

Curriculum Vitae of Rakesh Kumar Maurya

Associate Professor
Department of Mechanical Engineering
Indian Institute of Technology Ropar
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Areas of Interest: HCCI and Low Temperature Combustion for IC Engines, Alternative fuels, Engine Emission Control, Engine management systems, Engine Instrumentation and Combustion Diagnostics, Particulate Characterization and Control, New Engine Designs, Engine Endurance and Long Term Durability Studies. Engineering Ethics, Cognitive Science

Personal Profile:

Date of Birth: June 24th, 1981
Nationality: Indian

Academic Qualifications:

Degree/ Examination	Year	Institution/ University	CGPA/ % marks
Ph.D. (Mech. Eng.)	2012	Indian Institute of Technology Kanpur, Kanpur	8.9/10 CPI
M.Tech. (Mech. Eng.)	2006	Indian Institute of Technology Kanpur, Kanpur	8.3/10 CPI
B.Tech. (Mech. Eng.)	2005	Indian Institute of Technology Kanpur, Kanpur	7.6/10 CPI

Experience Record:

Professional Career

December 2019- Present – Associate Professor, IIT Ropar

August 2013- December 2019 – Assistant Professor, IIT Ropar

March 2011- August 2013- CSIR Senior Research Associate (Pool-Scientist) at IIT Kanpur

August 2006- March 2011- Teaching and Research Assistant at IIT Kanpur

May 2004-June 2004 – Vocational Training at Lohia Starlinger Limited, Kanpur

Scholastic Achievements/ Awards:

- ISEES Young Scientists Award, 2016. International Society for Energy, Environment and Sustainability.
- Early Career Research Award 2016, Department of Science and Technology, Govt. of India.
- Awarded Senior Research Associate (Pool Scientist) from CSIR in the year 2011.
- Awarded Outstanding Reviewer (Certificate of Outstanding Contribution in Reviewing) by several reputed journals: Applied Energy, Energy Conversion & Management, and Applied Thermal Engineering.
- Second Best Student Paper Award in SAE INDIA International Mobility Conference-2012, January 2012, New Delhi, India.
- Received Research Cash Award by IIT Kanpur for publishing in reputed journals.

- Publications have been cited more than 1500 times [Ref. Google Scholar].
- Qualified IIT JEE-2001 with All India Rank (AIR) 864.
- Recipient of “Certificate of Merit” by Central Board for Secondary Examination, New Delhi for securing 0.1 Percent top ranker position in PHYSICS at 10+2 level, 1998.
- Recipient of “Merit Certificate” by Navodaya Vidyalaya Samiti New Delhi for Highest marks in Physics among all Jawahar Navodaya Vidyalaya.

Publications:

Master Dissertation:

“Combustion and Emission Behavior of Ethanol Fuelled HCCI Engine: An Experimental Investigation” at Department of Mechanical Engineering, IIT, Kanpur, 2006.

Doctoral Dissertation:

“Performance, Emissions, Combustion Characterization and Close Loop Control of HCCI Engine Employing Gasoline like Fuels” at Department of Mechanical Engineering, IIT, Kanpur, 2012.

Authored Books

1. **Rakesh Kumar Maurya** "Characteristics and Control of Low Temperature Combustion Engines: Employing Gasoline, Ethanol and Methanol" Springer, 2018; pp. 544 ISBN 978-3-319-68507-6.
2. **Rakesh Kumar Maurya** "Reciprocating Engine Combustion Diagnostics: In-Cylinder Pressure Measurement and Analysis" Springer, 2019; pp.616 ISBN 978-3-030-11953-9.

Edited Books

1. Dhananjay Kumar Srivastava, Avinash Kumar Agarwal, Dutta, A., **Rakesh Kumar Maurya**, (Eds.) Advances in Internal Combustion Engine Research, Springer 2018. ISBN 978-981-10-7574-2.

Book Chapters

1. **Rakesh Kumar Maurya**, Mohit Raj Saxena, Nikkanti Akhil, “Experimental Investigation of Cyclic Variation in a Diesel Engine Using Wavelets” In: Berretti S., Thampi S.M., Dasgupta S. (Eds.) Intelligent Systems Technologies and Applications, Springer 2016. pp 247-257; ISBN 978-3-319-23036-8
2. **Rakesh Kumar Maurya**, Mohit Raj Saxena, "High Efficiency Reactivity Controlled Compression Ignition Engine" Chapter 12 p.p. 313-328, In: A.K. Agarwal, S.K. Aggarwal, A.K. Gupta, A. Kushari, and A. Pandey (Eds.) Energy, Combustion& Propulsion: New Perspectives, Athena Academic, UK 2015. ISBN:9781910390290
3. **Rakesh Kumar Maurya**, “Investigation of Deterministic and Random Cyclic Patterns in a Diesel Engine using Symbol Sequence Analysis”, In: Choudhary, R.K., Mandal, J.K., Auluck, N., Nagarajaram, H.A. (Eds.) Advanced Computing and Communication Technologies, Springer 2016, pp 549-556. ISBN: 978-981-10-1023-1.
4. **Rakesh Kumar Maurya**, Prashant Mishra "Computational Analysis of Emissions from Gasoline HCCI Engine Using Stochastic Reactor Model" In:Krishnankutty P., Mahbub A.M, Zhan W., Majumdar S., Janardhanan S. and Vucinic D. (Eds.) Computing in Mechanical Engineering, Research Publishing Services, Singapore, 2016, ISBN: 978-981-09-6278-4; doi:10.3850/9789810962784-1570115407.
5. **Rakesh Kumar Maurya** and Nekkanti Akhil, Combustion Instability Analysis Using Wavelets in Conventional Diesel Engine," In: Ram M., Davim J.P. (Eds.) Mathematical Concepts and Applications in

Mechanical Engineering and Mechatronics, IGI Global, USA, 2017, DOI: 10.4018/978-1-5225-1639-2.ch019.

