



Smart Factory

Case Study

https://smartplants.io/smart_factory

The Customer..

Kverneland Group is an international leading provider of innovative agricultural solutions, machinery and services. Kverneland's history traces back to the 1800s. The family business started in South West Norway and developed into a company that was able to be listed on the Oslo stock exchange in 1983, with factories and sales companies located in Europe, mainly. Since then, it has been a thriving and continually expanding business, spanning 5 continents. In addition to the manufacturing of a complete product range related to agricultural activities from soil preparation to crop care, KG incorporates innovative methods by using the latest and smartest technological solutions for efficient farming and sustainable agriculture.

The KG headquarters and the factory dedicated to the manufacturing of the reputed Kverneland ploughs are both based in Klepp, Norway. The latter is referred as Kverneland Group Operations Norway (KGON).

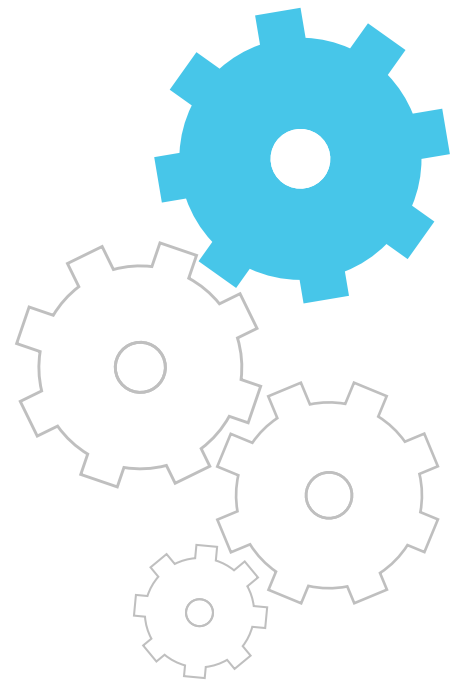
The Challenge

To uphold the commitment to provide the best implemented solutions to demanding customers, and create brand loyalty, operations in the factory must be monitored accurately. In addition to that, the development of sales requires a higher production capacity and higher efficiency from the operators and production machinery.

There's an overwhelming amount of work going on, and it has become more crucial and challenging than ever to monitor operations on a micro level as well as the workflow as a whole.

Key Objective

To devise a solution that enables KGON to monitor the entire manufacturing facility, both holistically and on a micro level, as well as increasing uptime on machinery.



The Solution

Smart Plants has incorporated Internet of Things (IoT) technologies in the establishment to connect every workstation from each factory hall to a cloud-based network. It allows data to be remotely accessed by any device with a browser and internet connection. All information can be viewed through a single web application that is designed to provide a holistic overview of the whole factory as well as performance details of individual workstations. It contains multiple dashboards that are simple to navigate about. Each of them presents the data gathered by the factory in a usable and sensible manner which are visually appealing too.



The dashboards are also visible throughout the facility on mounted LCD screens installed across the halls. Their source is a windows-running virtual PC accessing the web application and casting its display to the screens. This achieves the purpose of giving a handy and complete overview to everyone working on the floors as well. Hence quick decisions can be made (instead of spending time in retrieving information by manually patrolling work stations or from data logs which would require extra efforts for their understanding).



Main Features and Advantages of Solution



Cloud-based System

Cloud connectivity offers flexibility and ease of access. All data validation, storage and backup is on the cloud, making it maintenance free and reducing cost. The data transport is through military grade encrypted tunnels so it ensures end-to-end security of the factory's house data. Moreover it allows personnel to diagnose systems and analyze them remotely. Hence, reducing downtime on work centres.



Real-time Status

The data-driven technology enables managers and operators to track real-time performance stats for any workstations on the factory floor, live on the go. They also get alert for situations of notice. For instance: tooling errors or small discrepancies in work centre performance that could accumulate over time and cause problems for the work centre. Hence, they can address them beforehand, ensuring that factory operations never face unnecessary delays.



Automated Dashboard

Either through a remote computer or large display screens installed across the factory, all current and historic details of workflow are comprehensively visible by quick glances on an easy-to-navigate and attractive dashboard. Designed to be simple to understand and use, it also allows the employee administering the web product, to configure users and devices from one single portal (among other things).



KPI Reports

Smart Factory makes it possible to track success with absolute ease by the KPI reports generated by the system. These KPIs are generated by the goal metrics provided by KGON and are updated with every slight change to display how well targets are being met. This helps optimize workflow logistics in the manufacturing process and allows factory runners to be well-informed for target-oriented future decisions.



Integration

The system integrates with a single sign on from the KGON internal Microsoft AD. Existing members of the active directory simply login with their existing credentials. It also reports back in real-time to SAP with data provided by the cloud system, for internal processing. This bidirectional method of integration allows real-time status reports, data exchange and control commands, to and from both ends.

Results

- ◉ Smooth workflow operations
- ◉ Predictive maintenance allowing minimum interruption in the production process
- ◉ Increased efficiency and increased productivity due to reduced downtime on machinery
- ◉ Lower operating costs enabled by cloud connectivity
- ◉ End-to-end security on data transport
- ◉ Factory processes made “lean” through fact-based feedback
- ◉ Decreased carbon footprint from efficient use of energy
- ◉ 24/7 remote monitoring capability
- ◉ Improved uptime

