



Innovative IoT *for* HAPPY COWS

i Introduction

In the age of the digitized human, with smart devices and wearables tracking our every move, we have become used to the idea of data points monitoring. It is imminent that these smart concepts have penetrated its presence in various industries and sectors including Agriculture. In the field of "Agritech", internet-connected devices are helping farmers in conserving valuable energy, increase productivity and monitor the health of livestock.

“ This case study showcases how Winjit's IoT Sense can be easily adopted in an existing ecosystem with immense scalability option and leverage technology to the dairy industry by using the Internet of things (IoT) to connect cattle and monitor their data. ”

Customer

A leading dairy product company wanted to implement IoT solution for monitoring activities of their cattle which will help them to reduce livestock losses, improve breeding success, maximize pastures and increase milk production that would in turn bring efficiency in their business management and maintain quality standards.

Requirement

To maintain the cows' well-being, high quality milk production and reproductive function, the customer had to ensure the best environmental, physical and behavioural conditions. The customer wanted to monitor various activities of the cows based on their step count which would help them with heat detection, maintain healthy herds, cows' well-being and comfort, and automated tools for reducing labour.



Challenges

At a dairy farm, there are a lot of factors that can go wrong which causes cows' productivity. Its productivity mainly depends on their feed intake, health, stress and reproduction cycles.

Fertility: The Estrous cycle (Period between 2 consecutive estrus/heats) is critical for cows reproductive health and its overall wellness. The cow exhibits typical behaviour including restlessness during the estrus (heat) period which typically lasts for about 18 – 24 hours. A trained human can detect this behaviour change, but since the time window of a heat is very small, it normally goes undetected especially if it occurs in the night. The problem to detect this by human observation is compounded further in case of larger herds.

Health: High-production cows are particularly susceptible to diseases. Mastitis, ketosis, calving problems reduces production and are costly veterinary treatment. Ultimately, it leads to financial losses that can transform a profitable dairy farm to a losing enterprise.

Labour: Identifying cows that need attention, approaching and treating these animals and reporting treatment events are all labour-intensive tasks.

Communication: Configuring and managing different IoT sensors that would work on different communication protocols across different geographies.

Reporting: Improve reporting and planning for management and strategizing operations at individual farm level.



Solution

Focusing on the challenges, Winjit designed a Wi-Fi enabled farm with/without Internet using pedometers and IoT Sense gate way. This product ensured that all the requirements

were addressed. The pedometers attached to the cows, provided data that helped detect heat level in the cow.

As the heat period approaches, the restlessness of the cow increases and she starts moving more than average. This increase in activity is recorded by the pedometer and helps the farmer to identify and isolate the cow for artificial insemination.

The activity monitoring also helps in detecting animals affected with ailments like sickness or lameness based on lesser than normal activity. An early detection means better treatment and comfort to the animal and an early recovery to good health.



Benefits

To Make prominent detection of business, following data were captured which can be exported and analysed through Winjit's offerings.

- ▶ Every 4 minutes, Winjit's IoT Sense was updated with the collected behaviour information of each cattle (Grazing, Walking, Laying, in-heat, Pregnancy, illness, bull efficiency, calves' delivery, calves' conditions, location/tracing /theft and illness early warning).
- ▶ Every 2 Hours, reports of the behaviour information is updated to the farmer's PC. The report included counting heads and temperature monitoring.
- ▶ A comprehensive database of the cow pedigree was created and maintained through the obtained data points.
- ▶ The feeds were regularized based on the yield, ensuring maximum ROI.
- ▶ Scalable system: Deployed at farms with 40 heads to 350 heads' herd.



Achievements

Our focussed solutions helped the customers achieve the following:

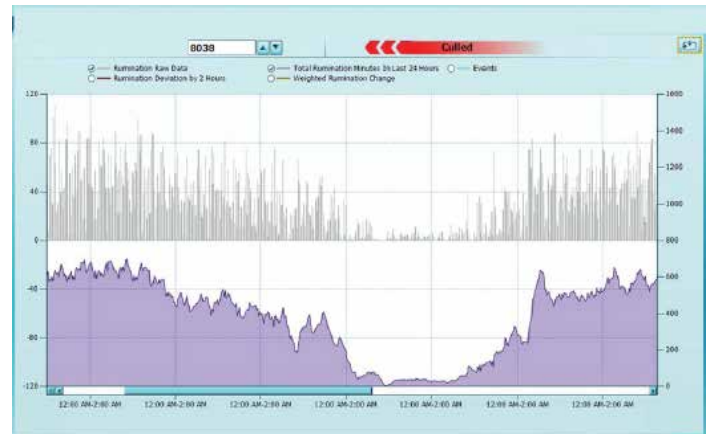
Accuracy & Robustness - Enabled correct and timely decision-making which increased productivity by 15-25%

Labour Saving - Eliminated need for visual detection, reducing labour. Resource management became more informed/intuitive, accurate data for inventory, job work statuses and accurate Invoicing.

Early Detection - Automated cow monitoring and heat detection systems enabled automatic drafting of animals for treatment which increased cattle readiness/availability by 10-15%

Early Treatment - Reduced the duration of a disease and need for medicine which resulted in better milk production and quality increasing yield by 10-20% and saving operational cost

- ▶ Daily, Weekly, Monthly step count report and analysis
- ▶ Daily Heat Detection report.
- ▶ Monthly high activity report and Analysis chart
- ▶ Real time alerts in stress situation
- ▶ Behavioral pattern analysis
- ▶ Low activity Analysis report
- ▶ Eventually helps in man power analysis



Conclusion

This is a Long-term solution which operates independently, improving herd fertility on an ongoing basis.

The actionable recommendations and solutions make sure that cows stay healthy & happy. A healthy & happy cow is key to high milk yields which in turn yield profits from the farm.



Reports

Connected Cattle provide most accurate cow monitoring system with the help of their step count. It provides better and timely heat detection. Following reports helps to identify the behaviour of COW at individual as well as at Group level.

IoTSense is a smart, secure and scalable software gateway platform which enables businesses to move from traditional technology implementation to smarter, real time and advanced technological transformation. It is best example of how legacy devices and existing eco-system can be transformed into smarter businesses.

IoTSense is powered by Winjit Technologies which is an award-winning technology company for providing IT product and solutions globally.



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