6. **Rakesh Kumar Maurya**, Mohit Raj Saxena, "Investigation of Effect of Butanol Addition on Cyclic Variability in a Diesel Engine using Wavelets", In: Corchado Rodriguez, J.M., Mitra, S., Thampi, S.M., El-Alfy, E.-S. (Eds.) Intelligent Systems Technologies and Applications 2016, Springer 2016, pp 965-976, 978-3-319-47951-4; DOI:10.1007/978-3-319-47952-1_77
7. **Mohit Raj Saxena** and Rakesh Kumar Maurya, "Impact of Fuel Premixing Ratio and Injection Timing on Reactivity Controlled Compression Ignition Engine", In: Agarwal A.K., De S., Pandey A., and Singh A.P. (Eds) Combustion for Power Generation and Transportation: Technology, Challenges and Prospects, Springer, 2017, pp-277-296, ISBN:978-981-10-3784-9. DOI:10.1007/978-981-10-3785-6_13.
8. **Rakesh Kumar Maurya**, Amit R. Patel, Prabir Sarkar, Harpreet Singh, Himanshu Tyagi, "Biomass, its Potential and Applications", In: Kumar S., and Sani R.K. (Eds) Biorefining of Biomass to Biofuels: Opportunities and Perception, Springer, 2018, pp 25-52. ISBN: 978-3-319-67677-7; DOI: 10.1007/978-3-319-67678-4_2
9. Amit R. Patel, **Rakesh Kumar Maurya**, Prabir Sarkar, Harpreet Singh, Himanshu Tyagi, "Biomass Gasification and Sustainability Assessment of Biomass Utilization", In: In: Kumar S., and Sani R.K. (Eds) Biorefining of Biomass to Biofuels: Opportunities and Perception, Springer, 2018, pp 53-85; ISBN: 978-3-319-67677-7 ; DOI: 10.1007/978-3-319-67678-4_3.
10. Mohit Raj Saxena and **Rakesh Kumar Maurya**, "Performance, Combustion and Emissions Characteristics of Conventional Diesel Engine Using Butanol Blends", In: Srivastava, D.K., Agarwal, A.K., Dutta, A., Maurya, R.K. (Eds.) Advances in Internal Combustion Engine Research, Springer 2018, pp 93-110. ISBN 978-981-10-7574-2.
11. **Rakesh Kumar Maurya** and Mohit Raj Saxena, "Characterization of Ringing Operation in Ethanol Fueled HCCI Engine using Chemical Kinetics and Artificial Neural Network", In: Srivastava, D.K., Agarwal, A.K., Dutta, A., Maurya, R.K. (Eds.) Advances in Internal Combustion Engine Research, Springer 2018, pp 43-61. ISBN 978-981-10-7574-2.
12. Mohit Raj Saxena and **Rakesh Kumar Maurya**, "Characterization of Cycle to Cycle Variations in Conventional Diesel Engine Using Wavelets", In: Srivastava, D.K., Agarwal, A.K., Dutta, A., Maurya, R.K. (Eds.) Advances in Internal Combustion Engine Research, Springer 2018, pp 135-155. ISBN 978-981-10-7574-2.
13. **Rakesh Kumar Maurya**, Mohit Raj Saxena, Akshay Rathore and Rahul Yadav, "Chemical Kinetic Simulation of Syngas Fueled HCCI Engine", In: Srivastava, D.K., Agarwal, A.K., Dutta, A., Maurya, R.K. (Eds.) Advances in Internal Combustion Engine Research, Springer 2018, pp 209-226. ISBN 978-981-10-7574-2.
14. Srivastava D.K., Agarwal A.K., **Maurya R.K.**, Datta A. (2018) Horizons in Internal Combustion Research. In: Srivastava D., Agarwal A., Datta A., Maurya R. (eds) Advances in Internal Combustion Engine Research. Energy, Environment, and Sustainability. Springer, Singapore. ISBN 978-981-10-7574-2.
15. **Rakesh Kumar Maurya** and Mohit Raj Saxena, (2019) "Nanoparticle Emissions in Reactivity-Controlled Compression Ignition Engine", In: In: Agarwal A., Dhar A., Sharma N., Shukla P. (eds) Engine Exhaust Particulates, Chapter 12, pp 239-266. ISBN: 978-981-13-3298-2.

