Shubham Sharad Khule

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PROFESSIONAL SUMMARY

Mechanical Engineer pursuing a Master's degree at Arizona State University with experience in mechanical design, thermal analysis, system integration, and performance testing. Proficient in 2D/3D CAD modeling, energy modeling, technical documentation, and experimental validation of mechanical components and assemblies. Experience includes power electronics, thermal management, HVAC systems, and energy applications. Seeking mechanical design, thermal, or systems engineering roles across the mechanical and clean energy sectors.

TECHNICAL SKILLS.

- **Mechanical Design:** SolidWorks (Professional Certified), AutoCAD (Professional Certified), Fusion 360, 2D/3D CAD Modeling, Assemblies & Drawings, Prototyping
- **Analysis & Simulation:** COMSOL, FEA, Thermal Analysis, Heat Transfer, Energy Modeling, Testing & Validation
- **Engineering Tools:** MATLAB, EnergyPlus, Excel, Technical Documentation
- **Standards & Methods:** GD&T, Tolerance Analysis

EXPERIENCE.

RAM MOTORCYCLES, NAVI MUMBAI. MAINTENANCE APPRENTICE **Jun 2023 - jul 2023**

- Diagnosed electrical and mechanical faults in battery systems, wiring harnesses, and components using digital multimeters and hand tools
- Performed engine work, chain alignment, oil and filter changes, and tire replacements on customer motorcycles
- Interpreted technical manuals, documented findings, and followed safety procedures during preventive maintenance operations

PROJECTS.

HYBRID SOLAR/WIND BASED SELF-CHARGING SYSTEM FOR EVS **Aug 2023 - May 2024**

- Designed and assembled a hybrid renewable energy prototype integrating a 50W, 12V solar PV panel, PWM charge controller, battery, and alternator; created full 3D SolidWorks CAD models and assemblies
- Validated DC circuit wiring and system performance using a digital multimeter, measuring battery voltage before and after charging across multiple test runs
- Measured an average battery charging time of ~6.3 hours under alternator-assisted charging conditions through functional testing and performance analysis
- Performed engineering calculations for power, torque, and shaft sizing with a 20mm diameter shaft

PCM INTEGRATION FOR HVAC THERMAL MANAGEMENT **Aug 2024 – Dec 2024**

- Modeled sodium sulfate decahydrate ($Na_2SO_4 \cdot 10H_2O$) integration in roof systems to reduce peak HVAC loads and improve thermal stability
- Conducted transient heat transfer simulations in MATLAB and EnergyPlus; evaluated thermal conductivity (0.54 W/m·K), latent heat (254 kJ/kg), and material performance under cyclic conditions
- Analyzed temperature distribution and peak load reduction across seasonal conditions to assess impact on building energy consumption and system efficiency

DOUBLE-SIDED COOLING SIC POWER MODULE ANALYSIS **Aug 2025 - Dec 2025**

- Analyzed double-sided cooling architectures to reduce thermal resistance (RthJC) and lower junction temperature by 25–45°C compared to single-sided modules
- Evaluated thermo-mechanical stress distribution, material selection (sintered Ag, DBC substrates, TIMs), and structural reliability under thermal cycling conditions
- Quantified parasitic inductance reduction from 15–20 nH to 4–5 nH and its impact on switching performance and power density for high-power applications

EDUCATION

Arizona State University, Tempe, AZ. **Aug 2024-May 2026**
Master Of Science, Modern Energy Production & Sustainable Use (In Progress)
Current GPA - 3.52/4.00
Relevant Coursework- Applied Photovoltaics (Lab), Solar Energy & PV System Design, Industrial & Renewable Energy Systems, Energy Efficiency & HVAC Systems, Sustainable Energy Policy & Regulations

University of Mumbai (Terna College of Engineering), Navi Mumbai. **Jun 2021 - May 2024**
Bachelor of Engineering, Mechanical Engineering.
GPA - 3.2/4.00
Relevant Coursework: Thermodynamics, Heat Transfer, Machine Design, Fluid Mechanics, Refrigeration & Air Conditioning