

# SOHAM GUPTA

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## PROFESSIONAL SUMMARY

Chemical Engineering postgraduate (M.Tech, IIT Jodhpur) with strong exposure to Li-ion battery thermal management, CFD-based multiphysics simulation, and solar PV system design. Proficient in COMSOL, ANSYS, Aspen Plus, DWSIM, MATLAB, PVsyst, AutoCAD, and Excel. Hands-on experience in battery modeling, renewable energy system design, and process simulation, supported by industrial internships and research projects in biofuels and energy systems.

## TECHNICAL SKILLS

- **Simulation & Modeling:** COMSOL Multiphysics, ANSYS (Thermal & CFD), Aspen Plus, DWSIM, MATLAB
- **Energy Systems:** Battery Thermal Management, Li-ion Batteries, Solar PV System Design
- **Design Tools:** PVsyst, AutoCAD, MS Excel (Advanced)
- **Core Chemical:** Heat Transfer, Reaction Engineering, Distillation, Material & Energy Balance

## INTERNSHIP EXPERIENCE

### **Engineering Intern | Indian Oil Corporation Limited (IOCL), Odisha | May 2023 – June 2023**

- Gained exposure to refinery operations including Crude Distillation Unit (CDU), heat exchangers, pumps, and utility systems
- Assisted in process parameter monitoring, log-sheet verification, and basic operational data analysis
- Observed industrial safety practices, equipment functionality, and refinery process flow

### **Rourkela Steel Plant (SAIL), Odisha | Engineering Intern | May 2022 – June 2022**

- Studied coke ovens, blast furnaces, and water treatment units in integrated steel production
- Observed heat recovery systems, energy utilization, and plant-wide operations
- Assisted with equipment documentation and operational data entry.

## ACADEMIC PROJECTS

### **Battery Thermal Management System (M.Tech)**

- Developed 1D electrochemical and 2D CFD thermal model of 18650 Li-ion cells using COMSOL
- Predicted heat generation and temperature rise ( $\Delta T \sim 8-10$  K) at high C-rates
- Designed PCM-air hybrid cooling concept and performed transient thermal analysis

### **Catalytic Co-Pyrolysis of Waste Oil & Plastic (B.Tech)**

- Conducted ex-situ catalytic co-pyrolysis of waste engine oil and LLDPE plastics
- Evaluated CaO, phosphogypsum, and  $V_2O_5$  catalysts for fuel-grade bio-oil improvement
- Performed FTIR analysis to study compositional upgrading mechanisms

### **Solar PV System Design (Udemy)**

- Designed grid-tie and off-grid PV systems using manual calculations
- Created system layouts and SLDs using AutoCAD and simulated projects in PVsyst
- Performed inverter, battery, protection device design and financial analysis

### **Process Simulation using DWSIM**

- Built steady-state process simulations including separators, pumps, compressors, heat exchangers, and columns
- Exported heat and material balances for equipment sizing

## EDUCATION

1. **M.Tech**, Chemical Engineering — IIT Jodhpur | CGPA: 7.17 | 2024–2026
2. **B.Tech**, Chemical Engineering — VSSUT Burla | CGPA: 8.34 | Rank: 2 | 2020–2024

## ACHIEVEMENTS & CERTIFICATIONS

- Rank 2, Chemical Engineering – VSSUT
- Bronze Medal, Hybrid Electric Vehicle Challenge – IIT Kanpur
- NASSCOM TEQIP-III Certification: Virtual Reality in Engineering
- Udemy (Ongoing): PV Solar Energy (PVsyst, Excel, AutoCAD), DWSIM Process Simulation

## LANGUAGES KNOWN

English, Hindi, Odia, Marwadi