), 1573-1595. [10.1002/we.2758](https://doi.org/10.1002/we.2758)

13. Hosseini,* A., Cannon, D.T.*, & Vasel-Be-Hagh, A. (2022). Tip Speed Ratio Optimization: More Energy Production with Reduced Rotor Speed. *Wind*. 2(4), 691 – 710. [10.3390/wind2040036](https://doi.org/10.3390/wind2040036)
14. Hackler,* M., Vasel-Be-Hagh, A., & Pardue, B. (2022). On the Effect of Reynolds number and Structural Parameters on Vortex-Induced Vibrations. *International Journal of Fluid Mechanics Research*, 49(4), 17-30. [10.1615/InterJFluidMechRes.2022042820](https://doi.org/10.1615/InterJFluidMechRes.2022042820)
15. Nash,* R., Nouri,* R., & Vasel-Be-Hagh, A. (2021). “Wind Turbine Wake Control Strategies: A Review and Concept Proposal,” *Energy Conversion and Management*, 245, 114581. [10.1016/j.enconman.2021.114581](https://doi.org/10.1016/j.enconman.2021.114581)
16. Nouri,* R., Vasel-Be-Hagh, A., & Archer, C. (2020). “The Coriolis Force and the Direction of Rotation of the Blades Significantly Affect the Wake of Wind Turbines,” *Applied Energy*, 277, 115511. [10.1016/j.apenergy.2020.115511](https://doi.org/10.1016/j.apenergy.2020.115511)
17. Archer, C.L., & Vasel-Be-Hagh, A. (2020). Corrigendum to “Review and Evaluation of Wake Loss Models for Wind Energy Applications,” [*Applied Energy* 226 (2018) 1187–1207].
18. Archer, C.L., & Vasel-Be-Hagh, A. (2019). “Wake Steering via Yaw Control in Multi-Turbine Wind Farms: Recommendations based on Large-Eddy Simulation,” *Sustainable Energy Technologies and Assessments*, 33, 34-43. [10.1016/j.seta.2019.03.002](https://doi.org/10.1016/j.seta.2019.03.002)
19. Dittner,* M.E., & Vasel-Be-Hagh, A. (2019). “Advances in Wind Power Forecasting,” *Lecture Notes in Energy*, 70, 37-57. [10.1007/978-3-030-05636-0_3](https://doi.org/10.1007/978-3-030-05636-0_3)
20. Archer, C.L., Wu, S., Vasel-Be-Hagh, A., Brodie, J.F., Delgado, R., St. Pe, A., Oncley, S., & Semmer, S. (2019). “The VERTEX field campaign: observations of near-ground effects of wind turbine wakes,” *Journal of Turbulence*, 20, 64-92. [10.1080/14685248.2019.1572161](https://doi.org/10.1080/14685248.2019.1572161)
21. Zhang, W., Maleki, A., Gholipour Khajeh, M., Zhang, Y., Mortazavi, S.M., & Vasel-Be-Hagh, A. (2019). “A Novel Framework for Integrated Energy Optimization of a Cement Plant: An Industrial Case Study,” *Sustainable Energy Technologies and Assessments*, 35, 245-256. [10.1016/j.seta.2019.06.001](https://doi.org/10.1016/j.seta.2019.06.001)
22. Archer, C.L., Vasel-Be-Hagh, A., Wu, S., Pan, Y., Yan, C., Brodie, J.F., & Maguire, E. (2018). “Review and Evaluation of Wake Loss Models for Wind Energy Applications,” *Applied Energy*, 226, 1187-1207. [10.1016/j.apenergy.2018.05.085](https://doi.org/10.1016/j.apenergy.2018.05.085)
23. Vasel-Be-Hagh, A., & Iakovidis, F. (2017). “The Effect of Wind Direction on the Performance of Solar PV Plants,” *Energy Conversion and Management*, 153, 455-461. [10.1016/j.enconman.2017.09.077](https://doi.org/10.1016/j.enconman.2017.09.077)
24. Vasel-Be-Hagh, A., & Archer, C. (2017). “Wind Farm Hub Height Optimization,” *Applied Energy*, 195C, 905-921. [10.1016/j.apenergy.2017.03.089](https://doi.org/10.1016/j.apenergy.2017.03.089)
25. Vasel-Be-Hagh, A., & Archer, C. (2017). “Wind Farms with Counter-Rotating Wind Turbines,” *Sustainable Energy Technologies and Assessments*, 24, 19-30. [10.1016/j.seta.2016.10.004](https://doi.org/10.1016/j.seta.2016.10.004)
26. Vasel-Be-Hagh, A., Carriveau, R., Ting, D.S.-K., & Turner, J.S. (2015). “Drag of Buoyant Vortex Rings,” *Physical Review E*, 92(4), 1-5. [10.1103/PhysRevE.92.043024](https://doi.org/10.1103/PhysRevE.92.043024)

