

A large center pivot irrigation system is shown over a lush green field. The system consists of a long metal arm supported by a series of towers, with multiple wheels at the base. The arm extends across the field, and the towers are spaced out along its length. The field is a vibrant green, and the sky is a clear blue with some light clouds. The overall scene is a wide-angle shot, capturing the scale of the irrigation system.

Remote Fertilizer Tank Monitoring

Agriculture Sensor Company

CASE STUDY

The Overview

A pioneering startup in the agricultural sensor industry partnered with [Exosite](#) to develop its remote monitoring system for fertilizer injector tanks. Working with Exosite, they were able to utilize a fully managed software solution that eliminated the need for system management, minimized startup costs, and generated predictable recurring revenue. For their customers, the solution helps optimize fertilizer usage, ensure accurate injection ratios, better predict costs, and enhance crop yields.

The Opportunity

Injector systems are used in agriculture operations to apply chemical solutions to crops during the growing season. These systems draw predetermined ratios of water-soluble fertilizers and pesticides from on-site storage tanks and inject them into water lines, where the mixture is then distributed to crops. In order to ensure proper operation, injector systems must be carefully monitored to prevent fertilizer waste, unnecessary costs, and crop damage or loss. However, traditional monitoring methods often require physical visits to remote tank and injector sites that can be time consuming and expensive for farmers and growers.

Our customer saw an opportunity to solve this challenge with a solution that could monitor injector systems remotely utilizing Internet of Things (IoT) technology. But, to develop something that would be both effective for their customers and feasible for them, they needed to develop a solution that was:

- **A complete package.** To ensure customer adoption, they had to provide everything their customers would need, including hardware, software, and a solid user experience.
- **Easy to install.** Knowing their customers would have limited IoT experience, their solution had to just work, without requiring significant time and technical skills from customers to install.
- **A minimal upfront investment with clear long-term pricing.** They needed technology that wouldn't require unreasonable debt from the beginning or break the bank long term.

The Solution

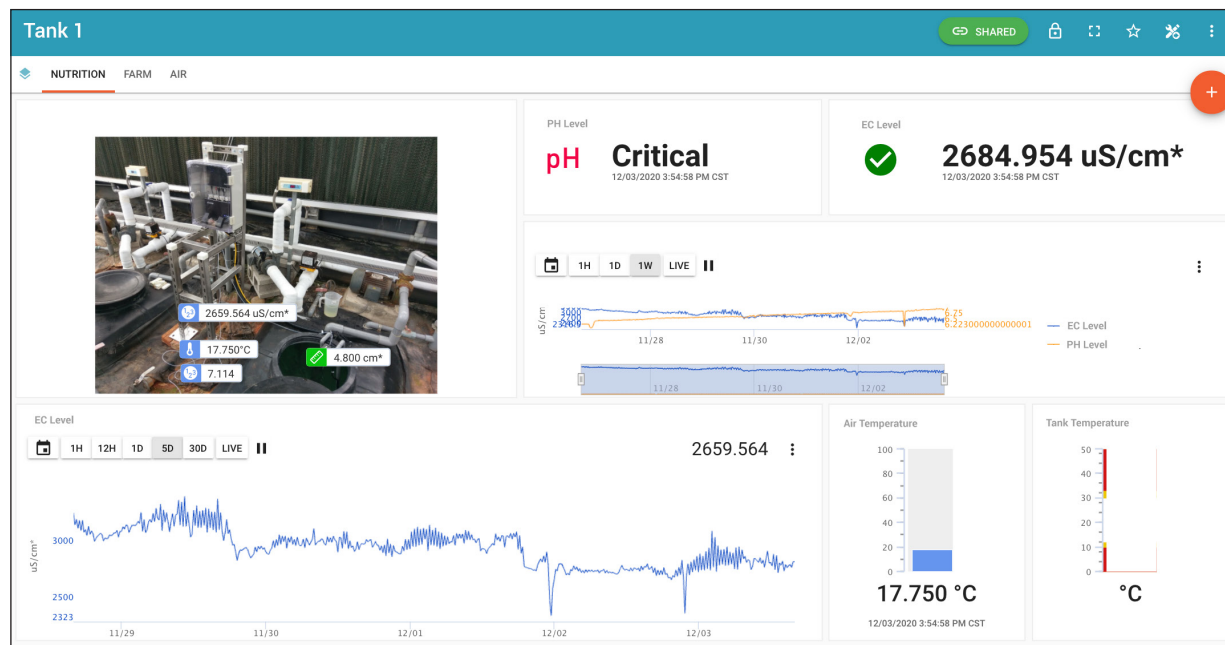
After researching available market solutions and evaluating the effort to build the necessary technology internally, our customer selected Exosite as its software technology partner to help develop its remote tank monitoring system. Exosite's [ExoSense® condition monitoring application](#) provided the fully managed software solution they needed, so they didn't have to worry about system management. It was also easy to set up and integrate with their selected hardware, enabling them to quickly develop a complete package for their customers that just worked. And, Exosite's approachable pricing model ensured they could get started small and scale up as they saw success.

