

Ekatra



QUICKFACTS

Company

Ekatra
www.ekatraiot.com

Customer Profile

Ekatra helps organizations that utilize large numbers of high-value physical assets and struggle to protect them against theft, tampering, and disrepair. Ekatra's proprietary solutions protect assets via smart IoT devices with specialized sensors that learn to predict and prevent disasters, accidents, theft, and damage in a unique way with Edge AI machine learning. Unlike costly, traditional security solutions that leverage personnel and video cameras, Ekatra's Protection as a Service solutions are agent-less, connected wirelessly and detect threats in creative, new ways.

Objectives

Ekatra wanted to build an Industrial IoT (IIoT) application that would detect leakage and prevent overflows on fertilizer tanks, enabling agriculture companies to minimize labor and materials costs associated with corroded tank walls and avoid hefty regulatory fines related to soil degradation and environmental damage.

Results

By using Sierra Wireless Octave, Ekatra was able to reduce its IoT application development time by 50%.

Sierra Wireless Products and Services

- Sierra Wireless Octave™, the all-in-one edge-to-cloud solution for connecting industrial assets.

Fertilizer Tanks: How Octave Helps Ekatra to Remotely Detect Leaks and Prevent Overflows

Fertilizers – both liquid and granular (when they are damp) – can produce corrosive effects on steel, on account of their high nitrogen and ammonia content. To obviate any contact between the fertilizer and the walls of storage tanks, the interior walls of most fertilizer tanks are covered with a PVC (polyvinyl chloride) liner.



“ We are not an IoT gateway company. I did not want to spend time and money on building the underlying IIoT infrastructure for the application. Out of all the 30 vendors we evaluated, Octave was the only solution that took care of the entire edge-to-cloud infrastructure, allowing us to confine our focus to building the business application. ”

Alexey Klimenko,
Founder and CTO, Ekatra

THE CASE FOR REMOTELY MONITORING FERTILIZER TANKS

Over time, however, the fertilizer can breach the PVC liner's membrane and start leaking into the narrow space between the PVC liner and the tank wall. Likewise, fertilizer can also fall into the same narrow space if the tank overflows during refilling. If the leak or overflow isn't addressed in a timely fashion, prolonged contact with the fertilizer will damage the tank's walls. In such cases, materials and labor costs for repair and clean-up can go up to \$100,000.

Even costlier are regulatory penalties for soil degradation. If the fertilizer leaks out of the tank altogether and continues seeping into the soil unchecked, regulatory fines to the tune of millions of dollars can be imposed for environmental damages.

In the past, measures undertaken to check fertilizer tanks for leaks and spills have proven to be too labor-intensive and time-consuming – typically, personnel collect samples from the tank's drainpipe (the pipe draining water condensate from the narrow area between the PVC liner and the interior walls of the fertilizer tank) and send them to the laboratory where they are tested for fertilizer presence.

By leveraging a combination of sensors and the IIoT, Ekatra decided to build a remote monitoring application that would provide real-time alerts on leaks, spills and prevent overflows by remotely locking the tank's intake valve during refilling.

BUILDING AN IIOT-ENABLED REMOTE MONITORING APPLICATION

There are up to four sensors on every tank; one is located in the drainpipe; the other three sensors are located in the valve boxes, which enclose each and every pipe going in and out of the tank.

The first sensor collects data on nitrogen, temperature, pressure and drain liquid level. Ekatra wanted to build a remote monitoring application that could use this data to detect fertilizer in the drainpipe and instantly alert tank owners, operators and service companies to address the leaks.

“ Our engineers took just two days to get comfortable with Octave. Within a couple of weeks, they were writing production level code. ”