27. [Vasel-Be-Hagh, A.](#), Carriveau, R., & Ting, D.S.-K. (2015). "A Balloon Bursting Underwater," *Journal of Fluid Mechanics*, 769, 522 – 540. [10.1017/jfm.2015.126](https://doi.org/10.1017/jfm.2015.126)
28. [Vasel-Be-Hagh, A.](#), [Carriveau, R.](#), & Ting, D.S.-K. (2015). "Flow over Submerged Energy Storage Balloons in Closely and Widely Spaced Floral Configurations," *Ocean Engineering*, 95, 59 – 77. [10.1016/j.oceaneng.2014.11.030](https://doi.org/10.1016/j.oceaneng.2014.11.030)
29. [Vasel-Be-Hagh, A.](#), Carriveau, R., & Ting, D.S.-K. (2015). "Structural Analysis of an Underwater Energy Storage Accumulator," *Sustainable Energy Technologies and Assessments*, 11, 165 - 172. [10.1016/j.seta.2014.11.004](https://doi.org/10.1016/j.seta.2014.11.004)
30. [Vasel-Be-Hagh, A.](#), Carriveau, R., & Ting, D.S.-K. (2014). "Flow past an Accumulator Unit of an Underwater Energy Storage System: Three Touching Balloons in Floral Configuration," *Journal of Marine Science and Application*, 13(4): 467 – 476. [10.1007/s11804-014-1277-3](https://doi.org/10.1007/s11804-014-1277-3)
31. [Vasel-Be-Hagh, A.](#), [Carriveau, R.](#), & Ting, D.S.-K. (2014). "Underwater Compressed Air Energy Storage Improved through Vortex Hydro Energy," *Sustainable Energy Technologies and Assessments*, 7, 1 – 5. [10.1016/j.seta.2014.02.001](https://doi.org/10.1016/j.seta.2014.02.001)
32. [Vasel-Be-Hagh, A.](#), Carriveau, R., & Ting, D.S.-K. (2013). "Numerical Simulation of Flow past an Underwater Energy Storage Balloon," *Computers and Fluids*, 88, 272 – 286. [10.1016/j.compfluid.2013.09.017](https://doi.org/10.1016/j.compfluid.2013.09.017)
33. [Vasel-Be-Hagh, A.](#), Carriveau, R., & Ting, D.S.-K. (2013). "Energy Storage using Weights Hydraulically Lifted above Ground," *International Journal of Environmental Studies*, 70(5), 792 – 799. [10.1080/00207233.2013.810043](https://doi.org/10.1080/00207233.2013.810043)
34. [Vasel-Be-Hagh, A.](#), Ting, D.S.-K., & [Carriveau, R.](#) (2013). "Correlating Flow Pattern with Force Coefficients in Air Flow past a Tandem Unit of Three Circular Cylinders," *International Journal of Fluid Mechanics Research*, 40(3), 235 – 253. [10.1615/InterJFluidMechRes.v40.i3.40](https://doi.org/10.1615/InterJFluidMechRes.v40.i3.40)
35. [Esfahani, J.A.](#), & [Vasel-Be-Hagh, A.](#) (2013). "A Numerical Study on Shear Layer Behavior in Flow over a Square Unit of Four Cylinders at Reynolds Number of 200 using the Lattice Boltzmann Method," *Progress in Computational Fluid Dynamics*, 13(4), 103 – 119. [10.1504/PCFD.2013.052425](https://doi.org/10.1504/PCFD.2013.052425)
36. [Esfahani, J.A.](#), & [Vasel-Be-Hagh, A.](#) (2012). "LB Simulation of Heat Transfer in Flow past a Square Unit of Four Isothermal Cylinders," *Comptes Rendus Mecanique*, 340(7), 526 – 535. [10.1016/j.crme.2012.03.011](https://doi.org/10.1016/j.crme.2012.03.011)

