



1ST BIENNIAL INTERNATIONAL CONFERENCE

# HEAT '21

**PES**  
UNIVERSITY

HYBRID AND ELECTRIC AUTOMOTIVE TECHNOLOGIES

JUNE 4 & 5, 2021

<https://heat.pes.edu>

**CONFERENCE IN HYBRID MODE**

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**(ESTABLISHED UNDER KARNATAKA ACT 16 OF 2013)**  
 100 FEET RING ROAD,  
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 BANGALORE-560085

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# ABOUT THE CONFERENCE

The market and technology for electric drive vehicles is growing rapidly and will soon epitomize the mainstream of new vehicle car sales. As such, it is more important than ever to stay informed on the latest technology, hybridization and electrification solutions, and new emission/energy consumption targets. Hybrid electric vehicles (HEVs) have great potential to save fuel consumption and reduce pollution emission.

The automotive technology that drives hybrid electric vehicles has huge potential for research and development. From efficiency-improving technologies such as regenerative brakes to advanced batteries in plug-in electric vehicles designed for extended life, the scope for enhancing the power available at the wheels is enormous, and as such many researches have focused on the technologies and applications of HEVs both in academia and industry.

HEAT seeks to provide a platform for researchers working in this domain with specific topics of discussion which include batteries, battery cooling methodologies, use of nano-coolants, electrified powertrain systems and components, hybridization infrastructure, energy storage, and many other topics of importance to the industry.

# ABOUT PES UNIVERSITY

PES University (formerly PES Institute of Technology) was established as a State Private University under Karnataka Act No. 16 of 2013 on November 19, 2013 and the first academic session of the University started on August 4, 2014. The University offers Bachelors and Masters Programs in Engineering, Business Management and Computer Applications. The vision of the University is to create professionally superior and ethically strong global workforce. PES Institute of Technology was established in 1988 as a flagship institute of PES (Peoples Education Society). The institution made rapid progress on the research front receiving grants from various funding agencies such as NRB, AR&DB, DST, DRDO, ISRO, KCTU. The institution entered into MOUs with leading industries, scientific organizations, and institutions of higher learning in the country and overseas, to facilitate student and faculty exchange programs, joint research, and publication.

The Department of Mechanical Engineering came into existence in 1988. The Department has a highly qualified and dedicated team of faculty engaged in teaching, research, and consultancy. The Department offers undergraduate & postgraduate programs in Mechanical Engineering. The Department is equipped with state-of-the-art laboratories with high end equipment such as subsonic wind tunnel and water tunnel, 3D-printing, friction-stir welding besides high end software and hardware. The students of the Department under the aegis of various clubs viz., Team Aeolus, Team HAYA, and Team VEGA involve in designing and building UAVs, racing cars and electric vehicles, and regularly participate in National and International competitions every year. One of the major achievements of the department is its recognition as the first PACE (Partners for Advancement of collaborative Engineering Education) centre in the country by general Motors, USA.

Process modelling is an important branch of mechanical engineering and is essential for optimizing control parameters and production planning. This is of great significance in the industry where production efficiencies are needed to be improved. Dedicated to bring to the industry the power of mathematical modelling, Process Modelling Research Lab at PES University is working to propagate the use of process modelling tools amongst academics and industries through continuous learning, research and consultancy.

## FLUID AND THERMAL ENGINEERING IN EV/ HEV

1. Cooling of computer chips
2. Cooling Systems
3. Porous Media and Phase Change Materials for cooling of electronics
4. Energy Conservation
5. Energy Conversion
6. Aerodynamics of automobile components
7. Heating and cooling systems for EV's
8. Fluid Structure Interaction in Vehicles
9. Case Studies in Thermal Engineering
10. Combustion Engines
11. Applications of Computational Fluid Dynamics (CFD) in Automobiles
12. Heat Exchangers and Heat Transfer Systems
13. Refrigeration and HVAC Systems
14. Renewable Energy
15. Pollution Control

## ELECTRICAL AND ELECTRONICS IN EV/ HEV

1. EV motor drives and controllers
2. Battery Management System
3. EV high voltage wiring
4. Innovations in EV energy storage solutions
5. EV systems modeling, simulation, and testing
6. AC and DC conductive charging, wireless charging, smart charging, fast charging
7. Power grid and renewable energy resource interfacing for EV mass deployment
8. Design for manufacturing for EV mass production
9. EV fleet and infrastructure asset management
10. Design for EV maintainability
11. Information Technology and Communication services for the EV ecosystem
12. Global standards development for EVs and their impact on EV deployment, R&D and manufacturing
13. Trends in EV deployment, supply chain and manufacturing
14. EV-related educational programs for engineers, legislators, and the public
15. Sensors used in EV/ HEV

## ENGINEERING DESIGN IN EV/ HEV

1. Tire Dynamics
2. Vehicle Dynamics
3. Innovations in EV component design
4. Behavior of Solids and Structures
5. EV system architecture concepts for passenger, service, and utility vehicles
6. Failure Analysis Multi-Body Dynamics
7. Noise, Vibration and Harshness

