

Dr. Vishal Vasantrao Patil

- ⊕ **Post-Doctoral Fellow, Combustion Research Laboratory, IIT Bombay**
- ⊕ **Associate Professor, Department of Mechanical Engineering, SITCOE, Yadrav**
- ⊕ **Ph.D., Mechanical Engineering**



👤 Contact details

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🎓 Education

- ⊕ **Ph.D. in Mechanical Engineering** 2019
Birla Institute of Technology and Science, Pilani.
- ⊕ **M. E. in Heat Power (Mechanical) Engineering** 2013
Padmabhooshan Vasantraodada Patil Institute of Technology, (Shivaji University, Kolhapur).
- ⊕ **B. E. in Mechanical Engineering** 2009
Padmabhooshan Vasantraodada Patil Institute of Technology, (Shivaji University, Kolhapur).

🎓 Ph. D Supervisor Recognition and Awards

- ⊕ **Recognized Ph.D. Supervisor, Dr. BATU, Lonere (Govt. of Maharashtra)**
- ⊕ **Recognized Ph.D. Supervisor, VTU, Belgaum, (Govt. of Karnataka)**
- ⊕ **Ph. D External Expert Member, VTU, Belgaum**
- ⊕ **Best Teacher Award, SITCOE Yadrav, 2012-13**



Professional Experience

Post-Doctoral Fellow, IIT Bombay (Sept 2021 - Jan 2023)

- Designed and executed fuel economy and emissions experiments
- Led endurance testing of gasoline engine performance and deposit studies under HPCL sponsorship
- Investigated thermodynamic characteristics of ketone-gasoline and surrogate fuel blends
- Provided lab infrastructure support and regulatory research compliance

Associate Professor, SITCOE (Dec 2019 - Sept 2021; Jan 2023 - Present)

- Teaching UG/PG courses, guiding student projects, and department administration

Assistant Professor, SITCOE (July 2010 - Dec 2019)

- Curriculum delivery, technical mentoring, course development, and student evaluation

Teaching Interests: Internal Combustion Engines, Renewable Energy, Refrigeration & Air Conditioning



Invited talks/lectures

- **Speaker** at the **International Workshop on Advancements in Hydrogen and Ammonia for Green Energy Transition**, organized by IIT Bombay and supported by IFCPAR/CEFIPRA.
Session: Energy and Exergy Analyses for Hydrogen Enriched Internal Combustion Engines.
- **Resource Person**, *One-Week Faculty Short-Term Course* on “**The Science Behind Heat Power: From Fundamentals to Real-World Uses**”, organized by the **Department of Mechanical Engineering, National Institute of Technology (NIT), Agartala, Tripura**, held during **20–24 May 2024**.
Session Topic: Energy and Exergy Analyses for Thermodynamic Systems
- **Resource Person**, *Faculty Development Training Program* on “**Fueling the Future: Advances in Hydrogen Cell Technology**”, sponsored by **MSBTE** and organized by the **Department of Electrical Engineering, SIT Polytechnic, Yadra**, held during **06–10 January 2025**.
Session Topic: Hydrogen in Mobility

- **Resource Person**, *One-Day Faculty Orientation Program* on “**Academic Writing and IPR**”, organized by the **Department of Mechanical Engineering, SIT Polytechnic, Yadra**, on **Thursday, 11 June 2020**.

Session Topic: *Writing of Research Papers and Proposals*



Research and Development Projects

- ⊕ **Coordinator, AICTE-sponsored IDEAL (Idea Development, Evaluation & Application Laboratory) Laboratory.**

Total Project Cost: ₹91,00,000

AICTE Sponsorship: ₹30,00,000

Industry Contribution (Raised by Institute): ₹61,00,000

- ⊕ **Research Team Member, HP Green R&D Centre, HPCL**

Contributed as a research team member in the HPCL-sponsored project titled: “*Evaluation of Gasoline Fuel and MFA Blended Gasoline Fuel in Terms of Engine Deposits.*”

