Shashank Gupta

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Profile

Enthusiastic and passionate power system engineer specialized in the design, performance analysis, and failure diagnostics of transformers. Backed by a Ph.D. in Electrical Engineering from IIT Roorkee, with research on winding joint failures and their impact on distribution transformer reliability. Proficient in both electrical and mechanical aspects of transformers. Seeking R&D opportunities in transformer design and engineering.

Education

PH.D. (ELECTRICAL ENGINEERING) | IIT ROORKEE | JULY 2025

Thesis Topic: Failure analysis of winding joints in distribution transformers

- Improved distribution transformer performance by identifying failure factors in aluminum and copper winding joints through experimental tensile (IS 1608) and creep (ASTM E139) testing.
- Enhanced understanding of distribution transformer performance by benchmarking aluminum and copper winding joints under long-term inrush current conditions, identifying variations in contact resistance.
- Recommended critical measures to improve DT reliability by resolving issues related to suboptimal joining methods and poor creep behaviour under operational conditions.

M.E. (POWER SYSTEMS) | THAPAR UNIVERSITY, PATIALA | AUGUST 2015

Thesis topic: Hybrid optimization technique for fixed and variable head short-term hydrothermal scheduling

- Used hybrid optimization technique (dynamic multi-swarm particle swarm optimizer (DMSPSO) and sequential quadratic programming (SQP)) to optimize the cost of fixed and variable head short-term hydrothermal scheduling problem.

B. TECH. (ELECTRICAL & ELECTRONICS) | SRMCEM, LUCKNOW | JULY 2012

INTERMEDIATE & HIGH SCHOOL | JDSVM, KANPUR | MARCH 2007 & MARCH 2005

Experience

RESEARCH ASSOCIATE | DEPARTMENT OF HYDRO & RENEWABLE ENERGY, IIT ROORKEE | MARCH 2025 - PRESENT

- Working on the R&D project 'R&D of ultra-low head and hydrokinetic turbines and performance prediction of small hydro turbine model/project' sponsored by MNRE, New Delhi.
- Handles generator performance issues in hydrokinetic turbine testing to ensure optimal operation.

- Involved in procurement of technical equipment via tendering, including bid evaluation and vendor coordination.

SENIOR RESEARCH FELLOW | DEPARTMENT OF MECHANICAL & INDUSTRIAL ENGINEERING, IIT ROORKEE | JULY 2018 – MARCH 2021

- Worked on the project 'Studies on creep behaviour of aluminium and copper winding joints of distribution transformers' sponsored by ICAI, Mumbai.
- Analyzed creep behaviour of aluminium and copper winding joints of distribution transformers and recommended engineering solutions to enhance transformer reliability by minimizing creep effects under operational conditions.

ASSISTANT PROFESSOR | PRABHAT ENGINEERING COLLEGE, KANPUR | AUGUST 2015 – AUGUST 2017

- Taught various subjects to undergraduate students: Power systems, Electrical measurement and measuring instruments, Control systems, Signals and systems and Electrical networks.
- Lab supervision in related subjects.

Software

- Ansys Maxwell/Ansys Mechanical/SolidWorks
- MATLAB/PSCAD
- Microsoft Office/Origin Pro

Internships and Workshops

- Participated in 5 days Indo-UK SPARC workshop on 'Recent trends in microgrid operation and control' organized by IIT Roorkee | Dec. 2024
- Four-month internship at United Electricals & Transformers, Roorkee | Dec. 2018 - Mar. 2019
  - Acquired in-depth practical knowledge and hands-on experience in the manufacturing process of distribution transformers as per IS: 1180, including winding formation, core assembly, insulation techniques, and routine electrical testing.
  - Observed and participated in quality control procedures to ensure compliance with industry standards.
- Organized one week GIAN course on 'HVDC Transmission and Facts' at IIT Roorkee | Dec. 2018
- One-month vocational training at 400 kV substation, UPPTCL, Panki-Kanpur | June - July 2011
  - Gained valuable insights into the functioning of a power substation and various components such as transformers, circuit breakers, buses, insulators and current transformers.

Presentations and Talks

- Delivered a presentation as a speaker in the conference 'Emerging Technologies on Electrical Systems' organized by Electrical Mirror at Scope Complex, New Delhi | August 2024
  Presentation topic: Winding Joints - A key towards reliability in Distribution Transformers.
- Delivered an invited presentation in the workshop 'Best practice for O&M of DT and code of practice for the repair of DT' held at Dehradun, organized by Indian Transformers Manufacturing Association (ITMA) and International Copper Association India (ICAI) | May 2024

Presentation topic: Winding Joints in Distribution Transformers – Key for Reliability.

- Delivered a presentation in 10th IEEE UPCON conference, held at Amity University, Noida | Dec. 2023
  Presentation Topic: Study on Mechanical Strength of Winding Joints in Distribution Transformers.
- Delivered a presentation in Conference 'Failure of Major Equipment's of Sub Station-Case Studies', organized by CBIP-CIGRE India, held at CBIP conference hall, New Delhi | Feb. 2023
  Presentation Topic: Impact of Winding Joint to the Failure of Distribution Transformers: A Field Study.

Research Publications

1. **S. Gupta**, D.K. Dwivedi, M. Tripathy, "Creep Failure Analysis of Crimp Joints in Aluminium and Copper Windings of Distribution Transformers", Engineering Failure Analysis, Vol. 156, 2024.
2. **S. Gupta**, D.K. Dwivedi, M. Tripathy, "Creep Failure Analysis of Western Union Splice Joints in Distribution Transformer Winding", Journal of Materials Engineering and Performance, Vol. 33, no. 23, pp. 12917–12929, 2024.
3. **S. Gupta**, D. K. Dwivedi, M. Tripathy, Study on Mechanical Strength of Winding Joints in Distribution Transformers, in 10th IEEE Uttar Pradesh Section International Conference on Electrical, Electronics and Computer Engineering (UPCON), 2023.
4. **S. Gupta**, D. K. Dwivedi, M. Tripathy, H. O. Gupta, "An Overview of the Winding Joints of Distribution Transformers", Electrical Mirror Magazine, pp. 156-160, July 2023.
5. **S. Gupta**, M. Tripathy, D.K. Dwivedi, "Impact of Winding Joint to the Failure of Distribution Transformers: A field study", Power Engineer Journal, Vol. 25, no.2, pp. 7-11, 2023.
6. **S. Gupta**, N. Narang, "Integrated PSO-SQP Technique for Short-term Hydrothermal Scheduling" Int. Journal of Advanced Research in Computer Engineering & Technology, Vol. 4, no. 4, 2015.
7. **S. Gupta**, N. Narang, "Short-term Hydrothermal Scheduling using Dynamic Multi-Swarm Particle Swarm Optimizer" Advanced Research in Electrical and Electronics Eng., Vol. 2, no. 10, pp. 87-91, 2015.

References

1. **Dr. D. K. Dwivedi**
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