

LALIT SINGH

Tata Passenger Electric Mobility Ltd

Senior Manager – Advanced Engineering (R&D)

*Embedded Systems | EV Power Electronics | ECU Validation |
Functional Safety*

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📍 Pune

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🇮🇳 India

Profile

Objective: Embedded Systems Engineer with **5+ years of experience in automotive EV systems**, including ECU validation, HIL testing, embedded C and Python automation, power electronics (DC-DC, OBC, PDU), and ISO 26262 Functional Safety. Seeking an Embedded Systems role to contribute to the **design, development, validation, and integration of reliable embedded hardware and software solutions** for automotive and EV applications..



Professional skills

- **HIL Testing:** OpalRT, dSPACE, Automation scripting
- **Communication Protocols:** CAN, LIN, UDS diagnostics
- **Programming:** Embedded C/C++, Python
- **Tools:** Vector CANoe, Canalyser, Vehicle Spy
- **Model-Based Design:** MATLAB/Simulink, Stateflow
- **Functional Safety:** ISO 26262 Compliance, Ansys Medini
- **ECU integration & Debugging**
- **DCDC, OBC, PDU**
- **Dfmea**
- **HV harness & CATIA**
- **Power electronics fundamentals**



Work Experience

Tata Motors – TPEM (Tata Passenger Electric Mobility Ltd.)

Senior Manager – Advanced Engineering (R&D Team)

📍 Pune, India | 📅 June 2019 – Present

Focus Areas: Embedded Systems, EV power electronics, ECU validation and Review, Functional Safety

- Performed **DC-DC Converter and On-Board Charger (OBC) performance & diagnostic automation testing** using **Python scripting**, improving test coverage and repeatability.
- Executed **HIL testing of EV ECUs** using **Opal-RT and dSPACE**, including:
Development of **MATLAB/Simulink models** (Console & Master models), CAN

communication and diagnostics using **VehicleSpy**, Test scripting using **C programming** for real-time validation

- Led **ECU hardware finalization** activities for EV programs, including schematic review, component selection alignment, and interface validation.
- Conducted **battery system testing** for EV buses, including: Field issue reproduction using automation and manual testing, Diagnostic Trouble Code (DTC) analysis and corrective action validation
- Worked on **HV wire harness routing and packaging** using **CATIA**, with lifecycle management through **PLM tools**, across multiple EV platforms.
- Performed **DFMEA for HV powertrain systems and wire harness**, identifying critical failure modes and implementing preventive controls
- Executed **Functional Safety (ISO 26262) activities** for HV components such as **DC-DC converters, OBC, and PDU**, including safety analysis and requirement traceability.
- Finalized **CCS2 charging system technical hardware parameters** for multiple EV programs, including supplier coordination and compliance checks..
- Contributed to **in-house development of AC slow charging gun circuitry**, and supported **field failure analysis and root cause resolution** for charging gun issues.

Education

Master of Technology: Process Control & Instrumentation,
NIT Tiruchirappalli

08-2018 – 06-2020
Tamil Nadu, India

Bachelor of Technology: Electrical and Electronics Engineering,
SIT Bhubaneswar

08-2012 – 04-2016
Odisha, India



CERTIFICATIONS

- ISO 26262 Functional Safety
- MATLAB/Simulink for Control Engineers
- Advanced VLSI design

SOFT SKILLS

- Technical documentation and reporting.
- Supplier evaluation and collaboration.
- Cross-functional teamwork and communication.
- Problem solving and debugging
- Agile project execution