

Technical Program

Version June 23, 2023

We take this opportunity to thank and welcome everyone to Engineering to Adapt 2023 and Reclaiming Eden – Engineering a Brighter Tomorrow 2023. We hope that you will have a wonderful time in the Southernmost city of Canada.

Sincerely,
ETA2023 Committee
RE-EBT2023 Committee

Website

Please refer to <https://eta2023.ca/> and/or <https://reebt2023.ca/> for updates and details. The banquet will be on Thursday June 22. Please advise us of any dietary restriction, special needs, etc. by emailing to TELab@uwindsor.ca

Notes:

This conference is for paid delegates only. If you have not registered, please do so at <https://www.uwindsor.ca/engineering/research/495/mitigating-climate-change-2022-symposium-in-dustry-summit>
Remember to save the receipt as you checkout.

RE2023 is running parallel to ETA2023. Only one registration is needed to attend both conferences. If the number of presentations is small, RE2023 presentations will be scheduled in series with ETA2023 presentations. If required, the presentations will run in parallel to fit all presentations within the two days. Selected papers for RE2023 will be published via University of Windsor Leddy Library; see <https://scholar.uwindsor.ca/wtel/2022/>. The authors will retain 100% of the copyright, allowing them to further their manuscripts and disseminate them as standard journal papers subsequently.

Please limit your presentation to 15 minutes, leaving 3 minutes for discussion, and 2 minutes for changeover. In case of a no-show, the next presentation(s) will be advanced accordingly.

Selected papers for ETA2023 will be considered for a Refereed Conference Proceeding, a Reviewed Volume with Springer Nature.

Notation

- * presenting author
- † corresponding author

Paper/presentation Status

- 🗨️ presentation / abstract only
- 📄 presentation + full-length paper
- 🕒 reviews conveyed, waiting for revision
- 😊 paper accepted to be published via University of Windsor Leddy Library
- ✓ paper accepted for the Springer Nature Proceeding
- ➔ pending visa approval and/or registration confirmation; please update us

Thursday, June 22, 2023	
08:15–08:45	Centre of Engineering Innovation (CEI) Atrium Breakfast Registration Package Pickup
08:45–09:00	Welcome and Opening Remarks (Room 1101 CEI) Rupp Carriveau VP Research – Chris Houser, Dean of Engineering – Bill Van Heyst
09:00–09:40	Plenary Lecture #1 (Room 1101 CEI) Engineering to Adapt: Waste Not, Want Not – Graham T. Reader
	Carbon & Transportation, Room 1101. Co-Chairs: Rupp Carriveau & Gary Rankin
09:40–10:00	A review of the status of carbon capture and storage in Canada Niknaz Atash Dehghan*, Tanay Sahu, Kulbir Kaur Ghuman, Thomas Cooper, Paul G. O'Brien† Department of Mechanical Engineering, York University, Canada Institut National de la Recherche, Centre Énergie, Quebec, Canada
10:00–10:20	🔧 Progress and potential of energy transitions for sustainable transportation Navjot S. Sandhu*, Simon Leblanc, Xiao Yu, Ming Zheng†, David S.-K. Ting Clean Combustion Engine Lab, University of Windsor, Canada
10:20–10:40	Coffee Break
	Light, Heat, and Radiation Room 1101. Co-Chairs: Fadi Al-Daoud & Vasel-Be-Hagh
10:40–11:00	Comparative assessment of winter night sky brightness in southwestern Ontario Heather Henry, Thomas Graham, Syeda Tasnim, Alex Nauta, William Lubitz*†, School of Environmental Sciences, School of Engineering, University of Guelph, Canada
11:00–11:20	Precise remote heat delivery for thermal treatment of a nuclear plant's condensers Ty Hagan*, Devin Roland, Tristan Hill, Ahamd Vasel-Be-Hagh† Fluid Mechanics Research Lab, Tennessee Tech University, USA
11:20–11:40	🔧 Metal organic frameworks (MOFs) in adsorption heat transformations Joud Al-rabadi*, Julia Aman† Mechanical Engineering, Concordia University, Canada
11:40–12:00	Life cycle assessment methods for determining the impact of radiative cooling technologies on global warming Atousa Pirvaram*, Siu Ning Leung, Paul G. O'Brien† Department of Mechanical Engineering, York University, Canada
12:00–13:00	Lunch & Posters