Peer Reviewed / Journals-

1. **Rakesh Kumar Maurya**, Parth Jaggi and Mohit Raj Saxena, "Crank-angle resolved exergy analysis of Ethanol fuelled HCCI engine using newly reduced ethanol oxidation mechanism", SAE 2018-01-1683, SAE Technical Paper, 2018.
2. Mohit Raj Saxena, and **Rakesh Kumar Maurya**, "Effect of Fuel Injection Strategy on Nano-particle Emissions from RCCI Engine", SAE 2018-01-1709, SAE Technical Paper, 2018.

3. Mohit Raj Saxena, and **Rakesh Kumar Maurya**, "Effect of butanol addition on performance, combustion stability and nano-particle emissions of a conventional diesel engine", SAE 2018-01-1795, SAE Technical Paper, 2018.
4. Mohit Raj Saxena, and **Rakesh Kumar Maurya**, " Effect of Diesel Injection Timing on Peak Pressure Rise Rate and Combustion Stability in RCCI Engine", SAE 2018-01-1731, SAE Technical Paper, 2018.
5. Avinash Kumar Agarwal, Akhilendra Pratap Singh, **Rakesh Kumar Maurya**, Pravesh Chandra Shukla, Atul Dhar, Dhananjay Kumar Srivastava, "Combustion Characteristics of a Common Rail Direct Injection Engine using Different Fuel Injection Strategies", International Journal of Thermal Sciences, Volume 134, December 2018, Pages 475-484, 2018
6. **Rakesh Kumar Maurya**, Mohit Raj Saxena, Rahul Yadav, and Akshay Rathore, " Numerical investigation of Syngas fueled HCCI engine using stochastic reactor model with detailed kinetic mechanism", SAE 2018-01-1661, SAE Technical Paper, 2018.
7. **Rakesh Kumar Maurya**, and Mohit Raj Saxena, "Characterization of Ringing Intensity in a Hydrogen-Fueled HCCI Engine", International Journal of Hydrogen Energy, Volume 43, Issue 19, 10 May 2018, Pages 9423–9437. DOI: 10.1016/j.ijhydene.2018.03.194
8. **Rakesh Kumar Maurya**, "Experimental Investigation of Deterministic and Random Cyclic Patterns in HCCI Engine using Symbol Sequence Approach" Iranian Journal of Science and Technology, Transactions of Mechanical Engineering, Volume 43, Supplement 1, pp 295–306, July 2019. DOI: 10.1007/s40997-018-0158-9.
9. **Rakesh Kumar Maurya**, Mohit Raj Saxena, Piyush Rai, and Aashish Bhardwaj, "Effect of Compression Ratio, Nozzle Opening Pressure, Engine Load and Butanol Addition on Particle Emissions from a Nonroad Diesel Engine" Environmental Science and Pollution Research, Volume 25, Issue 15, pp 14674–14689, May 2018. DOI:10.1007/s11356-018-1644-8.
10. **Rakesh Kumar Maurya**, and Nikkanti Akhil, "Experimental Investigation on Effect of Compression Ratio, Injection Pressure and Engine Load on Cyclic Variations in Diesel Engine Using Wavelets", SAE Technical Paper, 2018-01-5007, 2018.
11. **Rakesh Kumar Maurya** and Prashant Mishra, "Parametric investigation on combustion and emissions characteristics of a dual fuel (natural gas port injection and diesel pilot injection) engine using 0-D SRM and 3D CFD approach", Fuel, Volume 210, 15 December 2017, Pages 900-913. DOI: 10.1016/j.fuel.2017.09.021
12. Mohit Raj Saxena and **Rakesh Kumar Maurya**, "Optimization of Engine Operating Conditions and Investigation of Nano-Particle Emissions from a Non-Road Engine Fuelled with Butanol/Diesel Blends", Biofuels, 22 September 2017. DOI: 10.1080/17597269.2017.1378987.
13. Mohit Raj Saxena and **Rakesh Kumar Maurya**, "Effect of Premixing Ratio, Injection Timing and Compression Ratio on Nano Particle Emissions from Dual Fuel Non-Road Compression Ignition Engine Fueled with Gasoline/Methanol (Port Injection) and Diesel (Direct Injection), Fuel. Volume 203,1 September 2017, Pages 894–914. DOI:10.1016/j.fuel.2017.05.015
14. Avinash Kumar Agarwal, Akhilendra Pratap Singh and **Rakesh Kumar Maurya**, "Evolution, Challenges and Path Forward for Low Temperature Combustion Engines", Progress in Energy and Combustion Science. Volume 61, July 2017, Pages 1–56. DOI:10.1016/j.peccs.2017.02.001.
15. **Rakesh Kumar Maurya**, and Nekkanti Akhil, "Comparative study of the simulation ability of various recent hydrogen combustion mechanisms in HCCI engines using stochastic reactor model", International Journal of Hydrogen Energy, Volume 42, Issue 16, 20 April 2017, Pages 11911–11925. DOI: 10.1016/j.ijhydene.2017.02.155.
16. Sanghoon Lee, Chang Sik Lee, Sungwook Park, Jai Gopal Gupta, **Rakesh Kumar Maurya**, Avinash Kumar Agarwal, "Spray Characteristics, Engine Performance and Emission Analysis for Karanja Biodiesel and its Blends ", Energy Volume 119 (15 January 2017) Pages 138-151, DOI: 10.1016/j.energy.2016.12.043.

