



**PRODUCT DEVELOPMENT COURSE
DIPO04U3M & DIPO05UEM**

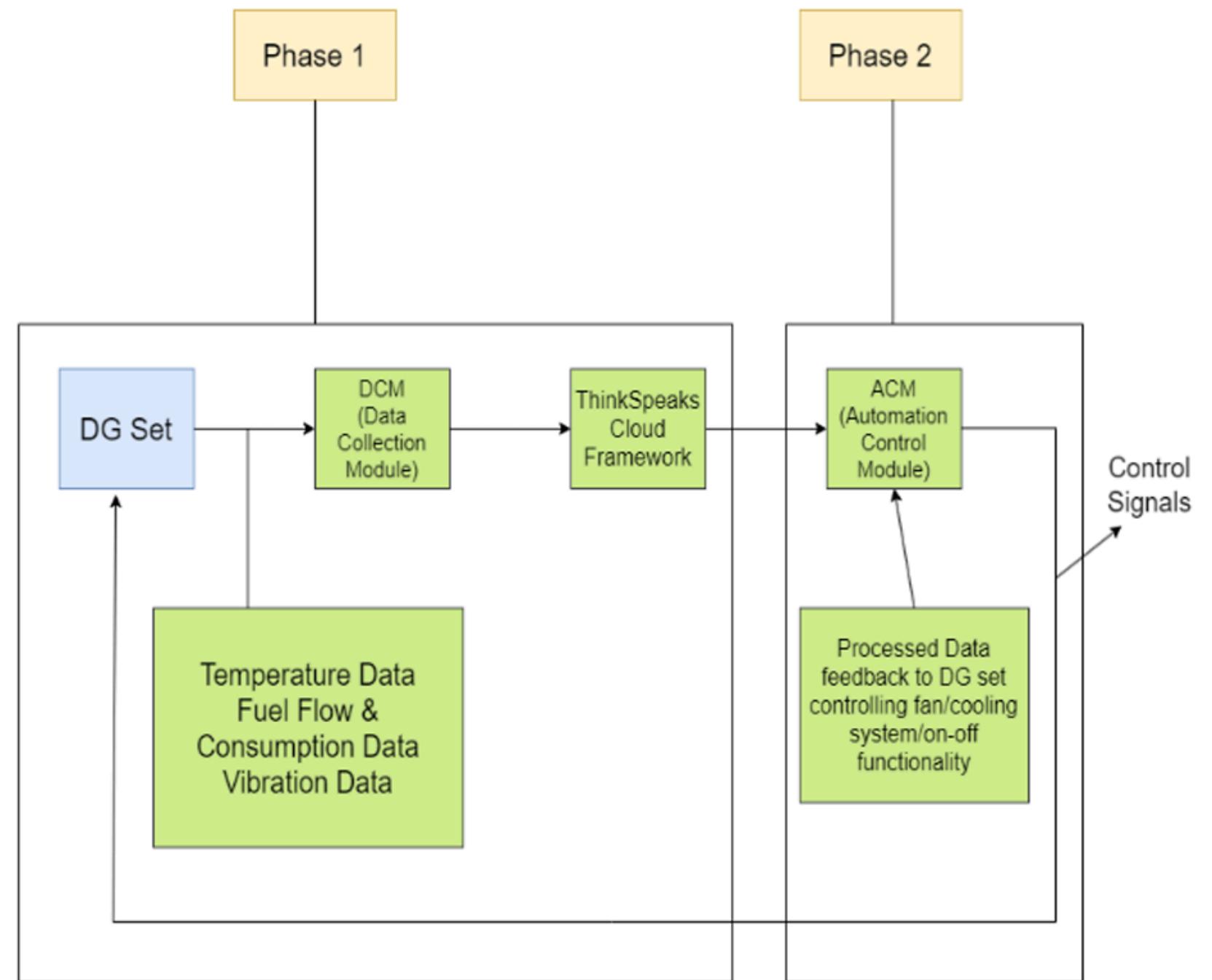
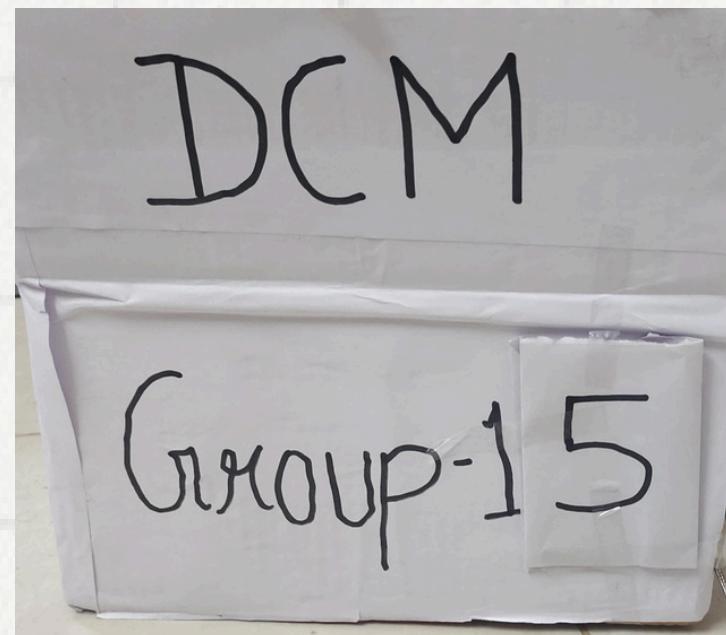
Final Presentaion