Thursday, June 22, 2023	
	Reclaiming Eden, Room 1101. Co-Chairs: Paul O'Brien & Jacqueline Stagner
13:00–13:20	Vertical greening systems: creating an esthetic tomorrow Saumili Jana*, Rajaram Lakkaraju, Jacqueline A. Stagner†, David S-K. Ting Indian Institute of Technology Kharagpur, India; Turbulence & Energy Lab, University of Windsor, Canada
13:20–13:40	☞ Metabolic balance of Lake Superior using autonomous underwater vehicle data Panditha Gunawardana*, Nolan Pearce, Jay Austin, Cassandra Elmer, Thomas Hollenhorst, Paul McKinney, Marguerite Xenopoulos†, Department of Biology, Trent University, Canada
13:40–14:00	Assessing underground cooling and ventilation strategies King Lucas Darko*, David S-K. Ting, Rupp Carriveau†, Turbulence & Energy Lab, University of Windsor, Canada
14:00–14:20	The effect of dissolved nitrogen to phosphorous ratio on Lake Erie cyanobacteria C. Koebel*†, C. Stevens, S. Crevecoeur, A. T. Fisk, P. C. Frost, N. D. Wagner, A. Zastepa, N. J. T. Pearce, M. A. Xenopoulos Trent University; Environment and Climate Change Canada; University of Windsor, Oakland University
14:20–14:40	Removal of Fe(II) from tannery wastewater using sulfated carboxymethyl cellulose nanofiller Sima Ghasemlou*†, Parvin Gharbani, Keith E. Taylor, Niharendu Biswas Department of Chemistry and Biochemistry, University of Windsor Department of Chemistry, Islamic Azad University, Ahar, Iran Department of Civil and Environmental Engineering, University of Windsor, Canada
14:40–15:00	<u>Coffee Break</u>
	Engineering Systems & Analyses, Room 1101. Co-Chairs: David Lubitz & Quade Digweed
15:00–15:20	☞ The impact of journal bearings on the natural frequencies of a five-stage API-BB3 centrifugal pump rotor Aida Fathipour*†, David S-K. Ting, Rupp Carriveau, Naser Alizade, Atabak Dindar Turbulence & Energy Lab, University of Windsor, Canada; Heavy Duty Pumps & Water Turbine Manufacture, Iran
15:20–15:40	☞ Profit based unit commitment using hybrid meta-heuristics search algorithms Karamjeet Singh*†, Vikram Kumar Kamboj, Om P. Malik Aquatech Corporation, New Delhi, India Schulich School of Engineering, University of Calgary, Canada
15:40–16:00	☞ Application of artificial intelligence in predicting outlet temperature of an automotive helical coil sub-cooled condenser Hardeep Singh*†, David S-K. Ting, Graham T. Reader, Bhaveshkumar C. Dharmani, Mitsuhsa Ichiyanagi, Takashi Suzuki Turbulence & Energy Lab, University of Windsor, Canada; Lovely Professional University, Punjab, India; Sophia University, Tokyo, Japan
16:00–16:20	The ignition and combustion characteristics of dimethyl ether under diluted conditions Simon LeBlanc*†, Binghao Cong, Linyan Wang, Xiao Yu, Graham Reader, Ming Zheng Department of Mechanical, Automotive & Materials Engineering, University of Windsor, Canada
16:20–16:40	Thermal Analysis of the nacelle of a small horizontal axis wind turbine using CFD model ANSYS-FLUENT© Bhaswati Sen*†, Nabanita Datta Department of Civil Engineering, Indian Institute of Engineering Science and Technology Shipbur Department of Ocean and Naval Engineering, Indian Institute of Technology Kharagpur, India
16:45	Bus leaves CEI, University of Windsor (@ 4:45 pm) for Banquet
18:00–20:00	Banquet at View Pointe Winery
20:00	Bus returns from banquet (View Pointe Winery ~ 8:00 pm) to CEI, & then, hotels, as needed

Friday, June 23, 2023	
08:15–08:45	Centre of Engineering Innovation (CEI) Atrium Breakfast Registration Package Pickup
08:45–09:00	Gift Draw (Room 1101 CEI) Rupp Carriveau
09:00–09:40	Plenary Lecture #2 (Room 1101 CEI) Adapting together: Incorporating the complexity of aquatic ecosystems into Engineering – Marguerite Xenopoulos
	Our Environment & Ecosystems, Room 1101. Co-Chairs: Rupp Carriveau & Marguerite Xenopoulos
09:40–10:00	☞ Characterizing water movements in Lake Erie Mo'tamad H. Bata, Seyed Ehsan Miri*, Rupp Carriveau†, David S.-K. Ting, Aaron T. Fisk Turbulence & Energy Lab, University of Windsor, Canada School of the Environment, University of Windsor, Canada
10:00–10:20	☞ Metabolic patterns and drivers in Lake Erie's Western Basin: Insights from continuous limnological and environmental data James D. Kelley*, Nolan JT. Pearce, Marguerite A. Xenopoulos†, Aaron T. Fisk, Katelynn Johnson, Todd Leadley, Arthur Zastepa Department of Biology, Trent University, Canada Great Lakes Institute for Environmental Research, University of Windsor, Canada Canada Centre for Inland Waters, Environment and Climate Change Canada, Canada
10:20–10:40	Coffee Break
	Greenhouse and Energy, Room 1101. Co-Chairs: Paul Henshaw & Narayan Kar
10:40–11:00	☞ Optimization of design and operation parameters for minimizing the supplemental energy loads in greenhouses Anubhav Dey, Debamita Pal, Aman Gaur, Alexander Nauta, William Lubitz*† Department of Mechanical Engineering, Department of Chemical Engineering, Jadavpur University, India; Department of Mechanical Engineering and Metaphysics, Indian Institute of Technology, India; School of Engineering, University of Guelph, Canada
11:00–11:20	☞ Powering greenhouse sector with transactive energy management scheme and grid-connected distributed energy solution. Reza Babaei*, David S.-K. Ting, Rupp Carriveau†, Turbulence & Energy Lab, University of Windsor, Canada
11:20–11:40	Impact of phase change material on greenhouse energy balance under light abatement curtains Quade Digweed*†, Sabrina Sawan Harrow Research and Development Centre, Agriculture and Agri-Food Canada University of Windsor, Canada
11:40–12:00	Greenhouse waste characterization and biomethane potential Geethalakshmi Sonaimuthu, Rickel Williams*†, Bhaswati Sen, Rajesh Seth, Hisham Hafez, Nihar Biswas Civil and Environmental Engineering, University of Windsor, Canada Greenfield Global Inc., Chatham, Canada
12:00–13:00	Lunch & Posters