Conferences

37. Hagan, T. & Vasel-Be-Hagh, A. (2024, June 20). *Homogenous Boiling Above-Ice-Liquid Interface* [paper presentation]. Brightening Tomorrow Together: Windsor, Canada.
38. Medlin, R., Meeks, S., & Vasel-Be-Hagh, A. (2024, June 20). *On the Contrails of Hydrogen-Powered Airplanes* [paper presentation]. Brightening Tomorrow Together: Windsor, Canada.
39. Jo, B., Saha, A., Akbar, M., Rahman M.M., Barrit, E., Vasel-Be-Hagh, A., & Kim, T. (2024, July 29 – August 2). *Towards the Conversion to Electrified Commercial Aircraft, the Boeing 737 Max 800 Field Data Analysis* [paper presentation]. AIAA Aviation Forum: Las Vegas, NV, United States.

40. Gong, M., Vasel-Be-Hagh, A., Tharpe, A. & Roberts, R. (2024, July 29 – August 2). *Preliminary Hazard Identification and Risk Assessment for Liquid Ammonia Fuel Safety in Zero-Emission Fuel-Cell-Hybrid Electric Aircraft* [paper presentation]. AIAA Aviation Forum: Las Vegas, NV, United States.
41. Roland, D. & Vasel-Be-Hagh, A. (2024, April 21-24). *Exploring the Influence of Relative Humidity and Temperature on CO₂ Laser Beams* [paper presentation]. 9th Thermal and Fluids Engineering Conference: Corvallis, OR, USA.
42. Hagan, T. & Vasel-Be-Hagh, A. (2024, April 21-24). *Enhanced Thermocavitation via Impeded Convection and Instabilities Induced by Temperature and Pressure Gradients* [paper presentation]. 9th Thermal and Fluids Engineering Conference: Corvallis, OR, USA.
43. Cannon, D.T. & Vasel-Be-Hagh, A. (2024, April 21-24). *Improving Heat Flux Measurement Accuracy in Solar Farm Environmental Studies: A Corrective Equation Approach* [paper presentation]. 9th Thermal and Fluids Engineering Conference: Corvallis, OR, USA.
44. Sims, W. & Vasel-Be-Hagh, A. (2024, April 21-24). *Exploring the Thermal Effects of Utility-Scale Photovoltaic Integration on Atmospheric Boundary Layer: Insights from a Field Campaign* [paper presentation]. 9th Thermal and Fluids Engineering Conference: Corvallis, OR, USA.
45. Hosseini, A. & Vasel-Be-Hagh, A.R. (2023, June 22-23). *Instantaneous Real-Time Control of Tip Speed Ratio and Yaw for Wind Farms* [paper presentation]. Engineering to Adapt: Windsor, Ontario, Canada.
46. Hagan, T., Roland, D., Hill, T., & Vasel-Be-Hagh, A. (2023, June 22-23). *Precise Remote Heat Delivery for Thermal Treatment of a Nuclear Plant's Condensers*. Engineering to Adapt: Windsor, Ontario, Canada.
47. Hosseini, A., Cannon, T., & Vasel-Be-Hagh, A.R. (2022, September). *Active Tip Speed Ratio Control Can Significantly Increase Annual Energy Production* [paper presentation]. The North American Wind Energy Academy Conference: Delaware, USA.
48. Nouri, R., Nash, R., & Vasel-Be-Hagh, A.R. (2022, June 23-24). *Wind Turbine Wake Redirection via External Vanes* [paper presentation]. Responsible Engineering & Living Symposium: Windsor, Canada.
49. Nouri, R. & Vasel-Be-Hagh, A.R. (2019, June 20-21). *Negative yaw versus positive yaw: the impact of Coriolis or the direction of rotation of the blades* [paper presentation]. Energy and Resources for Tomorrow: Windsor, Ontario, Canada.
50. Vasel-Be-Hagh, A. & Archer, C. (2016, December). *Hub Height Optimization to Increase Energy Production of Wind Farms*. American Geophysical Union (AGU) Fall Meetings: San Francisco, California, USA.
51. Vasel-Be-Hagh, A., Carriveau, R., & Ting, D. S.-K. (2014, July). *Flow-Induced Vibrations of an Underwater Energy Storage Accumulator*. Offshore Energy and Storage Symposium (OSES): Windsor, Ontario, Canada.