Mentor : Dr. Ankit Dubey

GROUP 15

- Antim 2021UME0204

Phase 1: Data Collection Module(DCM) for DG-SET



Problem

Diesel generator sets (DG sets) are pivotal for maintaining continuous power supply. However, there's a notable lacking in methodologies for analyzing, monitoring, and forecasting diverse parameters of a DG set. This results in suboptimal performance and health monitoring, as well as inadequate tracking of its fuel consumption.

Objective

To develop a product that can be used to capture and monitor the real-time data for the following parameters of the Diesel Generator.

- Radiator Temperature
- Engine Temperature
- Average Body Temperature
- Fuel rate (ml/sec)
- Diesel Consumed since Full Tank
- Mechanical Vibration in the DG-set.

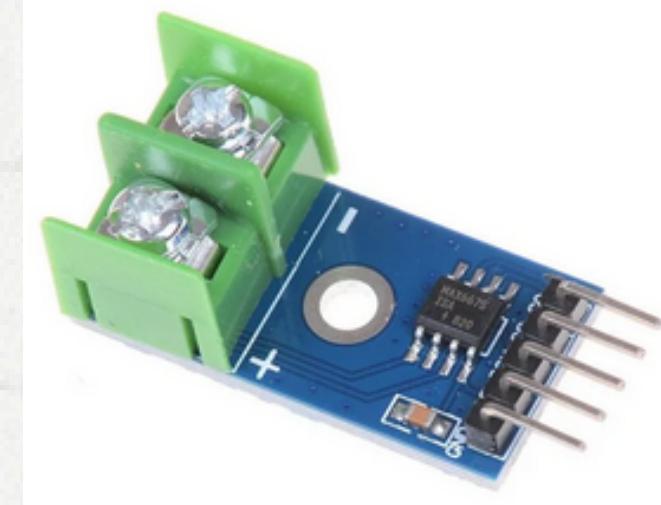
Sensors Used

We have installed the following sensors to capture the data for the required parameters.

