Ideation Phase
Electric Motor Temperature Prediction using Machine Learning
Template

Date	31 January 2026
Team ID	LTVIP2026TMIDS38689
Project Name	Electric Motor Temperature Prediction using Machine Learning
Maximum Marks	4 Marks

Electric Motor Temperature Prediction Template:

Create a predictive maintenance solution to forecast motor temperatures and prevent overheating.

Step-1: Team Gathering, Collaboration and Select the Problem Statement

Problem Statement

Industries rely heavily on electric motors for manufacturing, HVAC systems, and automation. Overheating of motors leads to equipment failure, unexpected downtime, high maintenance costs, and reduced efficiency. Traditional monitoring systems only detect issues after they occur rather than predicting them.

Selected Solution

Develop a **Machine Learning–based predictive system** that analyse historical motor data (load, voltage, current, ambient temperature, etc.) to forecast motor temperature and detect overheating risks in advance.

Objectives

- Predict motor temperature accurately.
- Prevent overheating and motor failures.
- Enable preventive maintenance.
- Improve energy efficiency.
- Increase equipment reliability.

Step-2: Brainstorm, Idea Listing and Grouping

Idea Categories for your ML Project:

Data Collection Ideas

- Collect sensor data from motors (temperature, current, voltage).
- Use industrial IoT sensors for real-time monitoring.
- Include environmental conditions like humidity & ambient temperature.

Data Processing Ideas

- Clean and preprocess sensor data.
- Handle missing values and noise removal.
- Normalize and scale data.

Machine Learning Ideas

- Use regression models to predict temperature.
- Compare algorithms:
    - Linear Regression
    - Random Forest
    - Decision Tree
    - Gradient Boosting
    - Neural Networks
- Perform model evaluation and optimization.

Visualization & Monitoring Ideas

- Real-time temperature dashboard.
- Alert system for overheating prediction.
- Graphical trend analysis.

Deployment Ideas

- Web dashboard using Python frameworks.
- Cloud deployment using IBM Watson services.
- Integration with industrial monitoring systems.

User Benefits Ideas

- Maintenance alerts before failure.
- Energy consumption optimization.
- Reduced downtime and repair costs.

Step-3: Idea Prioritization

Priority	Idea	Reason
High	Machine learning temperature prediction	Core functionality
High	Preventive maintenance alerts	Prevent failures & downtime
High	Data preprocessing & cleaning	Essential for accuracy
Medium	Real-time dashboard visualization	Improves monitoring
Medium	Energy efficiency optimization	Cost savings
Low	Cloud deployment & remote access	Enhancement feature