

# 2020 Purdue Conferences

Compressor Engineering | Refrigeration and Air Conditioning | High Performance Buildings

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

## 2020 ANNOUNCEMENT AND CALL FOR PAPERS



SHORT COURSES & INTELLIGENT BUILDING OPERATIONS (IBO) WORKSHOP • JULY 12, 2020  
PURDUE CONFERENCES • JULY 13-16

## THANK YOU TO OUR PAST 2018 CONFERENCE SPONSORS

*Interested in sponsoring the 2020 Conferences?*

*Email Brian Barrett for more information at [hlconf20@purdue.edu](mailto:hlconf20@purdue.edu).*



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# 2020 PROPOSED SESSION TOPICS

## Compressor Engineering Conference

Screw 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, and 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

# INTELLIGENT BUILDING OPERATION (IBO) WORKSHOP

**Coordinated by:** *Jim Braun (Purdue University), Gregor Henze (University of Colorado), Panagiota Karava (Purdue University), Neera Jain (Purdue University)*

The IBO Workshop is an annual event that alternates between the University of Colorado Boulder and Purdue University. It began in 2011 and has been held 6 times since. In 2020, it will be presented at Purdue in combination with the conferences. The IBO-Purdue Workshop will cover the state-of-the-art in intelligent building operation technologies and applications that can enable scalable and cost-effective solutions. The workshop will be held on the Sunday before the conferences and will feature invited presentations. In addition, IBO-Purdue will feature several technical sessions that will be held during the subsequent Purdue International High-Performance Buildings (HPB) and Refrigeration & A/C Conferences. The technical session presentations will be supplemented with papers that are part of the proceedings of these two conferences. IBO-Purdue Workshop participants will be able attend any of the technical sessions associated with all three of the parallel Purdue Conferences.

# 2020 SHORT COURSES

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

*Coordinated by: Eckhard A. Groll (Purdue University), Orkan Kurtulus (Purdue University), Davide Ziviani (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.

# ABSTRACT & PAPER SUBMISSIONS

Visit [www.conftool.com/Purdue2020](http://www.conftool.com/Purdue2020) 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 25, 2020 manuscript deadline. Abstracts and papers must be submitted in English.

## Student Paper Competition

The conference organizing committee is pleased to invite students to submit abstracts for the 2020 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 2020 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 2020 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

	Conference Only Registration	Conference and IBO Workshop	Deadlines
Abstract Submission			December 20, 2019
Abstract acceptance notification and instructions to authors for manuscript preparation			January 27, 2020
Manuscripts submission deadline			April 6, 2020
Notification to presenting authors of acceptance or rejection of manuscripts			May 4, 2020
Pre-registration for the conference ends. Final version of the papers must be uploaded at this time			May 25, 2020
Presenting Author Registration (2 Presented Papers Maximum)	\$650	\$750	May 25, 2020
Student Author Registration (2 Presented Papers Maximum)	\$250	\$350	May 25, 2020
Non-Author Registration	\$700	\$800	May 25, 2020
Student Non-Author Registration	\$300	\$400	May 25, 2020
Compressor Short Course Registration	\$650		May 25, 2020
Refrigerant Short Course 1 Registration	\$375		May 25, 2020
Refrigerant Short Course 2 Registration	\$375		May 25, 2020
Both Refrigerant Short Courses Registration	\$650		May 25, 2020
Student Short Course Registration	\$250		May 25, 2020

**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 25, 2020 and \$4,000 after May 26, 2020.

## IMPORTANT FACTS

- Conference registration will be available online starting March of 2020 at [www.conf.purdue.edu/Herrick2020](http://www.conf.purdue.edu/Herrick2020)
- Companies wishing to register using a wire transfer will need to contact Ethan Kingery at [ekingery@purdue.edu](mailto:ekingery@purdue.edu) or (765) 494-3667. 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 26, 2020. 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 [hlconf20@purdue.edu](mailto:hlconf20@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

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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 ..... Davide Ziviani

International Refrigeration and Air Conditioning Conference Chair ..... James E. Braun

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

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

International High Performance Buildings Conference Co-Chair..... Brandon Boor

## IMPORTANT DATES AND DEADLINES

Friday, December 20, 2019.....	Abstract Submission Deadline
Monday, January 27, 2020 .....	Abstract Acceptance Deadline
Monday, April 6, 2020.....	Manuscript Submission Deadline
Monday, May 4th, 2020 .....	Manuscript Acceptance Deadline
Monday, May 25, 2020.....	Final Papers must be uploaded
Monday, July 6, 2020 .....	Final Presentations must be uploaded



## FOR OVER 40 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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**SHORT COURSES: JULY 12, 2020 • CONFERENCE: JULY 13-16, 2020**

**800+**  
ATTENDEES

**30+**  
COUNTRIES

**650+**  
SUBMITTED  
ABSTRACTS

**450+**  
PRESENTED  
PAPERS