52. Vasel-Be-Hagh, A., Carriveau, R., & Ting, D. S.-K. (2013, June 2-6). *Flow past an Isolated Underwater Balloon* [paper presentation]. Canadian Congress of Applied Mechanics (CANCAM): Saskatoon, Canada.
53. Abolfazli Esfahani, J. & Vasel-Be-Hagh, A. (2011). *Employment of Lattice Boltzmann Method in Simulating Flow past Two Equal Diameter Cylinders* [paper presentation]. Saudi Engineering Conference (SEC 8): Buraydah, Saudi Arabia.
54. Abolfazli Esfahani, J. & Vasel-Be-Hagh, A. (2011, March). *A Lattice Boltzmann Study of Flow Past Moderately and Widely Spaced Units of Four Cylinders: Flow Structure Simulation* [paper presentation]. Iranian Aerospace Society International Conference: Tehran, Iran.
55. Abolfazli Esfahani, J. & Vasel-Be-Hagh, A. (2010, July 12-14). *A Lattice Boltzmann Simulation of Crossflow Around Four Cylinders in a Square Arrangement* [paper presentation]. Proceedings of the ASME 2010 10th Biennial Conference on Engineering Systems Design and Analysis: Istanbul, Turkey.
56. Abolfazli Esfahani, J. & Vasel-Be-Hagh, A. (2009, March). *Studying the Lattice Boltzmann Method by Simulating Couette Flow* [paper presentation]. Iranian Aerospace Society International Conference: Isfahan, Iran.

OTHER TALKS/SEMINARS

- | | |
|---------------|---|
| July 2023 | Atmospheric Thermofluids: Unraveling Aerospace and Renewable Energy Effects
<i>Department of Mechanical and Aerospace Engineering, University of South Florida</i> |
| April 2023 | Clean Energy: Our Commitment to a Sustainable Future
<i>Department of Mechanical and Aerospace Engineering, University at Buffalo</i> |
| March 2023 | Modeling Atmospheric Thermal and Momentum Transport Processes using Computational Fluid Dynamics
<i>CEE Distinguished Seminar Series, Northeastern University</i> |
| December 2017 | Wind Farm Layout Optimization
<i>University of Windsor, Windsor, ON, Canada</i> |

STUDENTS ADVISED/EVALUATED

Clubs

Men's Soccer Club, Tennessee Tech University, 2018 - 2023

Dissertation/Thesis in Progress

University of South Florida

1. Devin Roland, Ph.D., Spring 2024–present, “Understanding the Climate Effects of a Hydrogen-Powered Airplane.” (Sponsored by NASA)

2. Elijah Barritt, Ph.D., Fall 2023–present, “System-Level Optimization of a Hydrogen-Powered Airplane,” (Sponsored by NASA)
3. Ahmed Gamal Tolba, Fall 2024 – present.

Tennessee Tech University

4. Ty Hagan, Ph.D., Summer 2021–present, “Thermal Cavitation Induced by Extreme Temperature Gradients,” (Sponsored by TVA), degree expected Spring 2024
5. Scott Vanderlan, Ph.D., Summer 2022–present, “Large-Eddy Simulations of the Thermal Processes in the Near Vicinity of Photovoltaic Panels,” (Sponsored by ORNL), degree expected Fall 2024 (co-advisor: Jie Cui)

Dissertations Directed

6. Daniel T Cannon, Ph.D., 2020–2024, “Large-Eddy Simulations of the Thermal and Mechanical Interactions of Utility-Scale Photovoltaic Plants and Atmospheric Boundary Layer,” employed at Tennessee Tech University (postdoctoral researcher).
7. Reza Nouri, Ph.D., 2019–2023, “The Need to Go Deeper: The Employment of Convolutional Neural Networks to Analyze Turbulent Flows Frequency Content,” employed at the University of Memphis (postdoctoral researcher).
8. Doug Clark, Ph.D., 2018–2021, “Multiphysics-Modeling of Fire-Induced Uranium Aerosol Formation – A-Posteriori Benchmarking of Experiments,” employed at Oak Ridge National Laboratory.