17. **Rakesh Kumar Maurya**, and Nekkanti Akhil, "Development of a new reduced Hydrogen combustion mechanism with NO_x and parametric study of hydrogen HCCI combustion using stochastic reactor model", *Energy Conversion and Management*, Volume 132 (15 January 2017) pp.65-81; DOI: 10.1016/j.enconman.2016.11.021.
18. Mohit Raj Saxena and **Rakesh Kumar Maurya**, "Effect of Butanol Blends on Nano Particle Emissions from a Stationary Conventional Diesel Engine", *Aerosol and Air Quality Research*, Volume 16, No. 9, Pages 2255-2266; September 2016. DOI: 10.4209/aaqr.2016.04.0144
19. **Rakesh Kumar Maurya**, "Estimation of optimum number of cycle for combustion analysis using measured in-cylinder pressure signal in conventional CI engine" *Measurement*, Volume 94, December 2016, Pages 19–25, DOI:10.1016/j.measurement.2016.07.065.
20. **Rakesh Kumar Maurya**, and Nekkanti Akhil, "Numerical investigation of Ethanol fuelled HCCI engine using stochastic reactor model. Part 2: parametric study of performance and emissions characteristics using new reduced ethanol oxidation mechanism", *Energy Conversion and Management*, Volume 121, pp. 55-70, 2016, DOI:10.1016/j.enconman.2016.05.017 .
21. **Rakesh Kumar Maurya**, and Nekkanti Akhil, "Numerical investigation of Ethanol fuelled HCCI engine using stochastic reactor model. Part 1: development of a new reduced ethanol oxidation mechanism", *Energy Conversion and Management*, Volume 118, pp, 44-54, 2016. DOI: 10.1016/j.enconman.2016.03.076.
22. Avinash Kumar Agarwal, Jai GopalGupta, **Rakesh Kumar Maurya**, WoongII Kim, SanghoonLee, Chang Sik Lee, Sungwook Park, "Spray evolution, engine performance, emissions and combustion characterization of Karanja biodiesel fuelled common-rail turbocharged direct injection transportation engine," *International Journal of Engine Research* , Volume 17, Issue 10, pp. 1092-1107, December 2016, DOI: 10.1177/1468087416641802 .
23. **Rakesh Kumar Maurya**, and Avinash Kumar Agarwal, " Experimental Investigations of Particulate Size and Number Distribution in an Ethanol and Methanol Fuelled HCCI Engine", *Journal of Energy Resource Technology*, Volume 137, Issue 1, 012201; DOI: 10.1115/1.4027897.
24. **Rakesh Kumar Maurya**, and Avinash Kumar Agarwal, "Combustion and Emission Characterization of n-Butanol Fuelled HCCI Engine", *Journal of Energy Resource Technology*, Volume 137, Issue 1, 011101; DOI: 10.1115/1.4027898.
25. **Rakesh Kumar Maurya**, and Avinash Kumar Agarwal, "Experimental investigations of performance, combustion and emission characteristics of ethanol and methanol fueled HCCI engine" *Fuel Processing Technology*, Volume 126, October 2014, pp. 30-48, 2014 . DOI: doi:10.1016/j.fuproc.2014.03.031
26. **Rakesh Kumar Maurya**, and Avinash Kumar Agarwal, "Effect of intake air temperature and air–fuel ratio on particulates in gasoline and n-butanol fueled homogeneous charge compression ignition engine", *International Journal of Engine Research*, Volume 15(7) 789-804, October 2014, DOI: 10.1177/1468087413516617 .
27. **Rakesh Kumar Maurya**, and Avinash Kumar Agarwal, "Particulate Morphology and Toxicity of an Alcohol Fuelled HCCI Engine", *SAE International Journal of Fuels and Lubricants*, Volume 7, Issue 1, pp, 323-336, 2014, SAE 2014-01-9076. .DOI:10.4271/2014-01-9076
28. **Rakesh Kumar Maurya** and Avinash Kumar Agarwal, "Experimental Investigation of Cyclic Variations in HCCI Combustion Parameters for Gasoline like Fuels Using Statistical Methods" *Applied Energy* , Volume 111, November 2013, pp. 310-323, 2013. doi: 10.1016/j.apenergy.2013.05.004.
29. **Rakesh Kumar Maurya**, and Avinash Kumar Agarwal, "Experimental Investigation of Close Loop Control of HCCI Engine Using Dual Fuel Approach", *Kinetically Controlled CI Combustion (including HCCI)*, 2013, COLL-TP-00348 (SAE 2013-01-1675), SAE International, 2013, doi:10.4271/2013-01-1675.
30. Avinash Kumar Agarwal, Dhananjay Kumar Srivastava, Atul Dhar, **Rakesh Kumar Maurya**, Pravesh Chandra Shukla and Akhilendra Pratap Singh, "Effect of Fuel Injection Timing and Pressure on Combustion, Emissions and Performance Characteristics of a Single Cylinder Diesel Engine", *Fuel*, Volume 111, September 2013, Pages 374–383. doi:10.1016/j.fuel.2013.03.016, 2013.

