

50 HERRICK CONFERENCES

CELEBRATING 50 YEARS OF INNOVATION

26TH COMPRESSOR ENGINEERING • 19TH REFRIGERATION AND AIR CONDITIONING • 7TH HIGH PERFORMANCE BUILDINGS

HOSTED BY PURDUE CENTER FOR HIGH PERFORMANCE BUILDINGS • RAY W. HERRICK LABORATORIES



2022 CONFERENCE PROGRAM

COMPRESSOR & REFRIGERATION SHORT COURSES • JULY 10, 2022
HERRICK CONFERENCES • JULY 11-14, 2022

THANK YOU TO OUR CONFERENCE SPONSORS

Interested in sponsoring the 2022 Conferences?

Email Brian Barrett for more information at herrickconferences@purdue.edu.



ABOUT THE CONFERENCE

Since 1972, Herrick Labs has hosted the premier international conferences on Compressor Engineering, Refrigeration, Air-Conditioning, and High Performance Buildings. More than 800 industry experts from 30 countries come to Purdue University to present cutting-edge research, exchange ideas, do some personal networking, and tour the amazing facilities of Herrick Labs.

REGISTRATION INFORMATION

REGISTRATIONS	IN-PERSON FEE	VIRTUAL FEE
Presenting Author Registration (2 Presented Papers Maximum)	\$800	\$450
Student Author Registration (2 Presented Papers Maximum)	\$400	\$150
Non-Author Registration	\$850	\$400
Student Non-Author Registration	\$450	\$200
Group Registrations (1 free registration for every 5 paid registrations)	\$4,000	-
SHORT COURSES		
Compressor Short Course Registration	\$800	\$300
Refrigerant Short Course 1 Registration	\$525	\$200
Refrigerant Short Course 2 Registration	\$525	\$200
Both Refrigerant Short Courses Registration	\$800	\$300
Student Short Course Registration	\$400	\$200

Register at: engineering.purdue.edu/Herrick/about/news/Conferences/2022/Registration

WHY ATTEND?

- Excellent opportunity for practitioners and researchers in industry, government, consulting offices, laboratories and universities to reach an audience of 800 participants from over 30 countries
- Ideal location for presenting compressor, refrigeration/AC and high performance building systems research results and state-of-the art technology
- Receive CEUs (continuing education units) where applicable
- Discuss challenges and potential solutions on important issues of compressor technology, new refrigerants and refrigeration technology and efficiency, as well as energy-efficient building technologies
- Invited keynote speakers addressing current, world-wide issues of interest facing society today
- Panel discussions highlighting the latest breakthroughs in technology, alternative technologies in research and industry
- Opportunity to network with attendees and officers from industry organizations
- Registration includes three parallel conferences, reception, luncheon, and dinner

CONTACT INFORMATION

For Conferences and Short Courses – Brian Barrett

177 S. Russell St., West Lafayette, IN 47907, USA

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For Registration and Payment – Amanda Johnson

128 Memorial Mall, Room 116, West Lafayette, IN 47907

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Organizing Committee

General Chair..... Eckhard A. Groll

International Compressor Engineering Conference Chair..... W. Travis Horton

International Compressor Engineering Conference Co-Chair..... Jim Braun

International Refrigeration and Air Conditioning Conference Chair..... Neera Jain

International Refrigeration and Air Conditioning Conference Co-Chair..... Davide Ziviani

International High Performance Buildings Conference Chair..... Thanos Tzempelikos

International High Performance Buildings Conference Co-Chair..... Ming Qu

2022 SHORT COURSES

Compressor 104 – Numerical and Experimental Techniques Applied to Noise and Vibration in Positive Displacement Compressors

Coordinated by: Eckhard A. Groll (Purdue University), Davide Ziviani (Purdue University), Yangfan Liu (Purdue University), Haotian Liu (Purdue University)

In this fourth edition of the Compressor Short Course, the fundamentals and the practical aspects of noise and vibration phenomena in positive displacement compressors will be covered. It is well known that compressor performance heavily relies on each single component and its unique interaction inside the compressor housing, and subsequently requires a thorough understanding of the composite system to resolve issues arising from noise and vibration. Each positive displacement compressor type is characterized by different compression mechanisms and fluid-structure interactions. During the course, lectures will focus on the main noise and vibration sources of each compressor type and provide numerical and experimental methodologies to identify and mitigate such effects. The short-course consists of eight 45-minute lectures and will provide ample time for hands-on experience and discussion.