Friday, June 23, 2022	
	Wind, Soil, Solar, & Wave, Room 1101. Co-Chairs: Lindsay Miller-Branovacki & Nihar Biswas
13:00–13:20	Instantaneous real-time control of tip speed ratio and yaw for wind farms Amir Hosseini*, Ahmad Vasel-Be-Hagh† Fluid Mechanics Research Lab, Tennessee Tech University, USA
13:20–13:40	Investigation of the windward wall horseshoe vortex for a low-rise gable roof-shaped building Timothy John Acosta*†, Jin Wang, Gregory A. Kopp Boundary Layer Wind Tunnel Laboratory, University of Western Ontario, Canada
13:40–14:00	Parameter interactions on the adsorption behaviour of cobalt onto saline soil with different biosurfactants S. Narimannejad*†, Q. Cai, B. Zhang, K. E. Taylor, N. Biswas Faculty of Engineering and Applied Science, Memorial University of Newfoundland Department of Chemistry and Biochemistry, University of Windsor Department of Civil and Environmental Engineering, University of Windsor, Canada
14:00–14:20	Enzymatic removal of sulfa drugs from synthetic wastewater by soybean peroxidase M. Sharifzadeh*†, S. Narimannejad, N. Biswas, K. E. Taylor Department of Civil and Environmental Engineering, University of Windsor Department of Chemistry and Biochemistry, University of Windsor, Canada
14:20–14:40	Assessing the impact and mitigation of snow on building-integrated photovoltaic system Anup J. Poudel*, Rupp Carriveau†, David S-K. Ting Turbulence & Energy Lab, University of Windsor, Canada
14:40–15:00	<u>Coffee Break</u>
	Renewable Energy & Society, Room 1101. Co-Chairs: Paul G. O'Brien & Rajeev Ruparathna
15:00–15:20	Energy poverty and sustainable development of renewable energy Ishan Sathish Suvarna*, Shibu Clement, David S-K. Ting† Birla Institute of Technology and Science, India; Turbulence & Energy Lab, University of Windsor, Canada
15:20–15:40	The costs of climate change mitigation innovations Suchitra Senthil*, David S-K. Ting† Department of Aerospace Engineering, Indian Institute of Technology, Madras, India Turbulence & Energy Lab, University of Windsor, Canada
15:40–16:00	Comparison and analysis of solar thermal energy availability for different shapes and orientation of the greenhouse Gurpreet Khanuja*, Paul Bishop, Rajeev Ruparathna†, David -K. Ting Turbulence and Energy Laboratory, University of Windsor, Canada Can Grow Here Inc, Canada
16:00–16:20	☞ Exergy-based simulation and analysis of a power and water cogeneration system utilizing solar thermal energy and LNG cooling via Organic Rankine Cycle integration Muhammadsaeed Rahimi*†, Fatemeh Rostami Department of Chemical Engineering, Department of Chemistry, University of Ilam, Iran
16:20–16:40	Awards Committee Meet Committee: Paul O'Brien (Chair), David Lubitz, Lindsay Miller-Branovacki, Marguerite Xenopoulos, Ahmad Vasel-Be-Hagh
16:40–17:00	<u>Awards' Presentation in Room 1101</u>
	Thank you for your contribution. We look forward to seeing you next year.

†The awards are:

- ETA2023 Best Student Presenter
- ETA2023 Exceptional Student Presenter
- ETA2023 Outstanding Student Presenter

Brightening Tomorrow Together 2024, June 20-21, 2024. Information will become available at www.btt2024.ca (currently under construction).

Thriving through Change 2024, June 20-21, 2024. Information will become available at www.ttc2024.ca (currently under construction).