31. Avinash Kumar Agarwal, Atul Dhar, Dhananjay Kumar Srivastava, **Rakesh Kumar Maurya** and Akhilendra Pratap Singh, “ Effect of Fuel Injection Pressure on Diesel Particulate Size and Number Distribution in a CRDI Single Cylinder Research Engine”, *Fuel*, Volume 107, May 2013, Pages 84–89, 2013 doi:10.1016/j.fuel.2013.01.077.
32. **Rakesh Kumar Maurya**, and Avinash Kumar Agarwal, “Investigation on the effect of measurement errors on estimated combustion and performance parameters in HCCI combustion engine”, *Measurement*, Volume 46, Issue 1, pp, 80–88, 2013. doi:10.1016/j.measurement.2012.05.021.
33. **Rakesh Kumar Maurya**, Dev Datt Pal, and Avinash Kumar Agarwal, "Digital Signal Processing of Cylinder Pressure Data for Combustion Diagnostics of HCCI Engine" *Mechanical Systems and Signal Processing*, Volume 36, Issue 1, pp. 95–109, 2013. doi:10.1016/j.ymsp.2011.07.014.
34. **Rakesh Kumar Maurya**, and Avinash Kumar Agarwal, “Experimental Investigations of Gasoline HCCI Engine during Startup and Transients”, *SAE Technical Paper*, SAE 2011-01-2445. doi:10.4271/2011-01-2445.
35. **Rakesh Kumar Maurya**, and Avinash Kumar Agarwal, "Effect of Start of Injection on the Particulate Emission from Methanol Fuelled HCCI Engine" *SAE International Journal of Fuels and Lubricants*, Volume 4, Issue 2, pp, 204-222, 2011, SAE 2011-01-2408. doi: 10.4271/2011-01-2408.
36. **Rakesh Kumar Maurya**, and Avinash Kumar Agarwal, “Statistical Analysis of cyclic variation of Heat release parameters in HCCI combustion of Methanol and gasoline fuel”, *Applied Energy*, Volume 89, Issue 1, January 2012, pp. 228-236, 2012. doi:10.1016/j.apenergy.2011.07.002 .
37. **Rakesh Kumar Maurya**, Dhananjay Kumar Srivastava, and Avinash Kumar Agarwal, “Experimental investigations of particulate emitted by an alcohol fuelled HCCI/ CAI combustion engine,” *International Energy Journal*, Volume 12, Issue 1, March, 2011, pp 29-38, 2011.
38. **Rakesh Kumar Maurya**, and Avinash Kumar Agarwal, “Experimental Investigation on Intake Air Temperature and Air-Fuel Ratio Dependence of Random and Deterministic Cyclic Variability in a Homogeneous Charge Compression Ignition Engine”, SAE 2011-01-1183, SAE Special Publication SP-2313, 2011. (ISBN # 978-0-7680-4752-3).
39. **Rakesh Kumar Maurya**, and Avinash Kumar Agarwal, “Experimental investigation on the effect of intake air temperature and air fuel ratio on cycle-by-cycle variations of HCCI combustion and performance parameters,” *Applied Energy*, Volume 88, Issue 4, pp 1153-1163, 2011. doi:10.1016/j.apenergy.2010.09.027.
40. **Rakesh Kumar Maurya**, and Avinash Kumar Agarwal, "Experimental Study on the Combustion and Emission Characteristics of the Ethanol fuelled Port Injected Homogeneous Charge Compression Ignition (HCCI) Combustion Engine," *Applied Energy*, Volume 88, Issue 4, pp 1169-1180, 2011. doi:10.1016/j.apenergy.2010.09.015.
41. **Rakesh Kumar Maurya**, and Avinash Kumar Agarwal, "Experimental Investigation of Effect of Intake Air Temperature and Mixture Quality on Combustion of Methanol and Gasoline Fuelled HCCI Engine", *Journal of Automobile Engineering, Proceedings of IMechE, Part-D*, Volume 223, Number 11, pp 1445-1458, 2009. doi: 10.1243/09544070JAUTO1238 .
42. **Rakesh Kumar Maurya**, and Avinash Kumar Agarwal, "Experimental Investigation of cycle-by-cycle variations in CAI/HCCI combustion of Gasoline and Methanol by varying different engine operating conditions", SAE 2009-01-1345, SAE Special Publication SP-2242, 2009. doi:10.4271/2009-01-1345.

[Refereed International Conferences/ Published in Proceedings](#)

1. Mohit Raj Saxena, and **Rakesh Kumar Maurya**, “Influence of Fuel Injection Pressure and Injection Timing on Nano-Particle Emission in Gasoline/Diesel RCCI Engine", Accepted for 7th International Conference on Advances in Energy Research (ICAER), December 2019. IIT Bombay, Mumbai, India.

