

# 50 HERRICK CONFERENCES

CELEBRATING 50 YEARS OF INNOVATION

25TH COMPRESSOR ENGINEERING • 18TH REFRIGERATION AND AIR CONDITIONING • 6TH HIGH PERFORMANCE BUILDINGS

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



## 2022 ANNOUNCEMENT AND CALL FOR PAPERS

COMPRESSOR & REFRIGERATION SHORT COURSES • JULY 10, 2022

HERRICK CONFERENCES • JULY 11-14, 2022

## THANK YOU TO OUR PAST CONFERENCE SPONSORS

*Interested in sponsoring the 2022 Conferences?*

*Email Brian Barrett for more information at [herrickconferences@purdue.edu](mailto:herrickconferences@purdue.edu).*



## 2022 PROPOSED SESSION TOPICS

### Compressor Engineering Conference

Screw Compressors  
Scroll Compressors  
Rotary Compressors  
Reciprocating Compressors  
Dynamic Compressors  
Novel Compressor Mechanisms and Concepts  
Numerical Modeling of Compressors  
Thermal Management  
Valve Design and Analysis  
Compressors for Alternative Refrigerants  
Compressors for Air and Industrial Gases  
CO<sub>2</sub> Compressors and Expanders  
Compressor Efficiency Enhancements  
Tribology and Lubrication in Compressors  
Noise Identification and Reduction  
Variable Speed Compressor Technologies  
Capacity Modulation Concepts  
Compressor Testing and Evaluation

### Refrigeration & A/C Conference

Refrigerant Properties and Assessments  
Lubrication Properties and Assessments  
Heat and Mass Transfer Characterization, Modeling, and Enhancements  
Heat Exchanger Modeling, Design, & Advancements  
Throttles and Expanders  
Domestic, Commercial, and Industrial Refrigeration  
Heat Pumps  
Transportation Air Conditioning Equipment  
Quasi-Steady & Dynamic HVAC&R Equipment Modeling  
Advanced Controls for HVAC&R Equipment  
Automated Diagnostics for HVAC&R Equipment  
Vapor Compression Cycle Enhancements  
Alternative Cooling and Heating Technologies  
Heat-Driven Refrigeration Technologies  
Power and Co-Generation Equipment  
Energy Storage Technologies  
Energy Recovery Technologies

### High Performance Buildings Conference

Smart Buildings, Controls and Automation  
Building Simulation and Energy Modeling  
Building Performance Monitoring and Diagnostics  
Net Zero Energy Buildings  
Indoor Environment: Indoor Air Quality, Thermal, Acoustic, and Visual Comfort  
Building Envelope and Facade Systems  
Lighting and Daylighting  
Occupant-Building Interactions  
Innovative Building Materials  
Case Studies and Integrated Building Design  
Solar Energy Utilization in Buildings  
Filtration and Air Cleaning  
IoT Applications in Buildings  
Building Data Analytics

## 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), 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.

## 2022 STUDENT PAPER AWARDS

The conference organizing committee is pleased to invite students to submit abstracts for the **2022 Student Best Paper Award Competition**. Please note the following updated eligibility information and other guidelines for the competition:

- Students at the undergraduate level and graduate level at the time of the paper submission are eligible to compete.
- Students must be the first author on the submitted papers and must present their work at the conferences to compete.
- Every student paper submission to the 2022 Student Best Paper Award Competition must be accompanied by a separate nomination statement by the advising professor.
- Every advising professor may nominate a maximum of two student paper submissions to the 2022 Student Best Paper Award Competition.
- Cash prizes for each conference will be presented to the top three papers in the amounts of \$1000, \$500 & \$250

# ABSTRACT & PAPER SUBMISSIONS

Visit [www.conftool.com/Herrick2022](http://www.conftool.com/Herrick2022) to submit online. Choose most closely related topic area. Submit your 500 word abstract and after acceptance, an 8 page paper. Please note that presenting authors must be registered by the May 30, 2022 manuscript deadline. Abstracts and papers must be submitted in English.