Refrigeration Short Course 1 – Ejector Design for Vapor Compression Systems (morning session)

Coordinated by: Prof. William Murphy (retired University of Kentucky) and the U.S. National Committee of the IIR in collaboration with Herrick Laboratories Faculty

Ejectors are being developed as a way to improve vapor compression cycle efficiency by replacing the isenthalpic expansion process. Ejectors have no moving parts, like expander work recovery devices, so they have the potential to produce simpler and lower cost designs with improved system reliability.

Refrigeration Short Course 2 – Update on Flammable Refrigerants (afternoon session)

Coordinated by: Prof. William Murphy (retired University of Kentucky) and the U.S. National Committee of the IIR in collaboration with Herrick Laboratories Faculty

The demand for refrigerants with lower GWPs has led to a class of refrigerants that are considered mildly flammable. The use of flammable refrigerants will require changes in various safety codes and guidelines related to building design, installation and service requirements, and system design. This course provides detailed information on the latest code changes as well as experimental results involving flammable refrigerant safety testing.

ACCOMMODATIONS AND TRAVEL ARRANGEMENTS

Conference attendees are responsible for making their own housing reservations. Guests are encouraged to choose from our list of preferred accommodations, which are listed below and on our website. (<https://engineering.purdue.edu/HerrickConf>) You can choose from full service hotel facilities in and around the Purdue University area, as well as our University Residences. Conference organizers have worked together to negotiate conference rates for you. Please be sure to mention you are attending the Compressor Conference to ensure these rates.

Many of our area hotels offer a courtesy shuttle to campus, and attendees should make arrangements for transportation to the conference facilities with their respective hotels..

Purdue Union Club Hotel

www.union.purdue.edu

101 N. Grant Street, West Lafayette, IN 47906

800-320-6291 • 765-494-8913

Four Points by Sheraton West Lafayette

www.starwoodhotels.com

1600 Cumberland Avenue, West Lafayette, IN 47906

800-777-9808 • 765-463-5511

Holiday Inn City Center

www.hicclaf.com

515 South Street, Lafayette, IN 47901

800-423-1137 • 765-423-1000

University Residences

First Street Towers

www.housing.purdue.edu/Housing/Residences/FirstStreetTowers/index.html

1250 1st Street, West Lafayette, IN 47906

Book room at First Street Towers when registering for the conference



If you are traveling to Purdue via air transportation, the closest destination cities are Indianapolis & Chicago. Once on the ground, there are several shuttle services which offer service to Purdue University. To learn more about shuttle service, rental car options & maps of campus, please visit our website under the Travel & Accommodations Info tab. (<https://engineering.purdue.edu/HerrickConf>)

If you require a visa invitation letter to attend the conferences, please contact us as soon as possible. Presenting authors can find invitation letters available through Conftool.



If you are not a presenting author, but wish to attend our conferences please check out the VISAS tab under the Travel & Accommodations Info tab.

