Project Design Phase
Proposed Solution

Date	19 February 2026
Team ID	LTVIP2026TMIDS61980
Project Name	Electric Motor Temperature Prediction System
Maximum Marks	2 Marks

Proposed Solution Template:

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

S.No.	Parameter	Description
1.	Problem Statement (Problem to be solved)	Electric motors used in industries often experience overheating due to continuous operation and fluctuating load conditions. Traditional monitoring systems rely on threshold-based alerts, which detect issues only after the temperature crosses critical levels. This can result in equipment failure, downtime, and increased maintenance costs. Therefore, an intelligent predictive system is required to forecast motor temperature in advance and enable preventive maintenance.
2.	Idea / Solution description	The proposed solution uses Machine Learning techniques to predict the rotor temperature of an electric motor based on sensor inputs such as ambient temperature, coolant temperature, voltage, current, motor speed, and stator temperatures. The system: • Collects historical motor sensor data • Performs preprocessing and feature scaling • Trains regression models • Selects the best-performing model (Decision Tree Regressor) • Deploys the model using a Flask web application Users can manually enter motor parameters through a web interface, and the system instantly predicts the rotor temperature.
3.	Novelty / Uniqueness	The uniqueness of this project lies in: • Applying machine learning for predictive maintenance in electric motors • Integrating data analysis, model training, and real-time deployment • Providing a user-friendly web interface for temperature prediction

		• Designing a scalable architecture that supports future IoT sensor integration Unlike traditional threshold-based systems, this solution predicts temperature trends before failure occurs.
4.	Social Impact / Customer Satisfaction	This solution can provide significant social and industrial benefits: • Reduces unexpected motor failures • Minimizes industrial downtime • Improves energy efficiency • Increases equipment lifespan • Reduces maintenance costs Industries can achieve better operational efficiency and improved reliability, leading to higher customer satisfaction.
5.	Business Model (Revenue Model)	The solution can be commercialized as: • A subscription-based predictive maintenance software • A cloud-based monitoring service for industries • A licensed solution integrated into industrial automation systems Industries can pay monthly or yearly subscription fees to use the predictive analytics system for real-time monitoring and failure prevention.
6.	Scalability of the Solution	The solution is highly scalable because: • It can be integrated with real-time IoT sensors • It can be deployed on cloud platforms (AWS, Azure, GCP) • It can handle multiple motors simultaneously • The model can be retrained with larger datasets • It can be expanded to predict other parameters such as vibration and torque The system can easily scale from small manufacturing units to large industrial plants.