Alexey Klimenko, *Founder and CTO, Ekatra*

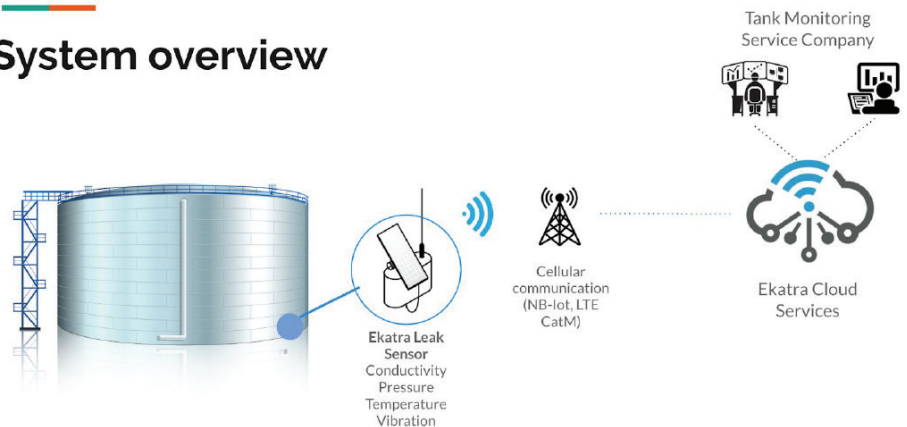


Secondly, the remote monitoring application could also prevent fertilizer spillage on the outer walls of the tank. In cases where the pipe or seal from the truck to the fertilizer tank is ruptured, the enclosing valve boxes become flooded with the leaking fertilizer. In such cases, fertilizer presence detected by the three sensors located in the valve boxes can instantly alert the relevant parties, who can then take corrective action to minimize spillage on the tank's outer walls.

Finally, if the tank overflows with fertilizer during a refill, the remote monitoring application could automatically shut down the tank's intake valves, effectively cutting off the supply of liquid fertilizer to the tank.

Ekatra decided to build the remote monitoring application using Sierra Wireless Octave, the all-in-one edge-to-cloud solution for connecting industrial assets.

System overview



USING OCTAVE TO SIMPLIFY IIOT DEVELOPMENT

According to Ekatra's Founder and CTO Alexey Klimenko, "We are not an IoT gateway company. I did not want to spend time and money on building the underlying IIoT infrastructure for the application. Out of all the 30 vendors we evaluated, Octave was the only solution that took care of the entire edge-to-cloud infrastructure, allowing us to confine our focus to building the business application."

As an all-in-one solution, Octave offered Ekatra a wide range of capabilities and benefits under one solution:



MODBUS SUPPORT

Ekatra chose Modbus as the standard industrial protocol for their sensors. Octave (which not only supports Modbus, but also CANopen and other popular industrial protocols) can pull data from virtually any type of industrial asset. It was therefore ideally positioned to connect to fertilizer tanks.

QUICK DEVELOPMENT

Ekatra looked at dozens of other vendors for the project, but their products fell short of providing an end-to-end solution. "With a lot of vendors, you might get great IIoT hardware, but you still need to spend a lot of time to make the solution work for you," says Klimenko.

As an all-in-one solution, Octave comes integrated with edge devices, device management, cellular connectivity, cloud APIs, allowing organizations to bypass the time and investment required in device and carrier certification, and other complex integration processes.

It took just three months for Ekatra to bring their IIoT application to market. Without Octave, it would have taken six months, according to Klimenko.

"When we connected the device and turned it on, that was the moment of truth – I was able to login, write a quick application to see how it works. Our engineers took just two days to get comfortable and within a couple of weeks, they were writing production level code."

EDGE INTELLIGENCE

According to Klimenko, "There are a lot of industrial IoT products out there, but they only pass data to the cloud. We wanted devices that had edge intelligence."

Indeed, edge intelligence plays an instrumental role in Ekatra's remote monitoring application. For instance, Octave's intelligent edge is critical in ensuring that the fertilizer does not overflow during a refill. "Often, when a truck is pumping the fertilizer into the tank, the trunk operator does not shut down the pump on time.

In these cases, gallons of fertilizer can spill into the area between the PVC liner and the tank's interior walls. When this goes undetected, the accumulation of fertilizer can severely damage the tank," says Klimenko. To avert this, Ekatra has configured the logic on Octave's intelligent edge to automatically shut down the tank's intake valves, cutting off the flow of fertilizer from the truck.

Further, Octave allows Ekatra to make instant changes to its edge processing logic as business requirements change. "Recently, we got a call from one of our customers. They asked us to change how overfill protection works. They had a special model of tanks – so that's why the change was necessary. Couple of hours later, our junior engineers pushed the updates for those particular set of devices; the customer is now happy," says Klimenko.

PREDICTABLE PRICING

Unlike standard cellular plans, Octave's connectivity pricing model is more flexible and better aligned with the needs of companies like Ekatra. Standard cellular plans are built around megabyte consumption, which can make it hard to predict cellular costs. With Octave, pricing isn't based around megabytes – rather, customers pay based on the number of messages that they want transmitted to the cloud.

About Sierra Wireless

Sierra Wireless (NASDAQ: SWIR) (TSX: SW) is the leading IoT solutions provider that combines devices, network and software to unlock value in the connected economy. Companies globally are adopting IoT to improve operational efficiency, create better customer experiences, improve their business models and create new revenue streams. Whether it's a solution to help a business securely connect edge devices to the cloud, or a software/API solution to help manage processes associated with billions of connected assets, or a platform to extract real-time data to make the best business decisions, Sierra Wireless will work with you to create the right industry-specific solution for your next IoT endeavor. Sierra Wireless has more than 1,300 employees globally and operates R&D centers in North America, Europe and Asia.

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