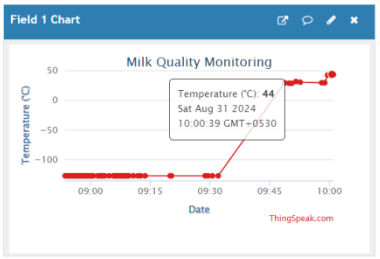
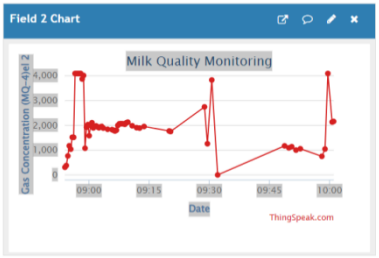
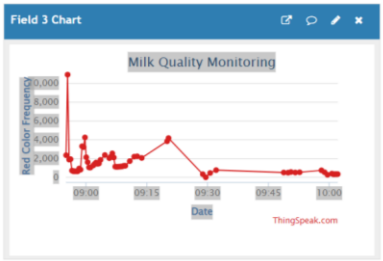
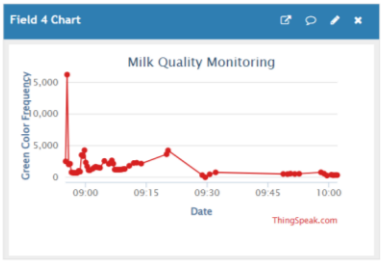
MILK QUALITY ANALYSIS OUTPUTS (BASED ON PROTOTYPE)

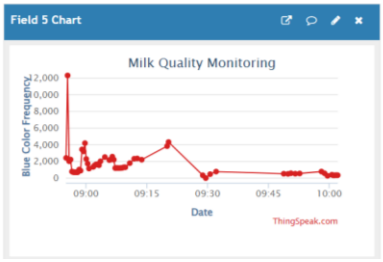
1. FRESH BOILED TONED MILK (60 C)