2. Ajay Singh, **Rakesh Kumar Maurya** and Mohit Raj Saxena, "Effect of Diesel Injection Timings on the Nature of Cyclic Combustion Variations in a RCCI Engine" Accepted for 7th International Conference on Advances in Energy Research (ICAER), December 2019. IIT Bombay, Mumbai, India.
3. Ajay Singh, Mohit Raj Saxena and **Rakesh Kumar Maurya**, "Investigation of Nature of Cyclic Combustion Variations in RCCI Engine", Accepted for National Conference on Internal Combustion Engines and Combustion (NCICEC 2019), November 1-4, 2019, National Institute of Technology Kurukshetra, India.
4. Mohit Raj Saxena, Suprim Negi and **Rakesh Kumar Maurya**, "Investigation of cyclic variations in air-fuel ratio, cylinder wall temperature, and residual gas fraction of a dual fuel compression ignition engine," International Conference on Recent Advances in Fluid and Thermal Sciences, December 5-7, 2018, Dubai, U.A.E.
5. Mohit Raj Saxena, **Rakesh Kumar Maurya**, and Geo Alex, "Comparative study on characteristics of compression ignition engine in dual fuel mode employing gasoline/butanol and diesel", Paper NO- SEEC-2018-141, International Conference on Sustainable Energy and Environmental Challenges (SEEC-2018) 01 Jan – 03, January, 2018, Indian Institute of Science (IISc), India.
6. Mohit Raj Saxena, and **Rakesh Kumar Maurya**, "Experimental Investigation on Range of Fuel Premixing Ratio for Stable Engine Operation of Dual Fuel Engine using Port Injection of Gasoline/Methanol and Direct Injection of Diesel", International Conference on Advances in Energy Research (ICAER), December 2017. IIT Bombay, Mumbai, India.
7. **Rakesh Kumar Maurya**, Mohit Raj Saxena, Rahul Yadav and Akshay Rathore, "Comparative analysis on simulation ability of several syngas reaction Mechanisms in HCCI engine", Paper NO-SEEC-2017-123 , International Conference on Sustainable Energy and Environmental Challenges (SEEC-2017) 26 – 28 February, 2017, Mohali, India.
8. Mohit Raj Saxena and **Rakesh Kumar Maurya**, "Investigation of cyclic variability in a non road diesel engine fueled with Diesel/butanol blends", Paper NO-SEEC-2017-60 , International Conference on Sustainable Energy and Environmental Challenges (SEEC-2017) 26 – 28 February, 2017, Mohali, India.
9. **Rakesh Kumar Maurya** and Mohit Raj Saxena, "Investigation of Effect of Butanol Addition on Cyclic Variability in a Diesel Engine using Wavelets", Second International Symposium on Intelligent Systems Technologies and Applications (ISTA'16) September 21-24, 2016 Jaipur, India. (LMNIT).
10. **Rakesh Kumar Maurya**, "Investigation of Deterministic and Random Cyclic Patterns in a Diesel Engine using Symbol Sequence Analysis", 9th International Conference on 'Advanced Computing and Communication Technologies' ICACCT™-2015, 27-29 November 2015, Panipat 132103 INDIA.
11. **Rakesh Kumar Maurya**, Prashant Mishra "Computational Analysis of Emissions from Gasoline HCCI Engine Using Stochastic Reactor Model" International Conference on Computing in Mechanical Engineering (ICCME'15), August 10-13, 2015, Kochi, Kerala, India.
12. **Rakesh Kumar Maurya**, Mohit Raj Saxena, Nikkanti Akhil, "Experimental Investigation of Cyclic Variation in a Diesel Engine Using Wavelets" International Symposium on Intelligent Systems Technologies and Applications (ISTA'15), August 10-13, 2015, Kochi, Kerala, India.
13. **Rakesh Kumar Maurya**, and Avinash Kumar Agarwal, "Experimental Investigation of Close Loop Control of HCCI Engine Using Dual Fuel Approach", SAE World Congress 2013 (2013-01-1675) April, 2013, Detroit, USA.
14. **Rakesh Kumar Maurya**, and Avinash Kumar Agarwal, "Experimental Investigation on Intake Air Temperature and Air-Fuel Ratio Dependence of Random and Deterministic Cyclic Variability in a Homogeneous Charge Compression Ignition Engine", SAE World Congress 2011 (2011-01-1183) April, 2011, Detroit, USA.
15. **Rakesh Kumar Maurya**, and Avinash Kumar Agarwal, "Experimental Investigation of cycle-by-cycle variation of Heat release parameters in HCCI combustion of Methanol and gasoline fuel", International conference and Exhibition on Advances in Energy Research, December, 2009, IIT Bombay, Mumbai, India.

16. **Rakesh Kumar Maurya**, and Avinash Kumar Agarwal, "Experimental Investigation of cycle-by-cycle variations in CAI/HCCI combustion of Gasoline and Methanol by varying different engine operating conditions", SAE World Congress 2009 (2009-01-1345) April, 2009, Detroit, USA.
17. **Rakesh Kumar Maurya**, Dhananjay Kumar Srivastava, and Avinash Kumar Agarwal, "Experimental investigations of particulate emitted by an alcohol fuelled HCCI/ CAI combustion engine," International Conference on Energy Security and Climate Change: Issues, Strategies, and Options, ESCC-08, August 2008, Bangkok, Thailand.
18. **Rakesh Kumar Maurya**, Avinash Kumar Agarwal, "Combustion and Emission Behavior of Ethanol Fuelled Homogeneous Charge Compression Ignition (HCCI) Engine", SAE Paper No. 2008-28-0064, SAE INDIA International Mobility Conference-2008, pp 440-445, January 2008, New Delhi, India.