Project Cost: ₹79,10,115

Project Duration: April 2021 – July 2023



Publication: Peer-Reviewed Journals

Q1 Journals

- [1] Akash Paul, **Vishal Patil**, Paramvir Singh, Rajsekhar Panua, Sudarshan Kumar, Thermodynamic and sustainability analysis of sanitary waste-derived syngas-hydrogen blends with diesel in a RCCI engine, *International Journal of Hydrogen Energy*, Volume 198, 152725, 2025. (ELSEVIER Journal) [Impact factor: 8.3] [SCIE, Web of Science, SCOPUS, etc.]
- [2] Sujit Kumbhar, Sanjay Khot, Udaysinh Bhapkar, **Vishal Patil**, Paramvir Singh, Avesahemad Husainy, Energy-exergy and exergoeconomic analysis of a hydrogen-enriched spark-ignition engine fueled with premium gasoline-ethanol blends, **International Journal of Hydrogen Energy (Elsevier)**, Volume 689-709, 12 June 2025 (Impact factor: 8.3; Abstracting and Indexing: SCIE, Scopus, Web of Science, etc.).

[3] Jami Paparao, Paramvir Singh, **Vishal Patil**, Bhupendra Khandelwal, Sudarshan Kumar, Applicability of furan-gasoline blends with energy, exergy, sustainability, and entropy generation analysis for SI engines, **Energy (Elsevier)**, Volume 327, 1 July 2025, 136345.

[4] **Vishal Patil**, Paramvir Singh, Sudarshan Kumar, Reliability of renewable oxygenated fuels in engines: A comprehensive review of long-term testing, **Fuel (Elsevier)**, Volume 367, 131451, 2024. <https://doi.org/10.1016/j.fuel.2024.131451>
(Impact factor: 8.035; Abstracting and Indexing: SCIE, Scopus, Web of Science, etc.)

[5] **Vishal Patil**, Paramvir Singh, Sachin Sonage, Neeraj Kumbhakarna, Sudarshan Kumar, Applicability of ketone-gasoline blended fuels for spark ignition engine through energy-exergy analyses, **Fuel (Elsevier)**, Volume 339, 127416, 2023.
<https://doi.org/10.1016/j.fuel.2023.127416>
(Impact factor: 8.035; Abstracting and Indexing: SCIE, Scopus, Web of Science, etc.)

[6] **Vishal Patil**, Paramvir Singh, Sachin Sonage, Neeraj Kumbhakarna, Sudarshan Kumar, Validation of gasoline surrogates through thermodynamic analysis of spark-ignition engine, **Journal of Energy Resources Technology (ASME)**, 2022, 1-34.
<https://doi.org/10.1115/1.4056527>
(Impact Factor: 3.183; Abstracting and Indexing: SCI, Scopus, etc.).

[7] **Vishal Patil**, Paramvir Singh, Sachin Sonage, Neeraj Kumbhakarna, Sudarshan Kumar, Experimental investigation to assess the efficacy of gasoline surrogates with engine testing, **Fuel (Elsevier)**, Volume 324, Part A, 124493, 2022.
<https://doi.org/10.1016/j.fuel.2022.124493>
[Impact factor: 8.035; Abstracting and Indexing: SCIE, SCOPUS, etc.]

[8] **Vishal V. Patil**, Ranjit S. Patil, Investigations on partial addition of n-butanol in sunflower oil methyl ester powered diesel engine, **Journal of Energy Resources Technology (ASME)**, 140(1), 012205, 2017.
<https://doi.org/10.1115/1.4037372>

[Impact Factor: 3.183; Abstracting and Indexing: SCI and Scopus]

[9] Paramvir Singh, Pragya Berwal, **Vishal Patil**, Bhupendra Khandelwal, Sudarshan Kumar, Impact of ammonia blended fuels on NOx emissions in a combustion engine, **AIAA** (SCITECH) 2022-1497, 2022.
<https://doi.org/10.2514/6.2022-1497>
[Abstracting and Indexing: Scopus].

