Project Design Phase
Proposed Solution

Date	18 February 2026
Team ID	LTVIP2026TMIDS84143
Project Name	Electric Motor Temperature Prediction using Machine Learning
Maximum Marks	2 Marks

Proposed Solution:

Project team shall fill the following information in the proposed solution template.

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Internal permanent magnet temperature in electric motors is difficult to measure directly due to high cost and technical limitations of embedded sensors. Overheating can lead to reduced efficiency, unexpected failures, and high maintenance costs. There is a need for a predictive system that estimates motor temperature using available operational data.
2.	Idea / Solution description	The proposed solution is a Machine Learning-based web application that predicts permanent magnet temperature using motor sensor inputs such as ambient temperature, coolant temperature, voltage, current, torque, and motor speed. The system preprocesses input data and uses a trained regression model to generate real-time temperature predictions through a Flask web interface.
3.	Novelty / Uniqueness	Instead of using physical thermal sensors inside the motor, the system uses data-driven predictive modeling to estimate internal temperature. The integration of ML prediction with a user-friendly web interface makes it practical and cost-effective. The solution bridges predictive maintenance and AI-based monitoring.
4.	Social Impact / Customer Satisfaction	The system improves motor safety, reduces risk of breakdowns, and enhances operational efficiency. It helps industries and electric vehicle manufacturers prevent overheating failures, thereby reducing maintenance costs and increasing equipment lifespan. This leads to higher reliability and customer satisfaction.

5.	Business Model (Revenue Model)	The solution can be offered as a SaaS (Software-as-a-Service) platform for industrial motor monitoring. Revenue can be generated through subscription-based access, licensing for EV manufacturers, or integration with IoT-based smart motor systems.
6.	Scalability of the Solution	The system follows a modular 3-tier architecture and can be scaled to integrate real-time IoT sensor data, cloud deployment, and multi-motor monitoring dashboards. It can handle multiple prediction requests and be deployed on cloud platforms like AWS or Azure for large-scale industrial applications.