

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. Its history traces back to the 1800s, when the family business started in Southwest Norway and developed into a company listed on the Oslo stock exchange in 1983, holding factories and sales companies mostly located in Europe. Since then, KG has been a thriving and continually expanding business, spanning across 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.

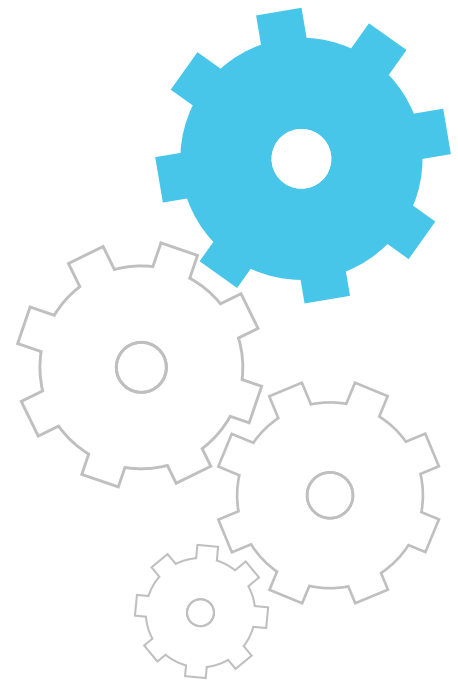
Both its headquarters and the factory dedicated to the manufacturing of the reputed Kverneland ploughs are based in Klepp, Norway. The latter is referred as Kverneland Group Operations Norway (KGON).

The Challenge

To uphold our commitment of providing the best implemented solutions to demanding customers and create brand loyalty by accurately monitoring operations in the factory. The development of sales also requires a higher production capacity and higher efficiency from the operators and production machinery. There's an overwhelming amount of work going on. 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 holistically and on a micro level, as well as increasing uptime on machinery.



The Solution

Smart Plants incorporated Internet of Things (IoT) technologies in the establishment to connect every workstation from each factory hall to a cloud-based network. This 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, designed to provide an overview of the whole factory as well as details of individual workstations and their performances.



The application contains multiple dashboards that are simple to navigate. For KGON, we even expanded the access to mounted LCD screens in the facility's hallways. Their source is a windows-running virtual PC with access to the application to cast its display to the screens. This also achieves the purpose of giving a handy and complete overview to everyone working on the floors. Thus, instead of spending time in retrieving information by manually patrolling workstations or from data logs, quick decisions can be made which would without extra efforts.



Main Features and Advantages of Solution



Cloud System

The cloud-based connectivity offers easy and flexible of access to the system. All data validation, storage and backup happens through the cloud. Military grade encrypted tunnels stand responsible for its data transport to ensure end-to-end security of the factory's house data. Moreover, it allows personnel to diagnose and analyze remotely and thereby 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 receive alerts for unusual situations. For instance: tooling errors or small discrepancies in centre performance that could accumulate over time and cause problems. Hence, they can address them beforehand, ensuring that factory operations never face unnecessary delays.



Automated Dashboard

All current and historic workflow-details are comprehensively visible by quick glances on an user-friendly and attractive dashboard. Among other things, the application also allows the employee responsible for the web product and its administration, to configure users and devices from one single portal.



KPI Reports

Smart Factory tracks developments through KPI reports generated by the system. These KPIs are generated by goal metrics, provided by KGON, and are updated with every slight change to display how well targets are being met. This helps optimizing 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-in from the KGON internal Microsoft AD. Existing members of the active directory simply log-in 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 in a two-way communication.

Results

- ◉ Smooth workflow operations
- ◉ Predictive maintenance, allowing minimum interruption in the production process
- ◉ Increased efficiency and 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 through efficient energy usage
- ◉ 24/7 remote monitoring capability
- ◉ Improved uptime
- ◉ 7.5% boost in production over 3 months
- ◉ € 10 million increase in net earnings per year

In an interview Næringsforeningen, maintenance manager Karina Djuve Aandera said a focus on predictive maintenance improved the uptime of critical machines an extra 4.5%. Immediate and precise analysis and alerts from Andon stand responsible at the core.