Theses Directed

9. Warren Sims, M.Sc., 2022-2024, “Design, Engineering, and Fabrication of a Weather Tower.”
10. Devin Roland, M.Sc., 2022–2023, “Understanding the Impact of Humidity and Turbulence Intensity on the Direction and Intensity of an Infrared Beam,” employed at the University of South Florida (Ph.D. graduate assistant).
11. Michael Hackler, M.Sc., 2020–2021, “On the Effect of Reynolds Number and Structural Parameters on Vortex-Induced Vibrations of Circular Cylinders,” employed at Y-12 National Security Complex
12. Hollee Sadler, M.Sc., 2020–2021, “Aerodynamics of a Damaged Wing,” employed at the University of Central Florida (Ph.D. graduate assistant)
13. Cody Long, M.Sc., 2018–2020, “Vortex-Induced Vibrations of Oscillating Bluff Bodies for Energy Storage/Conversion Applications,” employed at Y12 National Security Complex
14. Ryan R Nash, M.Sc., 2018–2020, “Wind Farm Wake Control,” employed at Arnold Air Force Base
15. Madison Dittner, M.Sc., 2018–2020, “Development of a Geometry Optimization Platform Using an In-House Developed Genetic Algorithm: Case of a Bladeless Wind Turbine,” employed at U.S. Patent Office

Service on Thesis Committees Other than Own Advisees

Tennessee Tech

16. Miles Nevills	Ph.D.	Mechanical Engineering	Advisor: Ethan Languri
17. Musayyibi Shuaibu	Ph.D.	Electrical Engineering	Advisor: Dr. Joseph Ojo
18. Sainand Jadhav	Ph.D.	Manufacturing	Advisor: Dr. DuckBong Kim
19. Jimmy Meacham	M.Sc.	Mechanical Engineering	Advisor: Dr. Rory Roberts
20. Trevor Kramer	Ph.D.	Mechanical Engineering	Advisor: Dr. Rory Roberts
21. Saiful Islam	Ph.D.	Manufacturing	Advisor: Dr. DuckBong Kim
22. Seyi Ayeni	Ph.D.	Chemical Engineering	Advisor: Dr. Holly Stretz
23. Saanyol Igbax	Ph.D.	Mechanical Engineering	Advisor: Dr. Steve Idem
24. Chaitanya Kodali	Ph.D.	Mechanical Engineering	Advisor: Dr. Steve Idem
25. Jason Cook	Ph.D.	Mechanical Engineering	Advisor: Dr. Pinggen Chen
26. Zhicheng Zhang	Ph.D.	Manufacturing	Advisor: Dr. Ismail Fidan
27. Mushrif Choudhury	Ph.D.	Mechanical Engineering	Advisor: Dr. Jie Cui
28. Mahdi Mohammadizade	Ph.D.	Manufacturing	Advisor: Dr. Ismail Fidan
29. Drew E. Winder	Ph.D.	Mechanical Engineering	Advisor: Dr. Sally Pardue
30. Tyler R Qualls	M.Sc.	Mechanical Engineering	Advisor: Dr. Pinggen Chen
31. Joseph Staller	M.Sc.	Mechanical Engineering	Advisor: Dr. Steve Idem
32. Byron Harrington	M.Sc.	Mechanical Engineering	Advisor: Dr. Rory Roberts
33. Michael Tidwell	M.Sc.	Mechanical Engineering	Advisor: Dr. Van Neste

University of Rhode Island

34. Boma Kresning	Ph.D.	Ocean Engineering	Advisor: Dr. Reza Hashemi
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Undergraduate Research Assistant

35. Chiara Deangelis (2024 – present). “Developing an Educational Mobile Application: ATMOSPORT.”
36. Ryan Medlin (2023 – present). “Condensation Trails of Hydrogen versus Kerosene: A Literature Review.”
37. Spencer Meeks (2023 – present), “Condensation Trails of Hydrogen versus Kerosene: A Literature Review.”
38. Jordan Frerichs (2022–2023). “Contributing to the Design of a Vertical Traverse System.”
39. Brian Hawkins (2021–2022). “Wind Tunnel Laboratory Maintenance.”
40. Pierce Wooten (2021–2023). “Investigating the Impact of Turbulence and Humidity on Infrared Beam Power Transmission: A Literature Review,” (employed by Oak Ridge National Lab).