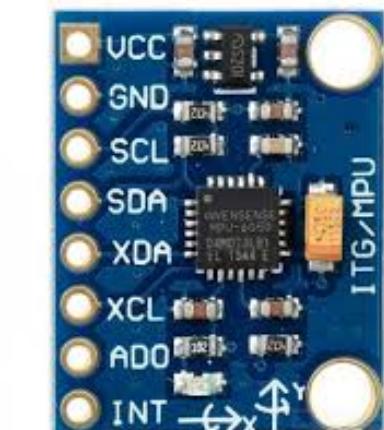
01. OF05ZAT G1/2
DN15 Oil Flow
Sensor



02. MAX6675
Thermocouple
Sensor Module



03. MPU-6050
3-Axis
Accelerometer:



Microcontroller Used

:ESP 32

Sensors

S1

S2

S3

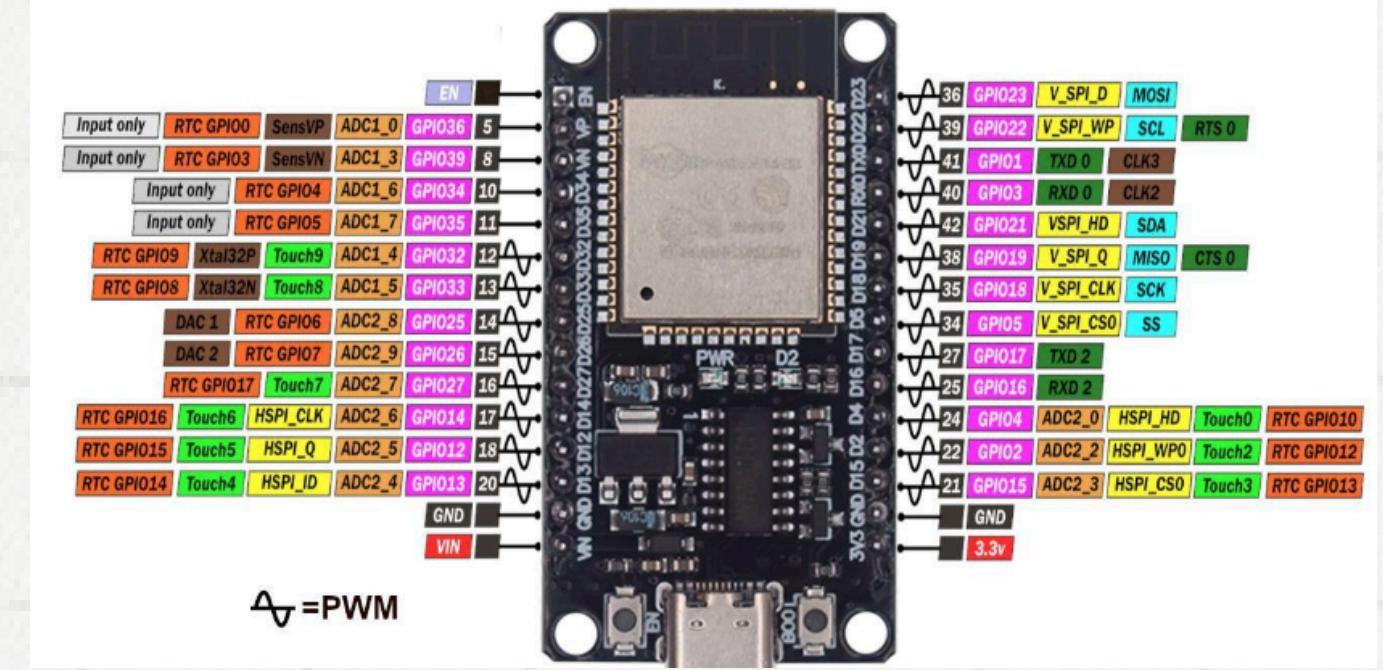
S4

S5

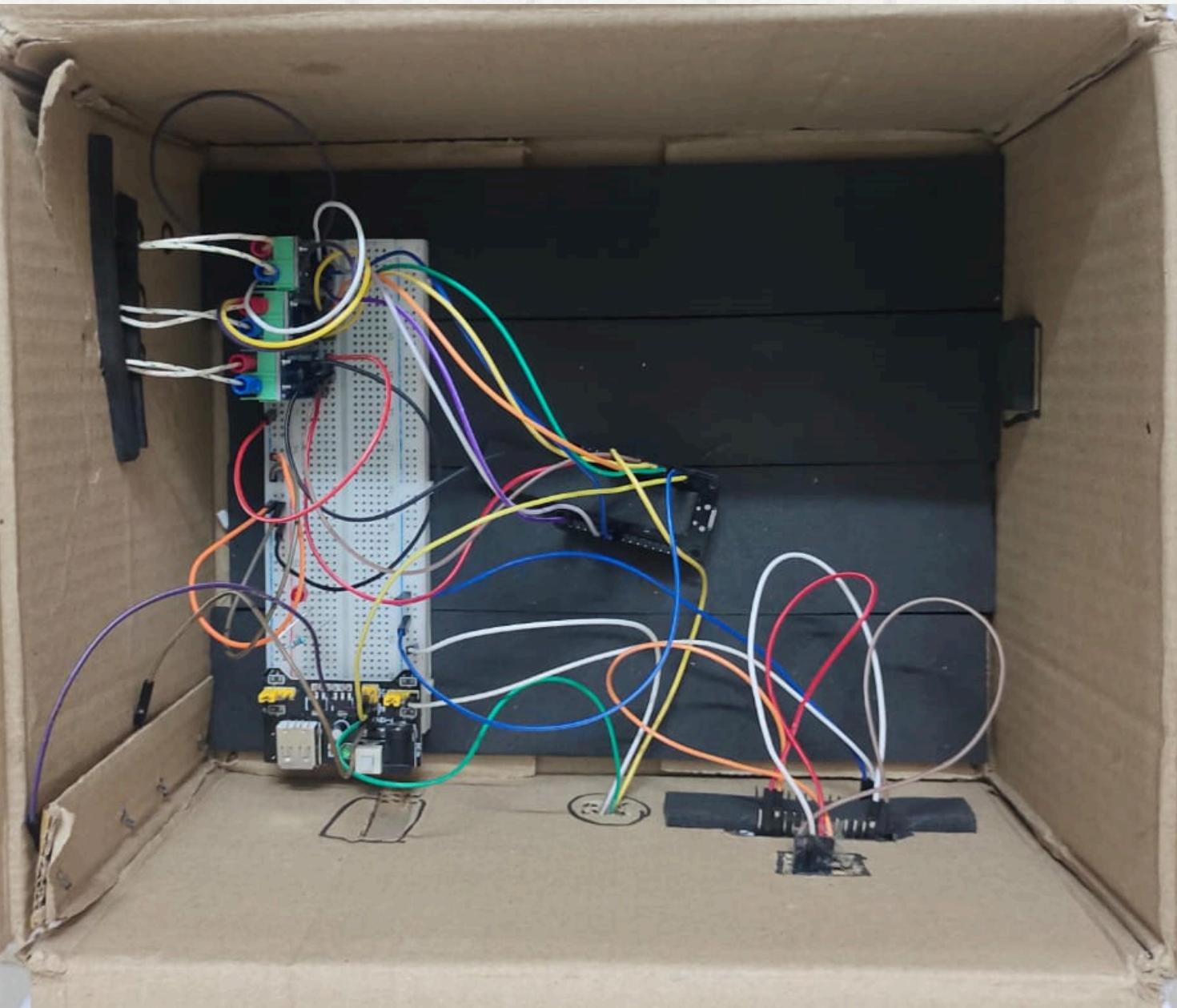


THINGS
SPEAK
CLOUD

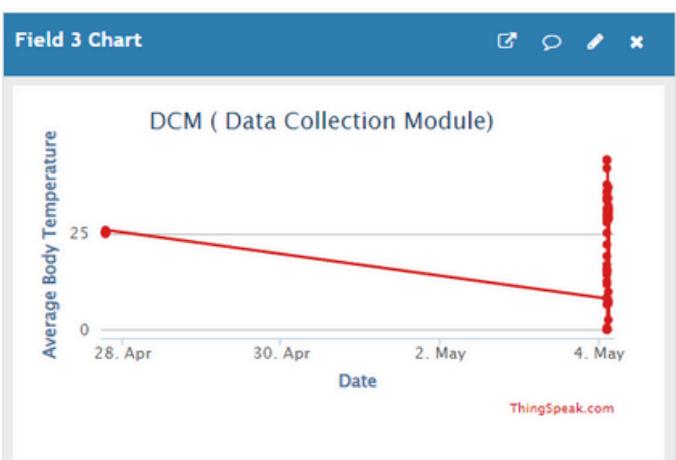
