

1. Personal Information

- **Name:** Dr. Kalpak Ramakantrao Sagar
- **Position:** Assistant Professor
- **Department:** Mechanical Engineering
- **Contact Information:** krsagar@sggs.ac.in

2. Educational Background

- **Degrees:**
 - PhD (Mechanical Engineering), S.V. National Institute of Technology, Surat, Year Passing: 2022.
 - M.Tech (Turbomachines, Mechanical Engineering), S.V. National Institute of Technology, Surat, Year Passing: 2015.
 - B. Tech (Mechanical Engineering), Government College of Engineering Amaravati, Year Passing: 2011
- **Postdoctoral Experience:**
 - Research Associate Level 3, in S.V. National Institute of Technology, Surat. From Feb 2022 to Sep 2023.

3. Research Interests

- **Areas of Expertise:**
 - Passive cooling Techniques, Heat Transfer, Renewable Energy, Two-phase flow, Heat Pipes
- **Ongoing Projects:**
 - Battery Thermal Management using Heat Pipes
 - Solar water distillation using pulsating heat pipes
 - Solar Dryer using PCM
- **Interdisciplinary Work:**
 - Battery thermal management with pulsating heat pipe (In collaboration with S.V. National Institute of Technology, Surat)

4. Teaching Experience

- **Courses Taught:**

- Fluid Mechanics and Hydraulic Machines
- Modern Mobility
- Renewable Energy
- Advance Manufacturing Technology

- **Course Development:**

- Turbomachines
- Advanced Fluid dynamics
- Fluid Mechanics and Fluid Machines
- Modern Mobility

5. Publications and Presentations

Google Scholar link

(<https://scholar.google.com/citations?user=ZFOvOE4AAAAJ&hl=en>)

- **Books:**

- Sagar, K.R., Raja, V., Pandya, M., Vachhani, M., Patel, V.M., Mehta, H.B. (2024). The Impact of Training Algorithms and Transfer Functions on the Accuracy of Neural Network-Based Temperature Prediction of 3S4P Battery Module. In: Tatiparti, S.S.V., Seethamraju, S. (eds) Advances in Clean Energy and Sustainability, Volume 1. ICAER 2023. Green Energy and Technology. Springer, Singapore.

- **Journal Articles:**

- Sagar, K. R., Naik, H., & Mehta, H. B. (2021). Numerical study of liquid nitrogen based pulsating heat pipe for cooling superconductors. International Journal of Refrigeration, 122, 33-46.
- Sagar, K. R., Desai, A., Naik, H., & Mehta, H. B. (2021). Experimental investigations on two-turn cryogenic pulsating heat pipe with cylindrical shell-type condenser. Applied Thermal Engineering, 196, 117240.
- Kalpak R. Sagar, Naik, H.B. & Mehta, H.B. CFD Analysis of Cryogenic Pulsating Heat Pipe with Near Critical Diameter under Varying Gravity Conditions. Theor Found Chem Eng 54, 64–76 (2020)
- Sagar, K. R., Naik, H., & Mehta, H. B. (2022). Novel condenser based cryogenic pulsating heat Pipe: Investigations on influence of geometrical parameters. Cryogenics, 126, 103543.

- Sagar, K. R., Naik, H., & Mehta, H. B. (2022). Performance assessment of planar and non-planar cryogenic pulsating heat pipe with novel condenser. *Cryogenics*, 129, 103614.
- Sagar, K., Mehta, H.B. Experimental investigations on heat transfer characteristics of pulsating single-phase liquid flow and two-phase Taylor bubble flow through a minichannel. *Sādhanā* 43, 47 (2018).
- Hemantkumar B. Mehta, Sagar, K.R. & Chaudhari, C.N. Influence of Direct and Co-Flow Pre-Injection of a Gas Phase on Gas–Liquid Two-Phase Flow through a Vertical Minichannel. *Theor Found Chem Eng* 54, 116–131 (2020).
- Vachhani, M., Sagar, K. R., Patel, V. M., & Mehta, H. B. (2024). Novel integration of dual evaporator loop heat pipe for improved electric vehicle battery thermal regulation. *Applied Thermal Engineering*, 236, 121832.
- Vachhani, M., Sagar, K.R., Patel, V.M. et al. Enhancing battery thermal management: a study on the feasibility of dual-evaporator loop heat pipe technology. *J Therm Anal Calorim* 148, 13639–13654 (2023).
- Vachhani, M., Sagar, K.R., Patel, V.M. & Mehta, H. B. (2024). Cooling hybrid/electric vehicle battery module: exploring the thermal potential of single evaporator Loop heat Pipe. *Energy Sources, Part A: Recovery, Utilization, and Environmental Effects*, 46 (1), 689-705.

