

AUTONOMOUS DRONE SOLUTIONS

A leading agricultural enterprise sought to revolutionize crop monitoring, pesticide application, and field management through drone technology. The aim was to automate labor-intensive tasks, reduce operational costs, and improve the accuracy of field data collection and decision-making.

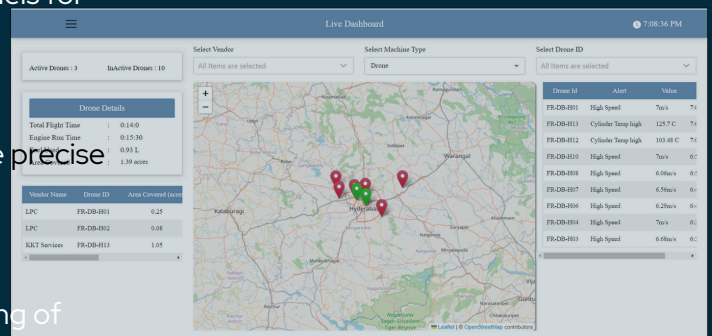
CHALLENGES

1. Manual crop monitoring and pest management were time-consuming and resource-intensive.
2. Lack of real-time visibility into field operations and crop health.
3. Inefficient pesticide application leading to wastage and uneven coverage.
4. Difficulty in managing multiple drones and integrating their data into existing systems.

SOLUTION

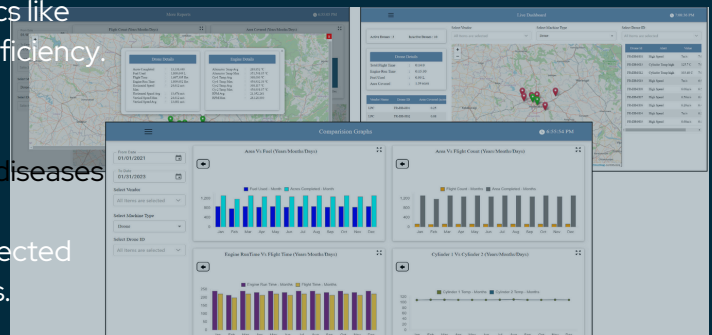
1. Autonomous Drone Operations

- Deployed drones equipped with advanced AI models for obstacle detection, avoidance, and path rerouting.
- Enabled autonomous flight for tasks such as area mapping, crop monitoring, and pesticide spraying.
- Implemented GPS-based path mapping to ensure precise coverage of fields.



2. Live and Historical Dashboards

- Developed live dashboards for real-time monitoring of drone operations, including fuel levels, engine temperature, and battery status.
- Introduced historical dashboards to analyze metrics like area sprayed, crop health trends, and operational efficiency.



3. Hyperspectral Image Analysis

- Leveraged hyperspectral imaging to detect crop diseases (e.g., rust, wilt) and assess the health of plants.
- Built clustering models to classify and visualize affected versus healthy crop areas for targeted interventions.

4. Integrated Drone Management System

- Created a centralized system to manage multiple drones, track their missions, and analyze collected data.
- Integrated mission planning tools for crop-specific requirements, such as pesticide selection and dosage.

5. Automated Pesticide Spraying

- Used AI-driven weed detection to automate pesticide application only where needed, reducing wastage and improving efficiency.
- Enabled real-time adjustments in pesticide levels based on field conditions.