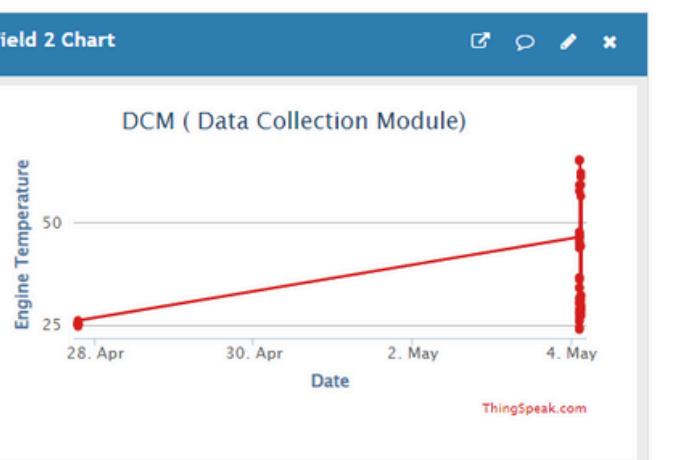
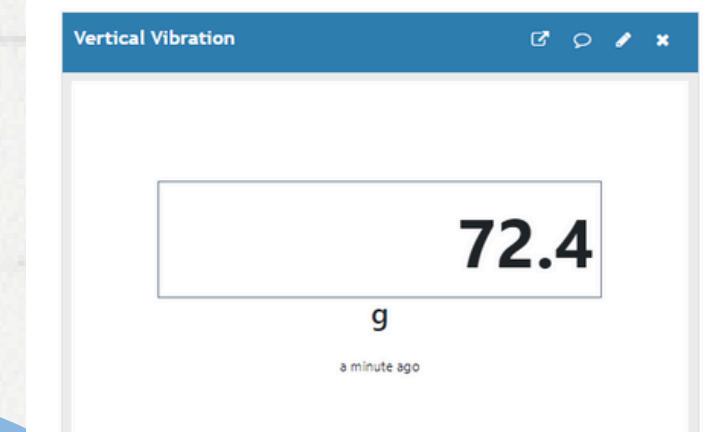
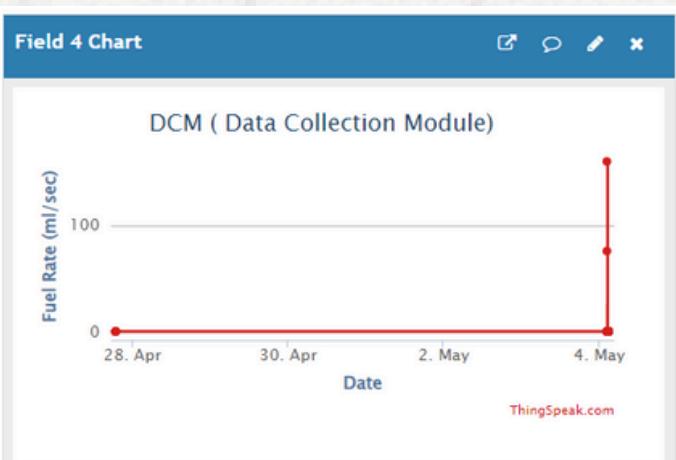
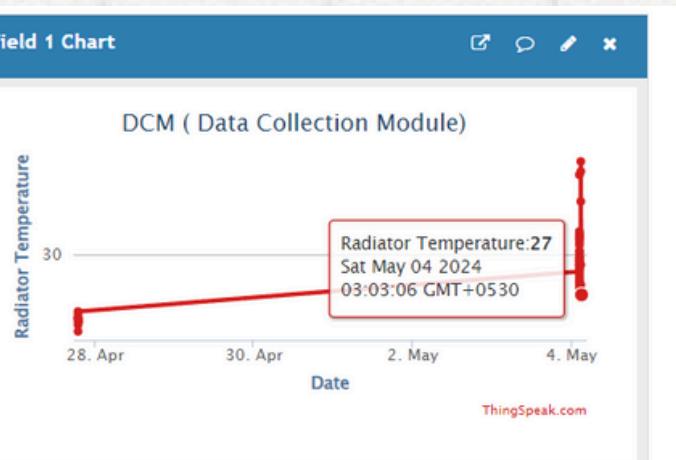