41. Luke Olson (2021–2023). “Designing and Fabricating a Wind Turbine Speed Controller,” (employed by Oak Ridge National Lab).
42. Koltar Houser (2021–2022). “Constructing a Steam Engine Setup for Investigating the First Law of Thermodynamics,” (employed by Designed Conveyor Systems, LLC).
43. Nathaniel Lee (2022). “Wind Tunnel Traverse Maintenance and Collaborating with the GSET R&D Team.”
44. Olivia Cline (2021). “Designing a Wind Turbine Speed Controller.”
45. William McCarty (2020–2021). “Designing an Interface for Simultaneous Visualization of CFD Simulations Conducted on an HPC Cluster.”
46. Wesley Upshur (2020–2021). “Harvesting Electricity from a Vehicle's Suspension System,” (employed by GE Aerospace).
47. Caleb Dunlap (2020–2021). “Harvesting Electricity from a Vehicle's Suspension System,” (currently a Ph.D. student at TN Tech)
48. Christophe Blair (2020–2021). “Harvesting Electricity from a Vehicle's Suspension System.”
49. Ty Hagan (2020–2021). “Generating CAD Files and 3D Printing Essential Components for Various Projects,” (currently a Ph.D. student at TN Tech).
50. Henry Pace (2020). “Modeling Linear-to-Rotary Conversion Mechanism using ANSYS,” (currently a Ph.D. student at Georgia Tech).
51. Stephen Foltz (2020). “Engineering an Underwater Energy Storage System,” (employed by National Aerospace Solutions).
52. Adam Beckleheimer (2020). “Developing an AI-based Signal Classifier using Python,” (employed by Fast Enterprises, LLC).
53. Andrew Davis (2019 – 2020). “Performing a Comprehensive Literature Review on the Aerodynamics of Damaged Wings,” (graduate student at Colorado State University).
54. Logan Unser (2019 – 2020). “Scaling Wind Turbines for Wind Tunnel Testing,” (employed at QuEST Global).
55. Josh Nichols (2019 – 2020). “Aided in the Development of an Algorithm to Identify, Curve-fit, and Calculate Area under Peaks within Irregular Signals,” (employed at ProviderTrust)
56. John Stephenson (2018). “Contributed to the Fabrication of the Wind Tunnel's Traverse System.”
57. Trenton Preston (2018). “Designing and Fabricating a Vortex Gun.”
58. Yixing Wang (2021 – 2022). “Exploring the Aerodynamics of a Scaled Aircraft Under Damage Conditions,” (currently graduate student at Tennessee Tech University).
59. Benjamin Cooper (2019 and 2021). “Wind Turbine Speed Control”

Special Achievements of Graduate Students

- Michael Hackler, 2023 Eminence Award for the M.Sc. Best Paper
- Reza Nouri, 2022 Best Mechanical Engineering Ph.D. Student Poster Award, Tennessee Tech's Research and Creative Inquiry Day
- William McCarty, Creative Inquiry Summer Experience (CISE) award, \$4,000 (Summer 2021)
- Reza Nouri, 2021 Eminence Award for the Doctor of Philosophy Best Paper
- Stephen Foltz, Creative Inquiry Summer Experience (CISE) award, \$4,000 (Summer 2020)
- Logan Unser, Creative Inquiry Summer Experience (CISE) award, \$4,000 (Summer 2020)
- Logan Unser, Creative Inquiry Summer Experience (CISE) award, \$4,000 (Summer 2019)
- Trenton Preston, Creative Inquiry Summer Experience (CISE) award, \$4,000 (Summer 2018)

SERVICE

Editorial Records

Special Issues

“Advances in Photovoltaics,” Sustainable Energy Technologies and Assessments, Elsevier, 2023

“Tomorrow Energy & Resources,” Sustainable Energy Technologies and Assessments, Elsevier, 2021

“Future and Sustainability,” International Journal of Sustainable Energy, Taylor and Francis, 2018 – 20

“Further Integration and Advancement of Sustainability,” Sustainable Energy Technologies and Assessments, Elsevier, 2018-19

“Natural Resources and Energy Usage,” Sustainable Energy Technologies and Assessments, Elsevier, 2017-18

Proceedings

Vasel-Be-Hagh, A., & Ting, D. (Eds.). (In press). *Engineering to Adapt*. Switzerland: Springer International Publishing.