(<https://engineering.purdue.edu/HerrickConf>)



MONDAY, JULY 11

7:00 - 10:00am	Conference Registration - <i>Main Lounge, Purdue Memorial Union</i>							
8:00am - 4:00pm	Hospitality Room - <i>STEW 302/306</i> Hosted by Saginomiya							
9:30am - 11:30am	Opening Session, Welcome, and Keynote Address - <i>Loeb Playhouse, Stewart Center</i>							
11:30am - 1:00pm	Complimentary Lunch for Chairpersons & Presenting Authors for Monday's Sessions - <i>West Faculty Lounge, Second Floor, Purdue Memorial Union</i>							
11:30am - 1:00pm	Lunch Break							
	STEW 214 A&B	STEW 214 C&D	STEW 218 A&B	STEW 218 C&D	STEW 310	STEW 278	STEW 202	STEW 206
1:00 - 3:00pm	B-01: Thermal Storage, Heat Pumps and Materials	R-01: Experimental Characterization and Modeling of Two-Phase Flow	R-02: Alternative Refrigerants Modeling and Test I	R-03: Vapor Compression System Performance and Enhancements	R-04: Automotive and Transportation HVAC&R	R-05: PCM TES Devices	C-01: Scroll Compressors I	C-02: Modeling Techniques
3:30 - 5:30pm	B-02: Building Simulation and Energy Modeling	R-06: Thermal Management of Electric Batteries	R-07: CO2 Assessment I	R-08: Alternative Air-conditioning, refrigeration and heat pumping I	R-09: Automated Fault Detection and Diagnostics for Equipment (IBO)	R-10: Flammable Refrigerants	C-03: Compressor Valves	C-04: Oil & Lubrication
3:30 - 5:30pm	Kick-off Meeting of IIR - <i>STEW 311</i>							
3:30 - 5:30pm	Student Branch ASHRAE Meeting - <i>STEW 313</i>							
5:30 - 6:00pm	Bus Transportation provided from Grant Street Garage to Lafayette Brewing Company							
6:00 - 8:30pm	Opening Night Reception - <i>Lafayette Brewing Company (LBC)</i> - Hosted by Carrier Corporation							
8:30 - 9:00pm	Bus Transportation provided from Lafayette Brewing Company to Grant Street Garage							

TUESDAY, JULY 12

7:15 - 8:15am	Complimentary Breakfast for Chairpersons & Presenting Authors for Tuesday's Sessions <i>West Faculty Lounge, Second Floor, Purdue Memorial Union</i>							
8:00am - 4:00pm	Hospitality Room - STEW 302/306							
8:30am - 9:20am	High-Performance Buildings Plenary Session - <i>Loeb Playhouse, Stewart Center</i>							
	STEW 214 A&B	STEW 214 C&D	STEW 218 A&B	STEW 218 C&D	STEW 310	STEW 278	STEW 202	STEW 206
9:40am - 11:40am	B-03: Smart Sensing, Data Analytics & IEQ	R-11: Frost and Defrost Characterization and Modeling	R-12: Advanced System Control	R-13: Advance equipment sensing	R-14: Alternative Refrigerants Modeling and Test II	Student Paper Competition: Refrigeration & A.C.	C-05: Compressor Testing & Evaluation I	C-06: Screw Compressors I
11:30am - 1:30pm	Sponsor Expo - <i>Purdue Memorial Union (outside of luncheon)</i>							
11:50am - 1:20pm	Conference Luncheon (included in Registration) <i>North and South Ballrooms, Purdue Memorial Union</i> Hosted by Trane Technologies							
1:30 - 3:30pm	B-04: MPC & Smart Building Controls	R-15: Oil and Lubrication I	R-16: Alternative Refrigerants Properties	R-17: Heat pump applications (Dryers & Water Heater)	R-18: Heat Exchanger Design	Student Paper Competition: Compressors	C-07: Novel Compressors I	C-08: Compressor Modeling II
4:00 - 6:00pm		R-19: Load Based Testing I	R-20: Heat Pump Design and Applications I	R-21: Experimental Characterization of Two-phase Flow I	R-22: Systems Integrated with PCM based TES	Student Paper Competition: High Performance Buildings	C-09: Reciprocating Compressors I	C-10: NVH I
4:00 - 5:30pm	IIR Combined Commission Meeting							
6:00 - 8:00pm	Tours of Herrick Laboratories							
6:30 - 8:00pm	Conference Advisory Committee Meeting (by invitation only) - <i>Spurgeon Club, Mackey Arena</i>							
8:00 - 10:00pm	Student Mixer - <i>Harry's Chocolate Shop</i> Hosted by Rheem							