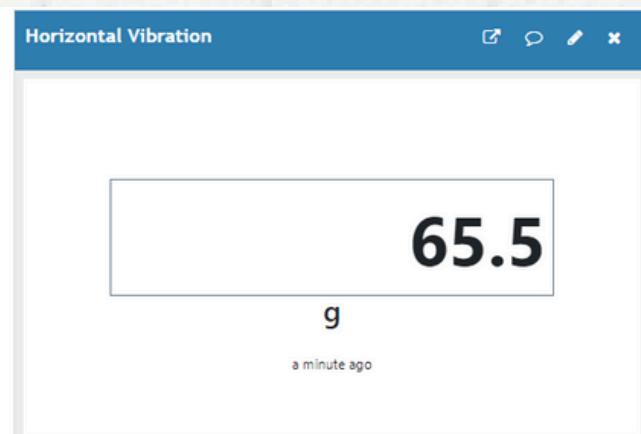
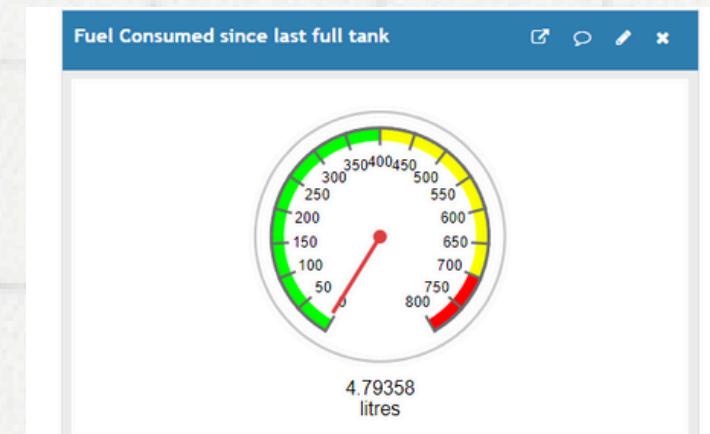
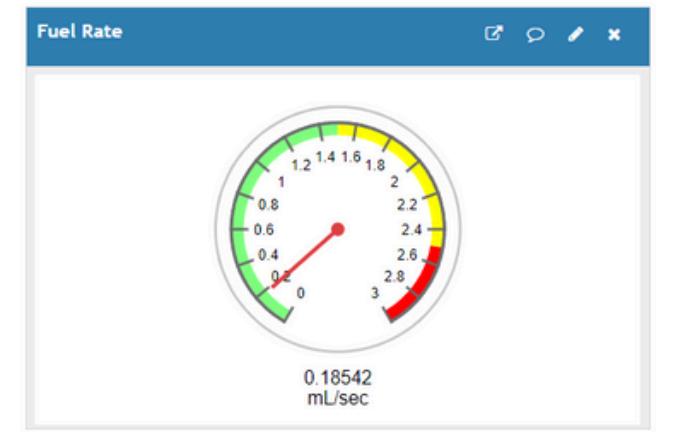
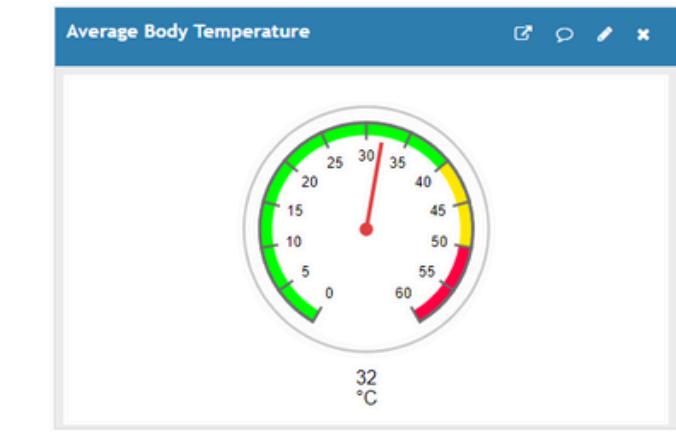
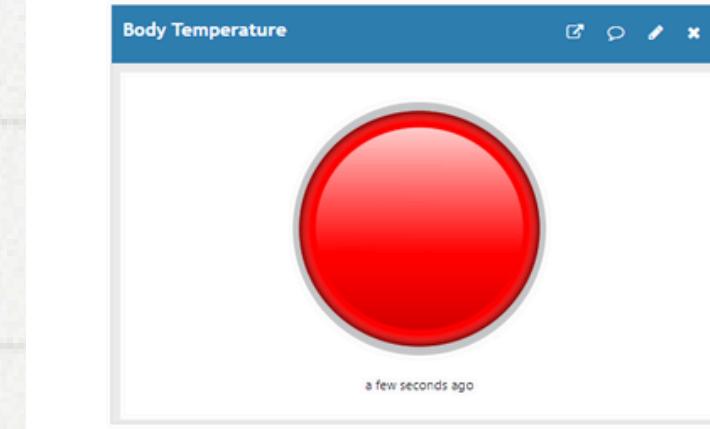