## AUTONOMOUS VEHICLES

1. Artificial Intelligence
2. Artificial Neural Networks & Deep learning
3. Augmented reality and virtual reality
4. Big Data analytics
5. Cloud computing
6. Cognitive computing
7. Computational learning theory
8. Computer graphics
9. Condition monitoring
10. Cyber-physical systems
11. Digital Thread and Twins
12. Evolutionary Computing
13. Hybrid machine intelligence techniques
14. Hybrid systems modeling and simulation
15. Image processing
16. Intelligent Decision Support Systems
17. Intelligent Robotics
18. Machine learning
19. Machine Vision and Industry 4.0
20. Night Vision Technology in Automobile
21. Navigation and Sensor Network



## INSTRUCTIONS FOR THE AUTHORS OF ACCEPTED PAPERS

Authors are requested to send the 3 documents as an attachment to [heat@pes.edu](mailto:heat@pes.edu) in a Zipped file (Paper Submission Number as a file name).

1. **Camera Ready Paper (pdf and word, both files).** File Name: Paper Submission Number \_camera.doc and Paper Submission Number \_camera.pdf
2. **Receipt of Registration Fee paid.** File Name: (Paper Submission Number \_Fee receipt.pdf).
3. **Response to Reviewers (word file).** File Name: Paper Submission Number \_response.doc

**Most Important Note:** You must not update your latest version of the paper uploaded at EasyChair and use that last version of the updated file (that was uploaded on EasyChair after revision) in order to prepare the final camera-ready paper.

The paper length should not exceed 8 pages. However, you can extend up to 12 pages, and over length page charge is Rs.1000 per page.

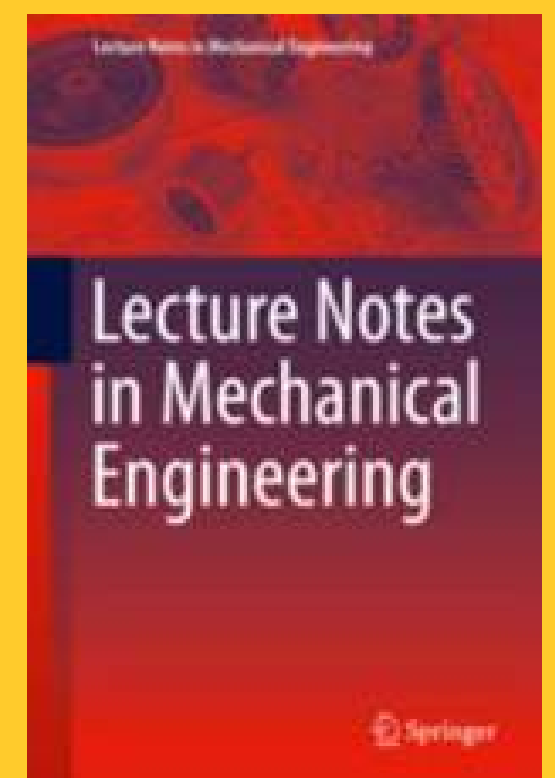
# CALL FOR PAPERS

Paper submission will be managed using the conference management system EasyChair. To submit your full papers please use the link below or refer to the conference web page. <https://easychair.org/conferences/?conf=heat2021> .  
 Call for paper: April 15th, 2021. (See updates on: [heat.pes.edu](http://heat.pes.edu)).

Acceptance of paper: April 30th, 2021.

**All accepted papers of the conference will be published in Lecture Notes in Mechanical Engineering, Springer Publications. (Scopus and Web of Science Indexed)**

*Proceedings will not be published in IEEE Xplore and SAE.*



## IMPORTANT DATES

Deadline for paper submission	April 15, 2021
Notification of Acceptance of Paper	April 30, 2021
Deadline for Submission of Camera-Ready Paper	May 15, 2021
Early Bird Registration	May 15, 2021
Conference	June 4&5, 2021

## CONFERENCE REGISTRATION FEES

#	PARTICULARS	REGISTRATION AMOUNT	
		INR	USD
1	Students (UG/ PG)*	2000	50
2	Research Scholar* (Ph. D/ JRF/ SRF etc.)	2000	50
3	Faculty Members	8000	250
4	Industrial Members	8000	250
5	Accompanying Person/ Listener	2000	50

\*Accepted papers from students/ research scholars will get Rs. 1500/- reimbursement at the end of the conference.

IEEE & SAE Members will be given a 10% discount on the registration fees.

- Students must produce a valid id card issued by concerned institute to register in student's category.
- Registration fees does not include accommodation and transportation expenses.
- Minimum one registration is mandatory for a paper to be the part of proceedings.
- Accommodation could be arranged in guest house of PES University or nearby hotels as per the availability, on the payment basis for which the organizers will provide necessary assistance if informed well in advance.

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