Invited Presentations

1. "Characteristics and Control of Low-Temperature Combustion Engines: Fundamentals", -Invited Lecture-AICTE-ISTE, Faculty Development Programme 14th to 19th May 2018, Gulzar Group of Institutions, Ludhiana, 18th May 2018.
2. "Fundamentals and Advances in Low Temperature Combustion Engines" International Conference on Sustainable Energy and Environmental Challenges (SEEC-2017) 26 – 28 February, 2017, Mohali, India.
3. "Combustion and Emissions Characteristics of Biofuels in HCCI and RCCI Engines" In: 2nd International Conference on 'Recent Advances in Bio-energy Research' 27th February 2016, Sardar Swarn Singh National Institute of Bioenergy, Kapurthala, Punjab.
4. " Universal Human Values and Professional Ethics" In: 3-Day Workshop on Human Values and Professional Ethics, 15-17 February 2016, Baddi University of Emerging Sciences and Technology, Baddi, Himanchal Pradesh.
5. "Universal Human Values & Professional Ethics" In: 8 day Workshop, organized by IRC-UHVE, PTU Kapurthala from 21-28 December, 2015 at SUSCET, Tangori, Mohali (Punjab).
6. "Advanced Combustion Modes for High Efficiency and Low Emissions", In: National Training Program on ' Practical Hands for Process of Biofuel Production, Characterization and Engine Applications, 1st December 2015, Sardar Swarn Singh National Institute of Bioenergy, Kapurthala, Punjab.
7. "Role of Education in Holistic Development", In: Engineer's Day Celebration, 22nd September 2015, Punjabi University Patiala, Punjab.
8. "Universal Human Values & Professional Ethics" organized by IRC-UHVE, PTU Kapurthala from 4-11 June, 2015 at PIMT, Mandi Gobindgarh (Punjab).
9. "Holistic Technologies: Case Studies" In: Course on 'Case Study - Detailed Analysis of a Specific Holistic Technology & Specific Holistic System, 11 April – 13 April 2015 at IRC-UHVE, PTU, Kapurthala.
10. "Universal Human Values & Professional Ethics" organized by PTU, Kapurthala from 22-29 December, 2014 at Sri Sai Group of Institutions, Amritsar, Punjab.
11. "Advanced Combustion Modes for High Efficiency and Low Emissions", In: Faculty Development Programme on "Automotive Technologies" July 21-25, 2014, Gulzar Group of Institutions, Khanna, Ludhiana.
12. "Introduction to internal combustion engines", In: Workshop organized by Society of Automotive Engineers at IIT Ropar on 29th March 2014.
13. "Engine Combustion Diagnostics by In-cylinder Pressure Measurement", In: National Conference on Advancements in Simulation and Experimental Techniques in Mechanical Engineering, February 21-22, 2014, Chandigarh University, Punjab.
14. "Homogeneous Charge Compression Ignition (HCCI): Alternative Engine Combustion Mode", In: Seminar organized by Society of Mechanical Engineers at IIT Ropar on 8th October 2013.
15. "Advanced Low Temperature Combustion Engine", In: Short-Term Course on Advanced engine technologies for combustion and emission control, May 1-5, 2013, IIT Kanpur.
16. "Homogeneous Charge Compression Ignition for Gasoline and Diesel Like Fuels", In: Short-Term Course on Advanced Engine Combustion and Diagnostics, June 23- 28, 2011, IIT Kanpur.
17. "Data Acquisition & Analysis in Automotive Engine Testing and Management", In: Short-Term Course on Diesel Engine Management, March 18 – 22, 2009, IIT Kanpur.

18. "Homogeneous Charge Compression Ignition (HCCI)", In: Short-Term Course on Advanced Internal Combustion Engine Technology, September 13 – 17, 2007, IIT Kanpur.

Research Project:

1. Soot Particle Number Emission Characterization and Investigation of Load Constraints in Reactivity Controlled Compression Ignition (RCCI) Engines, Funding 49.02 Lakhs, DST-SERB, Govt. of India. (ECR/2015/000177), 2016-19.
2. Combustion, Emission Characterization and Investigation of Load Constraints in High Efficiency Low Temperature Combustion Engine, Funding 105 Lakhs, 2013-2015 Institutional Seed Grant Project -IIT Ropar.
3. Development of Engine Test Setup and Experiments for Undergraduate (UG) Students at IIT Ropar, Funding 24.5 Lakhs. IIT Ropar, 2013-14.
- 4.

Administrative Responsibilities:

Departmental Responsibilities

- ACUGS Member- ME – Nov. 2018- till date
- Faculty In-charge – Advanced Engine and Fuel Research Laboratory 2013- till date
- Faculty advisor for the 2016 ME UG batch.
- Faculty Advisor - SAE Collegiate club IIT Ropar 2014-2016
- Member Departmental Committee for development of M. Tech Program-2014.
- Member, Organizing committee, Industry Academia Conclave 2015.