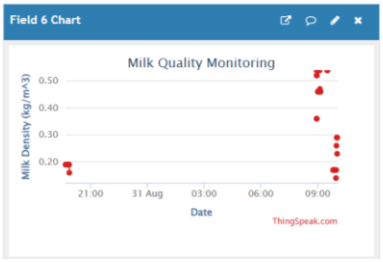


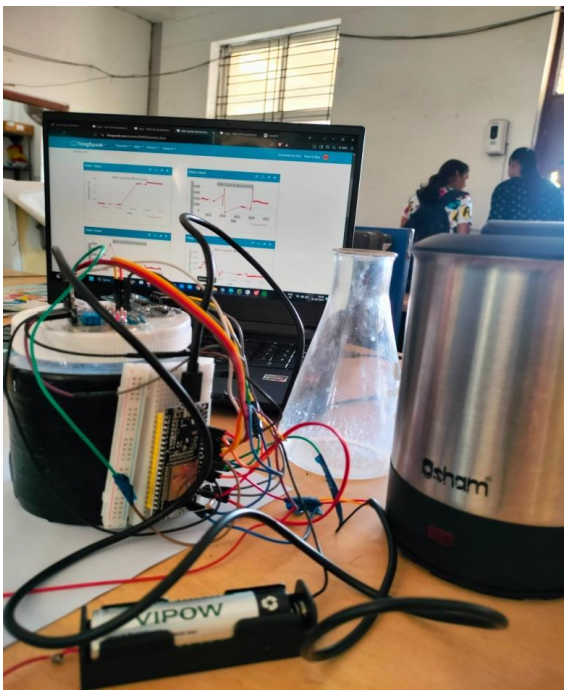


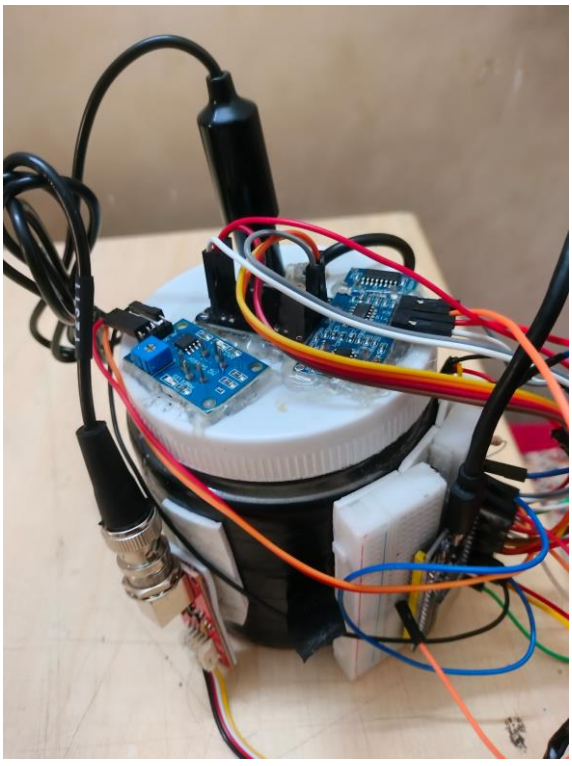




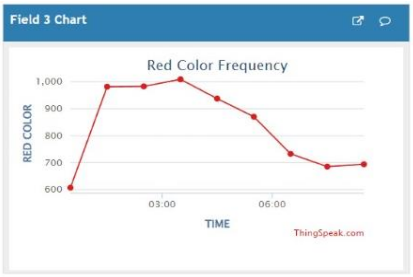


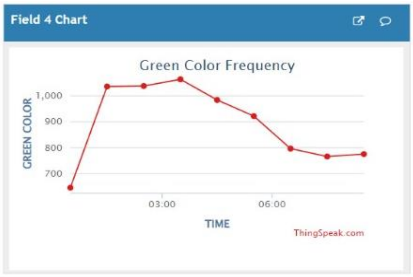


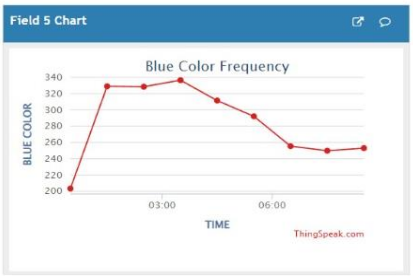


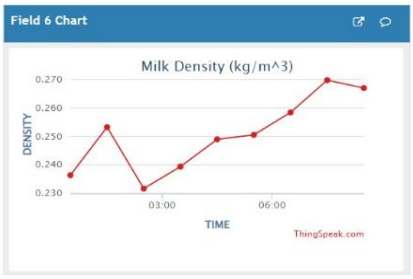


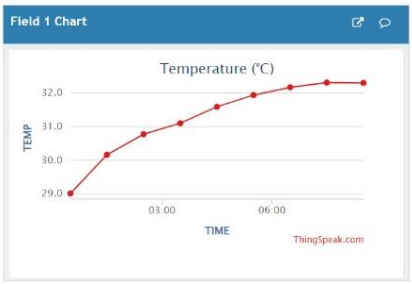
2. SPOILED TONNED MILK

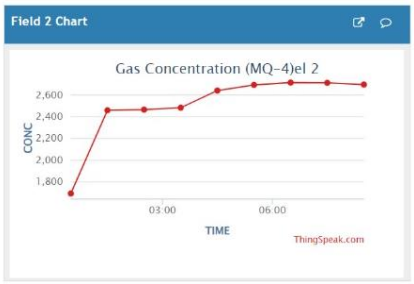




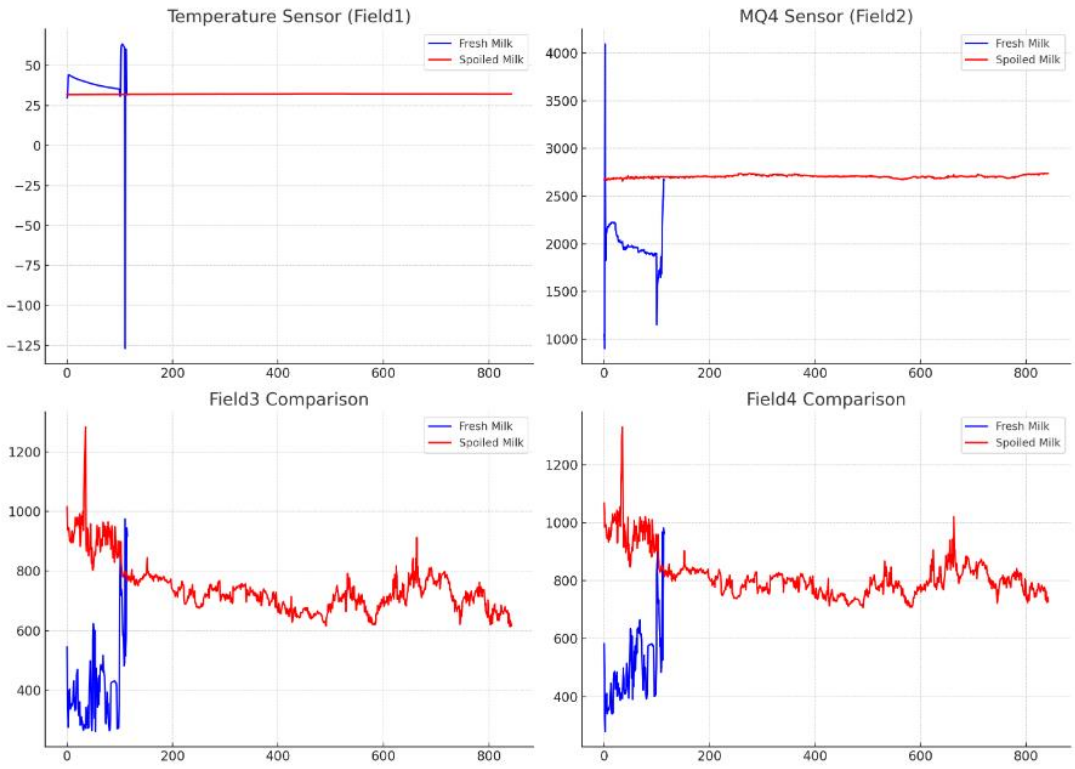








FINAL CONCLUSION AND ANALYSIS



Data Analysis:

1. **Temperature Sensor (Field1)**:
    - **Fresh Boiled Toned Milk at 60°C**: As expected, the temperature readings are high, reflecting the boiling process. This confirms that the milk was fresh and recently boiled.
    - **Spoiled Milk at Room Temperature**: The temperature readings are lower, corresponding to room temperature. This temperature drop is an indicator that the milk has been left overnight and is likely spoiled.
2. **MQ4 Sensor (Field2)**:
    - **Fresh Boiled Toned Milk**: The lower MQ4 readings suggest that boiling reduced the presence of volatile compounds typically detected by the sensor, possibly due to the removal or alteration of gases during boiling.
    - **Spoiled Milk**: The higher MQ4 readings indicate an increase in volatile compounds, such as those produced by bacterial activity during spoilage. This suggests that the milk is undergoing chemical changes as it spoils.
3. **Colorimeter (Field3 & Field4)**:
    - **Fresh Boiled Toned Milk**: Higher readings from the colorimeter indicate that the milk retained its typical color and consistency after boiling. The boiling process may enhance or stabilize certain properties, leading to these higher values.
    - **Spoiled Milk**: The lower colorimeter readings suggest that spoilage has altered the milk's color, possibly due to the breakdown of proteins and other components, leading to a noticeable change in appearance.
    -
4. **Density**:

    - **Fresh Boiled Toned Milk**: Higher density readings are consistent with the fact that boiling can concentrate the milk, reducing its water content and increasing its overall density.
    - **Spoiled Milk**: The lower density in spoiled milk indicates that spoilage has likely led to a breakdown of milk solids, resulting in a thinner consistency.

Logical Interpretation:

- **Fresh Boiled Toned Milk**: The combination of high temperature, high colorimeter readings, and low MQ4 readings confirms that the milk is fresh and has retained its quality post-boiling. The higher density further supports the idea that boiling has concentrated the milk.
- **Spoiled Milk**: The lower temperature, higher MQ4 readings, lower colorimeter readings, and reduced density clearly indicate spoilage. These changes reflect the breakdown of the milk's chemical and physical properties as it deteriorates.