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Poultry Farm Uses IoT Solution for Real-Time Supply Chain Insights

IoT for Smart Agriculture

Today's consumers demand quality, safety, and traceability throughout the food supply chain. The proliferation of IoT technology in Smart Agriculture practices is allowing farmers to leverage smarter decision-making to better manage their livestock, crops, infrastructure, environment, and other critical agricultural components. IoT provides technologies for automation, data collection and analysis, security and preventative maintenance amongst others, which in turn contributes to increased yields, improved operational efficiencies, mitigated risks, reduced waste and spoilage, all while driving down operational costs.

Within Smart Agriculture, poultry farming is an example of an industry being transformed by the Internet of Things. IoT technologies have presented new opportunities for modern, mass-producing poultry farms to achieve accurate and consistent real-time monitoring of environmental and health indicators to ensure the performance, comfort, and welfare of their birds.

Poultry Sense Overview

PrognostiX Poultry Sense IoT solution is the first of its kind, combining a wealth of expertise with the knowledge of specialist vets, engineers and data analysts to bring together real-time data across both environmental and health parameters to help facilitate improvements in bird performance, economics and welfare. The wireless system feeds accurate, live data into a bespoke analytics platform that uses artificial intelligence to produce insights assisting in better-informed on-farm and supply chain decision making.

This highly scalable solution has been successfully deployed by multiple customers and farms, managing an immense number of sensors from various manufacturers, and aggregating large volumes of real-time data over extremely long ranges. The Poultry Sense IoT offering is comprised of four key solutions each designed to empower end users to leverage the increased data available to them to make more informed decisions and improve efficiencies. These four solutions are:

- » **Sense node:** A market leading, wireless, battery powered sensor able to provide temperature and humidity data
- » **Sense node+:** A next generation, low cost rechargeable wireless sensor able to measure various environmental parameters such as air pressure, humidity, temperature and CO2
- » **Water sense+:** An ultrasonic water meter for precise recording of water consumption in all systems
- » **Weigh sense+:** A wireless, portable floor mounted weigh platform that is cellular and LoRa enabled providing accurate real-time bird weights

PrognostiX utilizes TEKTELIC's LoRaWAN® Gateways to provide the wireless LoRaWAN® connectivity needed for their innovative Poultry Sense solution. LoRaWAN® is the ideal technology to provide cost-effective, highly scalable, long-range, low power, and secure bi-directional communication between devices and gateways. These gateways are ideal for transmitting real-time sensor data securely over extremely long distances. PrognostiX has been successful in consistently deploying LoRaWAN® networks containing **thousands of end device nodes** with connectivity range from the devices to the gateway in **excess of 10km**. The extremely long-range capabilities of the wireless infrastructure ensures capital expenditures remain low, allowing the cost savings from the overall deployment to be passed down the supply chain. The gateway's being deployed for the Poultry Sense solution are TEKTELIC's best-in-class, carrier-grade KONA Macro and KONA Micro LoRaWAN® gateways.

The KONA Macro IoT Gateway is designed to be compact and lightweight, and is targeted at outdoor installations which require a small form factor and low power consumption. To minimize cost and installation complexity, the gateway is designed with internal antennas for the 3G/4G modem and for the GPS receiver. The KONA Micro IoT Gateway was built for applications that require Always On connectivity for their IoT solutions, and is configured with an internal 3G/4G modem and a built-in four-hour battery backup.

PrognostiX is planning to augment the Poultry Sense offering with additional services to support Smart Farming applications for poultry and beef, operating gateway infrastructure in remote and harsh areas.

Reference Project

Challenge

Monitoring and assessing key welfare indicators such as weight, water consumption, temperature, humidity, and CO2 levels within poultry houses is essential for ensuring sustainable and productive poultry farming practices. However, assessing these indicators in large poultry farms that rear millions of birds each year is no easy undertaking.

A customer managing 700,000 birds across 7 farms required a solution to wirelessly monitor parameters including climate, water consumption, and bird weights. Prior to implementing the Prognostix - Poultry Sense IoT solution, this customer manually took readings of temperature and humidity conditions and input those values into a spreadsheet. This proved to be a lengthy and increasingly inefficient process. Conditions in every shed and farm can vary, and with increasingly stringent audit requirements, the customer required a solution that would enable them to efficiently and consistently capture, track, and interpret real-time data.



Solution

Poultry Sense solution provided reliable hardware for capturing accurate, live insights to improve bird performance and welfare. These solutions included sense nodes for temperature and humidity, water consumption sensors, and wireless weighing platforms. The Poultry Sense IoT solution combines a wealth of expertise and evidence with the knowledge of specialist vets, engineers and data analysts to bring together real-time data across both environmental and health parameters to help facilitate improvements in bird performance, economics and welfare. The wireless system feeds accurate, live data into a bespoke analytics platform that uses



artificial intelligence to produce insights assisting in better-informed on-farm and supply chain decision making.

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Results

Since implementing Poultry Sense, the customer has been able to break sheds into zones to more effectively micro-manage environmental conditions and determine under which conditions their birds perform best. Poultry Sense has provided effective oversight of temperature, humidity, and CO2 for each area, average weights in each shed, and seasonality. This has allowed the customer to detect harmful conditions earlier and take preventative measures to ensure bird welfare. This has resulted in happy, healthier chickens with low mortality.

To learn more about the Poultry Sense solution please visit
<https://www.poultrysenseltd.com/>

To learn more about TEKTELIC's complete End-to-End IoT solutions, please visit
<http://www.tektelic.com> or contact info@tektelic.com