Q2 Journals

[10] Akash Paul, **Vishal Patil**, Paramvir Singh, Rajsekhar Panua, Sudarshan Kumar, Environmental sustainability, entropy generation, energy and exergy analysis of sanitary waste syngas-diesel blends in RCCI combustion mode, **Environmental Progress and Sustainable Energy (Wiley)**. **2025**. doi.org/10.1002/ep.70116

[11] Parag Mangave, Nilesh Pawar, Ranjit Patil, **Vishal Patil**, Sudarshan Kumar, Energy and Exergy Analysis of a SI Engine Fueled with Anisole and Isobutyl Acetate with Super-premium Gasoline, **Proceedings of the IMechE, Part C: Journal of Mechanical Engineering Science**, 2024. [Impact Factor: 1.9; Abstracting and Indexing: SCI and Scopus].

[12] **Vishal V. Patil**, Ranjit S. Patil, Experimental investigations to predict optimistic biodiesel(s) and its optimistic operating conditions by varying ignition delay period and fuel spray pressures for lower emissions and better performance, **Proceedings of the Institution of Mechanical Engineers, Part C: Journal of Mechanical Engineering Science (IMechE: Sage Publications)**, 234 (19), 3809-3902, 2020.
<https://doi.org/10.1177/0954406220917>
[Impact Factor: 1.9; Abstracting and Indexing: SCI and Scopus].

Q3 Journals

[13] **Vishal V Patil**, Ranjit S Patil, Investigations on effects of varying ignition delay period for the sunflower oil methyl ester, **Journal of Institution of Engineers (India): Series C (Springer)**, 2022.

<https://doi.org/10.1007/s40032-021-00779-4>

[Impact Factor: 2.1; Abstracting and Indexing: Scopus]

[14] **Vishal V. Patil**, Ranjit S. Patil, Effects of partial addition of n-butanol in rubber seed oil methyl ester powered diesel engine, Proceedings of the Institution of Mechanical Engineers, Part A: Journal of Power and Energy (IMechE: Sage Publications), 231(7), 607-617, 2017.

<https://doi.org/10.1177/0957650917708695>

[Impact Factor: 2.1; Abstracting and Indexing: SCI and Scopus]

Other Journal Papers

[15] **V. V. Patil**, R. S. Patil, Effects of partial addition of butanol in rubber seed oil methyl ester diesel blend, Materials Today: Proceedings (Elsevier), Volume 5, Issue 11, Part 2, 23119-23127, 2018.

<https://doi.org/10.1016/j.matpr.2018.11.042>

[Impact factor: 1.46; Abstracting and Indexing: Scopus].

[16] **Vishal V. Patil**, Ranjit S. Patil, Effect of exhaust gas recirculation on various characteristics of diesel engine powered by rubber seed oil methyl ester-butanol blend, ISHMT Digital Library, 2017. DOI:10.1615/IHMTC-2017.1950.

[17] Parag P. Mangave, Nilesh D. Pawar, Ranjit S. Patil, **Vishal V. Patil**, Sudarshan Kumar, Energy, Exergy, and Emissions Analysis of a SI Engine Fuelled with Partial Addition of Di-Isobutylene and Furfuryl Amine in Super-Premium Gasoline.



Conferences

[1] Parag P. Mangave, Nilesh D. Pawar, Ranjit S. Patil, **Vishal V. Patil**, Sudarshan Kumar, Effect on Laminar Burning Velocity by the addition of Anisole and Isobutyl Acetate to Super-Premium Gasoline at Elevated Temperature, International Conference on Sustainable Energy and Environment (ICSEE), **BITs Pilani**, K K Birla, Goa Campus, 8th-10th March, 2025

[2] Parag Mangave, Nilesh Pawar, Ranjit Patil, **Vishal Patil**, Paramvir Singh, A comparative study of the performance and emissions of SI engine fueled with isopropyl acetate, n-butyl acetate, and premium-gasoline, 9th International Conference on Advances in Energy Research, Energy Science and Engineering, **Indian Institute of Technology Bombay**, 12-14th December 2023.

[3] Parag Mangave, **Vishal Patil**, Nilesh Pawar, Ranjit Patil, Experimental investigations on emissions and performance of spark ignition engine fueled with butanol-pentane-gasoline blends, 9th International and 49th national conference on Fluid Mechanics and Fluid power, organised by National Society of Fluid Mechanics and Fluid Power and **Indian Institute of Technology Roorkee**, 14-16th 2022.