The remote tank monitoring system includes a solar panel, lithium-ion battery, and a master module that is installed on the top of fertilizer injector tanks to collect ultrasonic sensor data on liquid levels. Optional temperature, humidity, dewpoint, and frost measurements can also be added.



The Solution (Cont.)

Sensor data is then sent to Exosite's platform using cellular or Wi-Fi, where it is aggregated and visualized using the ExoSense® application. There, farmers and growers can remotely view dashboards with real-time tank levels and historical measurements, without requiring physical proximity to tanks or injection sites. Viewed from anywhere and on any device, these measurements can be used to quickly understand fertilizer usage, check injection ratios, and identify potential dispensing issues.



Users can export historical data with the click of a button, allowing them to calculate current costs, manage inventory, and predict future expenditures. Text notifications can alert farmers or vendors when tanks reach pre-set levels, ensuring they are refilled in a timely manner and fertilizer never runs out. Also, by adding an additional contractor module, farmers can remotely control injector pumps or establish pre-set runtime schedules.

The remote tank monitoring system is sold as a complete “plug-and-play” package, ensuring farmers have the hardware, software, and technical support they need to quickly implement the solution. It can easily be retrofitted to storage tanks up to 15 feet deep, requires minimal time and technical skills to install, and can be expanded to include multiple tanks, injection sites, or farms. The system also includes the first three months of monitoring services at no additional cost. After that, monitoring services are available for an affordable yearly subscription fee that includes all data costs, website maintenance, and technical support needs.

The Results

For Our Customer

Enabled benefits of remote monitoring without system management.

ExoSense® provided an easy-to-use, production-ready software solution our customer didn't have to manage themselves. Exosite provided the technical support to quickly get them up and running, and will take care of the ongoing maintenance long term, meaning they can remain focused on providing value to their customers.

Minimized startup costs and ensured predictable cost growth.

ExoSense has minimal startup costs, which made it financially feasible for our customer to get started without a back-breaking investment. And Exosite's long-term pricing model ensures costs grow in a predictable way as their customer base increases, so they only pay more as they see success.

Created a flexible solution that generates dependable, recurring revenue.

The flexibility of ExoSense means our customer can easily tailor the solution to target different customers, industries, and use cases. They can also package subscription fees as monthly, yearly, or multi-year engagements, so their revenue model spans a variety of markets and provides predictable income.

For Their Customers

Creates a more efficient, sustainable operation with 50% higher yields.

The ability to easily monitor and optimize the use of critical resources, like fertilizer, helps farmers and growers produce crop yields up to 50% higher. It also reduces waste, increases efficiency, and enhances the sustainability of their operations.

Ensures dispensing accuracy that results in 30% savings.

By continuously monitoring fertilizer levels, farmers can ensure injector systems are dispensing accurate ratios and make timely calibrations that result in over 30% savings on nutrient costs. And, with text alerts to key personnel about low tank levels, they can ensure fertilizer never runs out unexpectedly.

About Exosite

Since 2009, Exosite LLC, has pioneered IoT software solutions. Based in Minneapolis, with offices around the globe, the Exosite team possesses a wealth of experience and expertise in IoT technology and business strategy. Exosite engages with leading manufacturers, providing complete connected solutions, an enterprise software platform, and a rich ecosystem of tools and partnerships to quickly guide connected-product concepts to marketable IoT applications. Visit www.exosite.com to learn more about how Exosite powers digital transformation.

**Interested to see if Exosite can
expedite your IoT success
story?**

**Connect with our team of IoT experts
to learn more.**

exosite.com | info@exosite.com | +1 612.353.2161