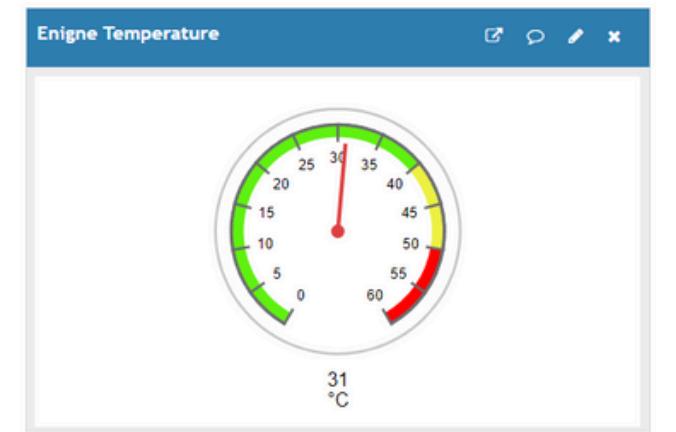
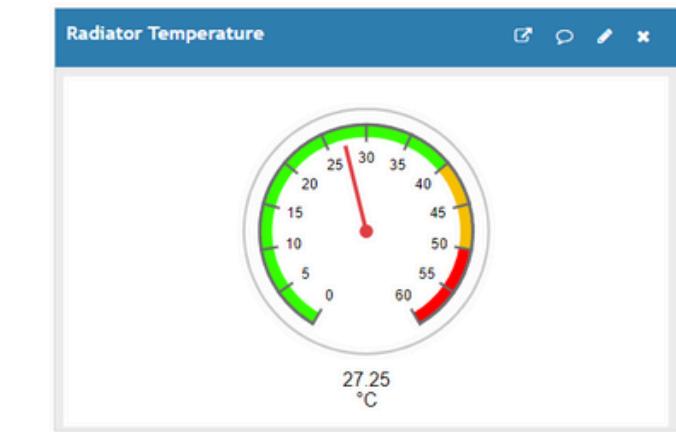
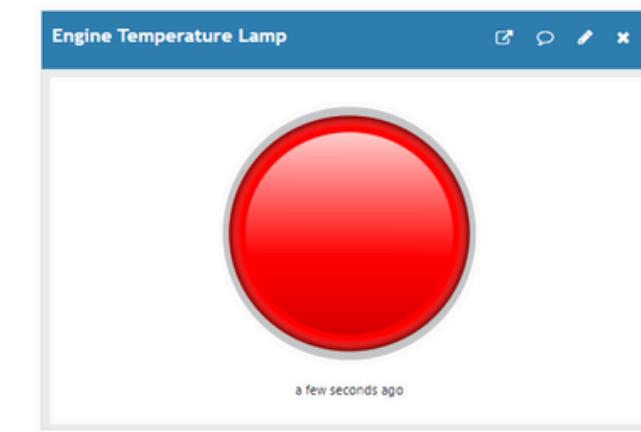
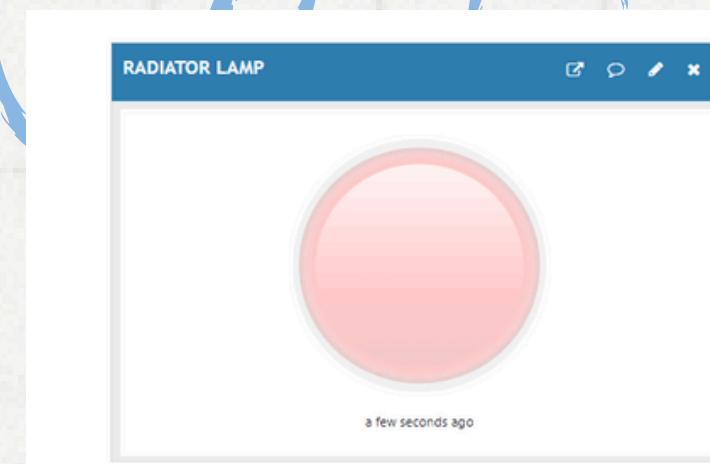
DASH
BOARD