- **Conference Papers:**

- Asodiya, Sagar M., Kalpak R. Sagar, and Hemantkumar B. Mehta. "A CFD Analysis of Closed Loop Pulsating Heat Pipe Using Fourth-Generation Refrigerant." *Recent Advances in Fluid Dynamics: Select Proceedings of ICAFFTS 2021*. Singapore: Springer Nature Singapore, 2022. 411-423.
- Hadavani, Jeet N., Kalpak Sagar, Milan Vachhani, Vipul M. Patel, and Hemant B. Mehta. "Performance Analysis of Thermosyphon using Different Working Fluids." In *Proceedings of the 27th National and 5th International ISHMT-ASTFE Heat and Mass Transfer Conference December 14-17, 2023, IIT Patna, Patna-801106, Bihar, India*. Begel House Inc., 2024.
- Mehta, Hemantkumar B., Durga Nand Jha, Milan Vachhani, Vipul M. Patel, and Kalpak Sagar. "Electro-Thermal Characteristics of Loop Heat Pipe based BTMS: An Experimental Investigation." In *Proceedings of the 27th National and 5th International ISHMT-ASTFE Heat and Mass Transfer Conference December 14-17, 2023, IIT Patna, Patna-801106, Bihar, India*. Begel House Inc., 2024.
- Sagar, Kalpak R., H. B. Naik, and Hemantkumar B. Mehta. "Development of cryogenic pulsating heat pipe with hybrid cooling system." *Proceedings of the*

28th national symposium on cryogenics and superconductivity: book of abstracts. 2022.

- Patel, Vipul M., Kalpak Sagar, and Hemantkumar B. Mehta. "A review on dry out mechanism of pulsating heat pipe." Proceedings of the national conference on critical heat flux and multiphase flow: abstracts. 2018.
- Dr. Kalpak R. Sagar, "A Machine Learning Approach to Li-Ion Battery Module" in the Proceedings of 5th International Conference on Recent Advances in Mechanical Infrastructure organised by IITRAM Ahmedabad in association with IIT Roorkee and SVNIT Surat 10th - 12th January 2025.
- Aditya G. Kahalkar, Alok Mishra, Jeet P. Patil, and Kalpak R. Sagar. "Experimental Investigations on Flat Plate Heat Pipe-Based Battery Thermal Management using Prismatic Dummy Cells" at the FEEMSSD-2025 Conference, organized by Madan Mohan Malaviya University of Technology, Gorakhpur, on February 27-28, 2025.

- **Editorial Work:**

- Reviewer of "International Journal of Refrigeration" Elsevier Publication
- Reviewer of "Cryogenics" Elsevier Publication
- Reviewer of "Applied Thermal Engineering" Elsevier Publication
- Reviewer of FHMT-Frontiers in Heat and Mass Transfer.

6. Awards and Honors

- **Grants:**

- Received Research Grant under PIDA for the project entitled "Experimental Investigations of loop heat pipe based BTMS for cooling EVs" for period 15th Feb 2024 to 14th Feb 2027.

7. Professional Experience

- **Administrative Roles:**

- Associate Dean Academics from 3rd June 2024 to till date
- Incubation Cell Co-Ordinator
- Department T&P Co-Ordinator
- FMHM Lab In-charge

- **Industry Collaboration:** NA

- **Consulting Work:** NA.

8. Supervision and Mentoring

- **PhD/Master's Supervision:** NA

9. Professional Memberships

- **Associations:** NA

10. Miscellaneous

- **Languages:** Marathi, Hindi, English
- **Skills:** CFD, ANSYS Fluent
- **Personal Interests:** I love everything I Do.