[4] **Vishal Patil**, Paramvir Singh, Neeraj Kumbhakarna, Sudarshan Kumar, Investigations of super premium octane rating ketone-gasoline blends fuelled spark ignition engine characteristics, VII International Conference on Sustainable Energy and Environmental Challenges, organized by the International Society for Energy, Environment, and Sustainability, **Banaras Hindu University (BHU)** India 16th -18th December 2022.

[5] Paramvir Singh, **Vishal Patil**, Sachin Sonage, Sudarshan Kumar, Experimental investigation surrogate fuel with conventional gasoline-powered in spark ignition engine, 6th International Conference on Sustainable Energy and Environmental challenges, organized by the International Society for Energy, Environment, and Sustainability, **Indian Institute of Technology Kanpur**, India from 27th to 29th December 2021.

[6] **Vishal V. Patil**, Ranjit S. Patil, G. Karthikeyan, Effect of addition of butanol in sunflower oil methyl ester diesel blend in a diesel engine, 23rd National Heat and Mass Transfer Conference and 1st International ISHMT-ASTFE Heat and Mass Transfer Conference, **ISRO Thiruvananthapuram**, 17th -20th December 2015.

[7] **V. V. Patil**, R. S. Patil, G. Karthikeyan, Experimental investigations on rubber seed oil methyl ester by varying the load conditions and compression ratio in a diesel engine, 5th International Conference on Advances in Energy Research, **Indian Institute of Technology Bombay**, 15-17th December 2015.

[8] **Vishal V. Patil**, Ranjit S. Patil, Influence of addition of butanol in neem seed oil methyl ester diesel blend in a diesel engine, 17th ISME Conference on Advances in Mechanical Engineering, **Indian Institute of Technology Delhi**, 3-4th October 2015.

[9] **V. V. Patil**, R. S. Patil, Effects of partial addition of butanol in a rubber seed oil methyl ester diesel blend, 5th International Conference on Advances in Energy Research, **Indian Institute of Technology Bombay**, 15-17th December 2015.



Patents and Intellectual Property Rights

[1] Indian Patent (Published)

Title: *Hydraulic Flood Protection System at Global Industry*

Applicants: Sharad Institute of Technology College of Engineering, Yadra; Bahubali Sangame, Pratapsinh Chougule, Dr. Vishal V. Patil, Adik Takale, Shital Udgave, Viddya Patil

Application Number: 202321034729

Date of Filing: 16 June 2023

Status: Published

Summary: This invention pertains to a scalable hydraulic-based system for industrial-level flood protection that integrates real-time sensing and actuation to mitigate flood-related damages.

[2] Indian Patent (Published)

Title: *Novel Smart Algae Bio Panel and Its Growth Forecasting Using Machine Learning – A Sustainable Solution*

Applicants: Sharad Institute of Technology College of Engineering, Yadra; Avesahmed S. N. Husainy, Dr. Vishal V. Patil, Samir M. Monim, Omkar S. Chougule, Sanmesh S. Shinde, Prathamesh U. Jadhav

Application Number: 202421030957

Date of Filing: 18 April 2024

Status: Published

Summary: The invention proposes an innovative bio panel that leverages algae for sustainable energy generation, incorporating machine learning algorithms for predictive

growth optimization.

[3] **Indian Patent (Filed)**

Title: *Punching Machine Using Poka-Yoke Technique for Elimination of Human Error*

Applicants: Sharad Institute of Technology College of Engineering, Yadrav; Ajay Singh, Javed Naikwade, Vinit Patil, Mayur Bhingare, Akash Bhanhatti, Dr. Vishal V. Patil, Avesahmed Husainy, Adik Takale, Prasanna Bhagwat

Status: Application Submitted

Summary: This patent application details a punching machine that integrates the Poka-Yoke methodology to minimize human error during operation, ensuring higher accuracy and workplace safety.