HARDWARE SETUP



**Data
Collection &
Monitoring on
Thingspeak
Cloud
Services**



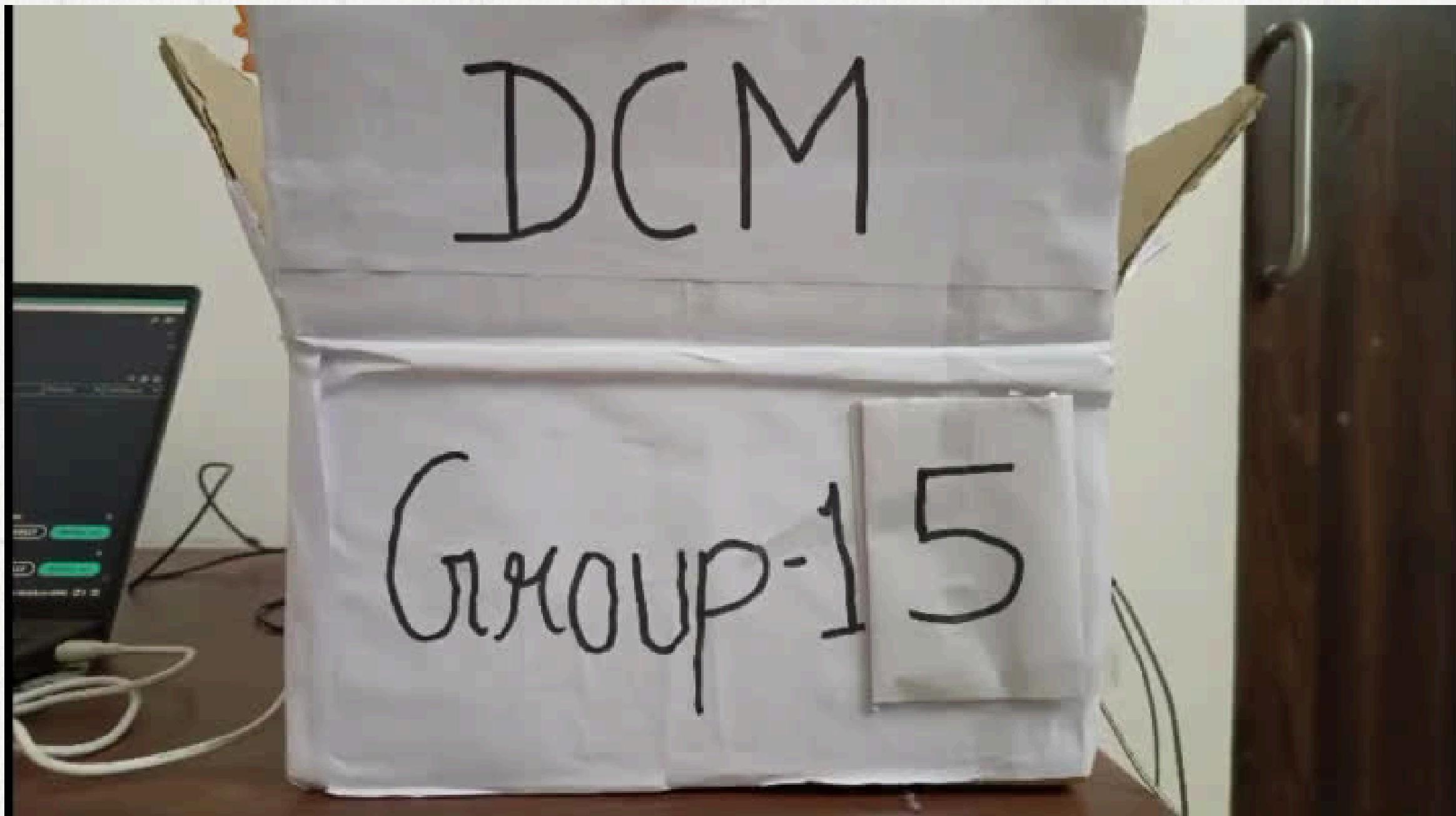
Shortcomings

- Requires regular maintenance and replacements due to continuous use.
- Long time data is required as for Digital Twin of DG Set, seasonal data is required.
- Sensor Data got 1-2% error due to environmental conditions.

Future Scope

- Forming working model of 2nd Phase of Digital Twin (Automation & Control Module)
- Developing Virtual Model with 3D models.
- Minimising error in data collected from DCM.

Video Of the Real Time Working of the Project



Thank you!