Vasel-Be-Hagh, A., & Ting, D. (Eds.). (2022). *Responsible Engineering and Living*. Switzerland: Springer International Publishing.

Vasel-Be-Hagh, A., & Ting, D. (Eds.). (2022). *Mitigating the Climate Change*. Switzerland: Springer International Publishing.

Vasel-Be-Hagh, A., & Ting, D. (Eds.). (2021). *Sustaining Tomorrow*. Switzerland: Springer International Publishing.

Vasel-Be-Hagh, A., & Ting, D. (Eds.). (2020). *Complementary Resources for Tomorrow*. Switzerland: Springer International Publishing.

Vasel-Be-Hagh, A., & Ting, D. (Eds.). (2018). *The Energy Mix for Sustaining Our Future: Selected Papers from Proceedings of Energy and Sustainability*. Switzerland: Springer International Publishing.

Vasel-Be-Hagh, A. (Ed.). (2017) *Proceedings of the International Conference of Numerical Analysis and Applied Mathematics*. American Institute of Physics (AIP).

Committees

Tennessee Tech University, Mechanical Engineering Department

Fall 2021 – present	Goals and Assessment Committee	Member
Fall 2021 – Spring 2022	Search Committee	Member
Fall 2018 – Spring 2021	Graduate Committee	Member
Fall 2017 – Spring 2018	Search Committee	Member
Spring 2018	Curriculum Committee	Member

Tennessee Tech University, College of Engineering

2020-2021	Planning the Hydraulics Lab for the A.I. Engineering Building	Member
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Outreach

Tennessee Tech University, TN, USA

Summer 23	Explorations in Engineering and Computing Camp	Departmental Co-Leader
Summer 23	Governor’s School for Emerging Technologies	R&D Team Leader
Summer 22	Explorations in Engineering and Computing Camp	Departmental Co-Leader
Summer 22	Governor’s School for Emerging Technologies	R&D Team Leader
Summer 21	Explorations in Engineering and Computing Camp	Departmental Co-Leader
Summer 20	Governor’s School for Emerging Technologies	Speaker
Summer 20	Explorations in Engineering and Computing Camp	Participant
Summer 18	Governor’s School for Emerging Technologies	Speaker
Fall 17 – present	Showcase Events	Presenting Fluids lab

University of Windsor, ON, Canada

2015	The Natural Gas and Hydrogen Storage Symposium	Communication Chair
2014	Offshore Energy and Storage Symposium	Logistics
2014	Canadian Science Writers Association Annual Conference	Logistics

Reviewer

National Science Foundation

Thermal Transport Processes Program	Panelist (Panel 2)	2022
	Panelist (Panel 1)	2022
	Ad Hoc Reviewer	2022
Environmental Sustainability Program	Ad Hoc Reviewer	2022
	Ad Hoc Reviewer	2020
Fluid Dynamics Program	Panelist	2021

Major Research Instrumentation Program Panelist 2020

Journals

Journal of Testing and Evaluation
Wind Energy Science
Atmosphere
Applied Energy
Sustainable Energy Technologies and Assessments
Energy Conversion and Management
Fluid Dynamics Research
Energies
International Journal of Numerical Methods for Heat & Fluid Flow
AIMS Energy
International Journal of Engineering and Technology Innovation
Journal of Energy Resources Technology (Transactions of the ASME)
International Journal of Energy Research

Conferences

2023	Engineering to Adapt	Windsor, ON, Canada	Program/Session Chair
2022	Responsible Engineering & Living	Windsor, ON, Canada	Program/Session Chair
2020	Mitigating Climate Change	Windsor, ON, Canada	Program Chair
2019	Energy & Resources for Tomorrow	Windsor, Canada	Program/Session Chair
2018	Energy and Sustainability	Windsor, Canada	Program/Session Chair
2017	International Conference of Numerical Analysis and Applied Mathematics	Thessaloniki, Greece	Symposium organizer
2015	Natural Gas and Hydrogen Storage	Windsor, Canada	Session Chair

Judge

2022	Tennessee Tech University's Research and Creative Inquiry Day	Judge
2022	Tennessee's FIRST LEGO League Tournament	Judge
2018	Tennessee Tech University's Research and Creative Inquiry Day	Judge