Book Chapters

[1] **Vishal Patil**, Avesahemad Husainy, Kaustubh Shedbalkar, Samir Momin, Omkar Chougule, Prathamesh Jadhav, Sanmesh Shinde, Paramvir Singh, Review on Revolutionary and Sustainable Green Hydrogen: A Future Energy Source, Challenges and Opportunities in Green Hydrogen Production, Energy, Environment, and Sustainability, **Springer Nature**, 2024 [Abstracting and Indexing: Scopus].

https://doi.org/10.1007/978-981-97-1339-4_3

[2] Avesahemad Husainy, **Vishal Patil**, Omkar Chougule, Prathamesh Jadhav, Samir Momin, Sanmesh Shinde, Paramvir Singh, Glance on Advancements and Innovations in Green Hydrogen Production Technologies, Challenges and Opportunities in Green Hydrogen Production, Energy, Environment, and Sustainability, **Springer Nature**, 2024 [Abstracting and Indexing: Scopus].

https://doi.org/10.1007/978-981-97-1339-4_6

[3] Parag P. Mangave, **Vishal V. Patil**, Nilesh D. Pawar, Ranjit S. Patil, Experimental investigations on emissions and performance of a spark-ignition engine fuelled with butanol-pentane-gasoline blends, Fluid Mechanics and Fluid Power , Volume 4, Lecture Notes in Mechanical Engineering, **Springer Nature**, 2024 [Abstracting and Indexing:

Scopus].

https://doi.org/10.1007/978-981-99-7177-0_20.

[4] A. S. N. Husainy, Utkal Patil, Vishal Patil, Sujit Kumbhar, Koustubh Shedbalkar, Performance improvement of ducted air-conditioning system by incorporation of Al_2O_3 nanoparticles in compressor oil, Helmand Books, ISBN: 978-93-93992-98-7, 2024, 19-37.



Reviewer Activities

Journal Publication

- **Applied Energy — Elsevier** (Indexed in SCI and Scopus)
- **Journal of Engines — SAE International** (Indexed in Scopus)
- **World Journal of Science, Technology and Sustainable Development — Emerald** Publishing
- **American Journal of Engineering and Applied Sciences** — Science Publications
- **Sigma Journal of Engineering and Natural Sciences**

International Conference

- International Conference on Frontiers in Engineering, Science, and Technology (ICFEST-2020) organized by the Department of Mechanical Engineering, Yenepoya Institute of Technology, Moodbidri, Karnataka

Book

- Engineering Thermodynamics by Prof. P. K. Nag McGraw Hill Publications.



Administration

- **Publication Committee Member, Green AI Nexus 2025: International Conference on AI for Environment, Energy, and Earth Sciences**
- **Head, Institute NAAC Accreditation Committee**
- **Deputy Coordinator, Institute NBA Committee**
- **Member, Institute Research and Development Committee**
- **Member, Institute NIRF Ranking Committee**
- **Dean Academics, (September 2020 – July 2021)**

- **Member Secretary, Institute Academic Council (September 2020 – July 2021)**
- **Controller of Examinations, (2019 – August 2021)**
- **Member, Institute Internal Quality Assurance Cell (IQAC) (September 2020 – July 2021)**
- **Member, Institute NAAC Accreditation Steering Committee**
- **Member, Institute Autonomous Accreditation Preparation Committee**
- **Coordinator, Mechanical Engineering Department – NBA Preparation Process (A.Y. 2019 – August 2021)**
- **Member, Department Academic Advisory Board (DAAB), Mechanical Engineering (A.Y. 2019 – Present)**
- **Head, Mechanical Engineering Department**
- **CAP Director, Supplementary Winter Examination 2019, Dr. Babasaheb Ambedkar Technological University (DBATU), Lonere**
- **CAP Director, Central Assessment Process (Supplementary Exam at SITCOE Yadra), DBATU Lonere (01 January 2020 – 15 January 2020)**
- **Program Coordinator, Mechanical Engineering**
- **Organizing Committee Member, 13th International Advanced Computing Conference (IACC), 2023**



Professional Society Membership

- Indian Society For Technical Education (ISTE) Life membership (LM-108877)



References

■ Prof. Sudarshan Kumar

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