WEDNESDAY, JULY 13

7:15 - 8:15am	Complimentary Breakfast for Chairpersons & Presenting Authors for Wednesday's Sessions <i>West Faculty Lounge, Second Floor, Purdue Memorial Union</i>							
8:00am - 4:00pm	Hospitality Room - STEW 302/306 Hosted by Rheem							
8:30am - 9:20am	Refrigeration Conference Plenary Session - Global Outlook Panel <i>Loeb Playhouse, Stewart Center</i>							
	STEW 214 A&B	STEW 214 C&D	STEW 218 A&B	STEW 218 C&D	STEW 310	STEW 278	STEW 202	STEW 206
9:40am - 12:00pm	B-05: Building Performance Monitoring, Energy Management & FDD	R-23: Absorption Technology	R-24: Vapor Compression System Modeling I	R-25: Heat Exchangers Testing	R-26: Domestic and Light-Commercial Refrigeration	R-27: Oil and Lubrication II	C-11: Compressor Testing & Evaluation II	C-12: Compressors for Alternative Refrigeration
12:00 - 1:00pm	Lunch Break							
1:00 - 3:00pm	B-06: IAQ, Disinfection & Air Cleaning, Outdoors	R-28: Advanced HX and Manufacturing	R-29: Vapor Compression System Modeling II	R-30: Application of Ejectors	R-31: Power and Co-generation Equipment I		C-13: Novel Compressors II	C-14: Compressor Modeling III
3:30 - 5:30pm		R-32: Heat Exchanger Modeling	R-33: Commercial and Industrial HVAC&R	R-34: Alternative Technologies for Sensible and Latent Load Management	R-35: Energy Storage		C-15: NVH II	C-16: Tribology
5:30 - 6:00pm	Shuttle buses will transport attendees from the Grant Street Parking Garage to the Gala Dinner							
6:00 - 9:00pm	50th Anniversary Gala Dinner - The Stables, West Lafayette, IN Hosted by Emerson Climate Technologies							
9:00 - 9:30pm	Shuttle buses will transport attendees from Gala Dinner to the Grant Street Parking Garage							

THURSDAY, JULY 14

7:15 - 8:15am	Complimentary Breakfast for Chairpersons & Presenting Authors for Thursday's Sessions <i>West Faculty Lounge, Second Floor, Purdue Memorial Union</i>							
8:00am - 4:00pm	Hospitality Room - STEW 302/306							
8:30am - 9:20am	Compressor Conference Plenary Session - Industry Panel: The Future of Compressors <i>Loeb Playhouse, Stewart Center</i>							
	STEW 214 A&B	STEW 214 C&D	STEW 218 A&B	STEW 218 C&D	STEW 310	STEW 278	STEW 202	STEW 206
9:40am - 12:00pm		R-36: Load Based Testing II	R-37: Alternative Refrigerants Modeling and Test III	R-38: CO2 Assessment II	R-39: Alternative Air-conditioning, refrigeration and heat pumping	R-40: Power and Co-generation Equipment II		
12:00pm	End of Conference							
1:00 - 3:00pm	Advisory Committee Meeting (by invitation only) - STEW 307							
1:00 - 3:00pm	Additional Ray W. Herrick Laboratory Tours by Request							



Ray W. Herrick Laboratories

Ray W. Herrick Laboratories

177 South Russell Street

West Lafayette, IN 47907-2099

FOR 50 YEARS

Purdue University has played host to the International Compressor Engineering Conference (beginning in 1972), the International Refrigeration and Air Conditioning Conference (added in 1986) and the International High Performance Buildings Conference (added in 2010). These conferences provide a perfect venue to present research and development work, as well as network with top experts in the field.

The conferences technical sessions run simultaneously enabling attendees to attend sessions of interest from any conference. Conference registration includes online access to the conference schedule, presented papers and all social networking events. The conferences will be conducted in English.

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