CASE STUDY

Lely's milking robots

Lely, one of our clients, is a company that helps farmers automate feeding, milking and cleaning. The Dutch-founded company produces robots that make agrarian life easier, as it changes the way farms work. Lely came to Strypes as they needed a trusted partner to develop a diagnostic and configuration application that can remotely monitor and manage different types of milking robots data.

Making an impact for farmers

Lely's solution is unique as it allows cows to get milked by letting themselves inside the robot. Each robot can service up to 80 cows per day, milking them 2-3 times a day. This is an effort that would otherwise require a lot of manual labour that cannot be handled by one person. The robots can be monitored by the farmer, but in the unlikely event that they stop working, they can hardly be replaced by manual labour. For this reason, it is critical to ensure that the work of the milking robots is uninterrupted.

What's interesting about these robots is that they are working with the knowledge of the behaviour of the cow, incentivising them to get milked voluntarily and be free to choose when they want to be milked which has a positive impact on both cows health and productivity. As the robots make the milking process enjoyable for the cows, they sometimes "cheat" and try to get milked more than 2-3 times and receive more treats as a reward. When this happens, the robot opens the doors and lets the cow go out.

The software also knows the health and the condition of the cow. When the milk is unfit for consumption because a cow is undergoing treatment, or is in nursing period, the robot still has to milk the cow but then disposes of the milk, or collects it for feeding of the calf.

All these robot software-specific settings, events, alarms and software logs are sent to the Event Hub in the Lely Azure Data Lake. It then gets consumed by the application developed by Strypes which reads the details, transforms them and saves it in different types of storages in the cloud. With the latest version release, we enabled the application to read and manage the different types of data––both in real-time and historical, using various approaches for representation to the users.

One of our objectives with this project was to minimise the unnecessary movement of technicians who provide support for the robots, optimise their work process, and react as early as possible in case of technical difficulties.

Strypes' solution saves all the data like robot location, alarms, events, robot logs, settings, and so on. This data is then shown in the application in a way that makes it possible to drill down to a specific farm and robot and search or filter, using different parameters like a specific moment of time, settings, and so on. This contributes to the quick orientation of the technician with the robot state or the specific issue that he troubleshoots.

The impact of the application can be seen immediately as it extracts real-time data about the components of the canbus domain of the robot. Farmers can see when a robot is milking a cow, how many litres of milk are collected during the current milking, what are the latest parameters of the different components and if all are operational. If a farmer is next to the robot, remote technicians can instantly view the data in the application and instruct farmers to turn different components on and off. This way, the service technician can help the farmer remotely, instead of travelling back and forth for many miles at a time. Through interactive communication between the person who is next to the robot, the technician can diagnose the robot remotely.

Software engineers can troubleshoot both the robot and the robot software issues, researching in logs or jumping between the diagnostic application and other integrated applications for a specific moment of time when an event or an alarm occurred.

We have worked with Lely since July 2019. **All this was possible thanks to the kind support of Lely domain experts in the different areas.** The feedback we have received from them was that we are very flexible when it comes to accomplishing work and delivering the solution. We work Agile following Scrum principles with 2-week sprints and ad hoc software releases to production. We interact with all Lely teams as if we're a part of the client's organisation. At the same time, we take ownership over research, solution and implementation and work autonomously. As next steps, we will analyse the user behaviour flows to identify the key functionalities and improve the user interface as well as work on implementing some smart wizards that will support the onsite troubleshooting for the service technician.