Institute Level Responsibilities

- Liaison Officer for non-teaching staff Recruitment- 2014- till date
- Coordinator Unnat Bharat Abhiyan (UBA)- Sept 2015 to Aug 2019
- Member committee for Designing MS (research) Program-2019
- Member committee for JLA Recruitment in Material Science Department-2019
- Coordinator Human Values Session during Induction Program IIT Ropar-2018
- Coordinator Human Values Session during Induction Program IIT Ropar-2017
- Faculty In-charge - Alumni Cell, February 2018- April 2016
- Member Bio-energy Committee- 2013-2015
- Member Transport Committee-2014

Teaching and Research Guidance:

Teaching Experience

2019-20 SEM II

ME472: Internal Combustion engine

ME685 Combustion Engineering

2019-20 SEM I

ME102 Engineering Thermodynamics (3-1-0-5-3) [94]

MEP302: Manufacturing Laboratory (0-0-6) [36]

CPP301: B.Tech Project I

CPP302: B.Tech Project II

2018-19 SEM II

MEL 623:Alternative Fuels and Advances in Engines (3-0-0) [15]

CPP301: B.Tech Project I

HS202: Human Geography and Societal Needs 3(1-1/3-4-11/3-3)

2018-19 SEM I

MEL470: Combustion and Emission in Reciprocating engine (3-0-2) [24]

MEP302: Manufacturing Laboratory (0-0-6) [36]

2017-18 SEM II

MEL 625: Engineering Ethics (3-1-0) [10]

MEL622: Engine Instrumentation and Combustion Diagnostics (3-0-0) [3]

2017-18 SEM I

MEL470: Combustion and Emission in Reciprocating engine (3-0-2) [24]

MEP302: Manufacturing Laboratory (0-0-6) [33]

2016-17 SEM II

MEL 625: Engineering Ethics (3-1-0) [22]

2016-17 SEM I

MEL470: Combustion and Emission in Reciprocating engine (3-0-2) [20]

MEP302: Manufacturing Laboratory (0-0-6) [35]

MEN 100: Introduction to Mechanical Engineering [50]

2015-16 SEM II

MEL 625: Engineering Ethics (3-1-0) [13]

2015-16 SEM I

MEL 623: Alternative Fuels and Advances in Engines (3-0-0) [13]

MEP302: Manufacturing Laboratory (0-0-6) [39]

2014-15 SEM II

MEL470: Combustion and Emission in Reciprocating engine (3-0-2) [30]

MEP401: Thermo-Fluids Laboratory (0-0-3) [39]

MEL 623: Alternative Fuels and Advances in Engines (3-0-0) [2]

2014-15 SEM I

MEL472: Automotive Engineering (3-1-0) [13]

MEL622: Engine Instrumentation and Combustion Diagnostics (3-0-0) [2]

2013-14 SEM II

MEL470: Combustion and Emission in Reciprocating engine (3-0-2) [32]

MEP401: Thermo-Fluids Laboratory (0-0-3) [40]

2013-14 SEM I

MEL412: Propulsion Technologies (3-0-2) [64]

Special Courses:

1. Organized one week AICTE Sponsored Faculty Development Program on Universal Human Values at IIT Ropar on 2nd to 8th July 2019.

Research Guidance:

PhD [1]

1. Dr. Mohit Raj Saxena (2014MEZ0002) Experimental Investigation of Combustion Stability and Nano-Particle Emission in Conventional and Advanced Dual-Fuel Compression Ignition Engine, October 2019.

M.Tech [3]

1. Akash (2016MEM10002) Analysis of Cyclic Variations in a Dual Fuel Engine fuelled with Gasoline/Diesel and Methanol/Diesel, August 2018.
2. Suprim Negi (2016MEM1016) Estimation and Analysis of Cyclic Air-Fuel Ratio, Residual Gas Fraction and In-Cylinder Wall Temperature from In-Cylinder Pressure in a Dual Fuel CI Engine, June 2018.
3. Geo Alex (2015MEM1018) Estimating the Range of Fuel Premixing Ratio for Dual Fuel Operation in Compression Ignition Engine, Jan 2018.

B. Tech [11]

1. Manjeet Kuma Yadav (2010 ME 1109) "Intermediate Pyrolysis of Agro-Residues" May 2014.
2. Nitin Arora (2010 ME 1114) "Intermediate Pyrolysis of Agro-Residues" May 2014.
3. Harshimaran Jot Singh (2011 ME 1093) "Utilisation of bio-fuels in compression ignition engines" May 2015.
4. Atul Bhagat (2011 ME 1086) "Utilisation of bio-fuels in compression ignition engines" May 2015.

5. Aashish Bhardwaj, "Effect of Compression Ratio and Fuel Injection Pressure on Nano-Particle Emissions in Conventional Diesel Engines", December 2015.
6. Piyush Rai, "Effect of Compression Ratio and Fuel Injection Pressure on Nano-Particle Emissions in Conventional Diesel Engines", December 2015.
7. Nekkanti Akhil, "Combustion, Emissions and Exergy Analysis of Ethanol Fuelled HCCI Engine Using Stochastic Reactor Model", December 2015.
8. Parth Jaggi, "Combustion, Emissions and Exergy Analysis of Ethanol Fuelled HCCI Engine Using Stochastic Reactor Model", December 2015.
9. Prashant Mishra, "Analysis of Combustion, Performance and Emission Characteristics of A Dual Fuel Engine Using 0-D/3-D CFD Approach", May 2016.
10. Muhammed Roshan, "Analysis of Combustion, Performance and Emission Characteristics of A Dual Fuel Engine Using 0-D/3-D CFD Approach", May 2016.
11. Rohit Anand, "Numerical Investigation of Butanol fuelled HCCI Engine", May 2017.

Date:

Place: IIT Ropar

Dr. Rakesh Kumar Maurya