	Conference Registration	Deadlines
ConfTool Abstract Submission System Opens		September 28, 2021
Abstract Submission		December 20, 2021
Abstract acceptance notification and instructions to authors for manuscript preparation		January 24, 2022
Manuscripts submission deadline		April 4, 2022
Notification to presenting authors of acceptance or rejection of manuscripts		May 2, 2022
Pre-registration for conference ends. Final version of papers must be uploaded at this time		May 30, 2022
Presenting Author Registration (2 Presented Papers Maximum)	\$650	May 30, 2022
Student Author Registration (2 Presented Papers Maximum)	\$250	May 30, 2022
Non-Author Registration	\$700	May 30, 2022
Student Non-Author Registration	\$300	May 30, 2022
Buildings Short Course Registration	\$650	May 30, 2022
Compressor Short Course Registration	\$650	May 30, 2022
Refrigerant Short Course 1 Registration	\$375	May 30, 2022
Refrigerant Short Course 2 Registration	\$375	May 30, 2022
Both Refrigerant Short Courses Registration	\$650	May 30, 2022
Student Short Course Registration	\$250	May 30, 2022

**All registration rates will increase by \$150 after the deadline date.** Groups of 6 attendees from the same employer receive 1 complimentary registration for every 5 paid registrations. Group registration fees are \$3,500 before May 30, 2022 and \$4,000 starting May 31, 2022.

## IMPORTANT FACTS

- Conference registration will be available online starting March of 2022 at [www.conf.purdue.edu/Herrick2022](http://www.conf.purdue.edu/Herrick2022)
- Companies wishing to register using a wire transfer will need to contact Amanda Johnson at [john2145@purdue.edu](mailto:john2145@purdue.edu) or (765) 494-0874. Note that additional wire transfer fees are included.
- All fees must be paid in U.S. funds and drawn on a U.S. bank. Fees paid in advance but not used will be refunded upon written request by June 27, 2022. We are not responsible for costs incurred due to cancellation.
- Letters of invitation to obtain your travel visa can be found in ConfTool. Please contact Brian Barrett at [herrickconferences@purdue.edu](mailto:herrickconferences@purdue.edu) if you require additional documentation for travel.
- For additional registration information, daily schedule, etc. – please visit [engineering.purdue.edu/HerrickConf](http://engineering.purdue.edu/HerrickConf).
- Continuing Education Units (CEU's) may be available.

## CONTACT INFORMATION

**For Conferences and Short Courses** – Brian Barrett  
 177 S. Russell St., West Lafayette, IN 47907, USA  
 PH: (765) 494-6078 | E-mail: [herrickconferences@purdue.edu](mailto:herrickconferences@purdue.edu)

**For Registration and Payment** – Amanda Johnson  
 128 Memorial Mall, Room 116, West Lafayette, IN 47907  
 PH: (765) 496-0874 | E-mail: [john2145@purdue.edu](mailto:john2145@purdue.edu)

**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



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.

**ENGINEERING.PURDUE.EDU/HERRICKCONF**

An equal access/equal opportunity university.



**CELEBRATING 50 YEARS OF INNOVATION**

POSITIVE DISPLACEMENT & DYNAMIC COMPRESSORS HVAC&R SYSTEM COMPONENTS

ALTERNATIVE ENERGY SYSTEMS & EQUIPMENT

HEAT PUMPING SYSTEMS INTELLIGENT BUILDINGS OPERATIONS

INDOOR ENVIRONMENTAL QUALITY NETZERO BUILDINGS

BUILDING ENERGY MODELING WASTE RECOVERY

ADVANCED HEAT AND MASS TRANSFER TECHNOLOGIES HVAC&R

OIL MANAGEMENT FOR HVAC&R EQUIPMENT

INTERIOR BUILDINGS AND OCCUPANTS

IMPACTS OF BUILDING AND REFRIGERATION TECHNOLOGIES ON GLOBAL WARMING

MULTI-PHYSICS MODELING MACHINE LEARNING