



SEMTECH®

WaterBit



Nearly Doubling Production of Commercial Crops

WaterBit Reduces Devine Organics' Water Usage and Improves Crop Yields

Discover how WaterBit's LoRa-enabled precision irrigation solution helped Devine Organics transform their farming operations by delivering the right amount of water at the right place and time. By replacing manual soil moisture monitoring with an automated, data-driven approach, this organic agriculture business significantly reduced water usage and gas emissions while dramatically improving crop yields—all at a fraction of the cost of cellular or Wi-Fi technologies.

QUICKFACTS

Company

WaterBit
waterbit.com

Customer Profile

WaterBit is a precision irrigation company committed to providing cost-effective tools that help farmers improve yield, optimize water usage and be good stewards of the land. Founded in 2015, WaterBit's Autonomed Irrigation Solution leverages Semtech's LoRa devices and the LoRaWAN protocol to enable microblock-level monitoring and control of local irrigation with unprecedented granularity and accuracy.

Objectives

- Replace manual soil moisture monitoring
- Reduce water usage, nutrient leaching and greenhouse gas emissions
- Prohibitive cost to cover large acreage using cellular, Wi-Fi or ZigBee

Results

- Devine Organics reduced water usage by 750,000 gallons.
- Achieved 5 percent reduction in gas emissions from pumping water.
- Nearly doubled its yield from 800 to 1,500 pounds per acre.
- IoT communication at a fraction of the cost of other wireless technologies.

Products and Services

- Connected network of LoRa®-enabled, palm-sized, solar-powered devices
- LoRa devices' robust transmission capabilities allow a single LoRaWAN®-based wireless gateway to cover up to 1,000 acres



“ We started delivering solutions to California farmers in 2015. Our key value is delivering a highly reliable product and we believe we have the best technology. ”

Manu Pillai,
President and Co-founder, WaterBit

INTRODUCTION

Delivering the Right Amount of Water at the Right Place and Time

Water is a precious commodity in California. Roughly nine million acres of farmland in California is irrigated, representing 80 percent of all water used for businesses and homes. Proper irrigation is a complex science for farmers as some types of soil retain water longer than others – one part of the field may have faster-draining, sandier soil, while another portion may have a high level of water-retaining clay.

WaterBit™ is a precision irrigation company committed to providing cost-effective tools that help farmers improve yield, optimize water usage and be good stewards of the land. WaterBit's Autonomed Irrigation Solution (AIS), leveraging Semtech's LoRa® devices and the LoRaWAN® protocol, is a complete irrigation planning and control solution. It enables microblock-level monitoring and control of local irrigation, and considers soil conditions, plant stage and weather at a level of granularity and accuracy not previously possible.

CHALLENGE

Reducing Water Usage by 750,000 Gallons

Devine Organics, a family, woman and minority-owned organic agriculture business with operations in California and Mexico, grows a range of fruits and vegetables. With rising wages, water limitations and pricing pressures from conventional farms, Elvia Devine, Devine Organics' co-founder, was compelled to increase efficiency and innovate to compete in the market.

Farming crews traditionally walked rows of asparagus and manually probed the ground to check moisture. This process was a valiant attempt to understand when and how much to water, but it was inefficient and time-consuming, often resulting in higher costs due to overtime work.

“ WaterBit’s soil probes tell us exactly where the crops need more or less water, all from the WaterBit dashboard app. It helps us monitor the soil and control the valves in the field, allowing us to apply the right amount of water at the right time and place. ”

Jose Garcia,
Farm Manager, Devine Organics

SOLUTION

Data-driven Agriculture

WaterBit’s precision irrigation system uses LoRa devices to connect a network of palm-sized, solar-powered devices, known as Carbon™ nodes, which are distributed at critical locations throughout the farm. Carbon nodes are paired with soil moisture probes to monitor soil conditions, and WaterBit Block Valve Controllers™ to operate irrigation valves that meter water where needed. A wireless gateway collects sensor data and relays it to a Cloud-based monitoring and control application.

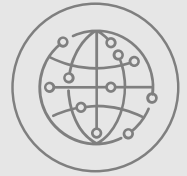
Growers access the application through a web-based dashboard to get real-time updates and analysis, adjust irrigation schedules and more. WaterBit enables data-driven agriculture practices that maximize crop yield while conserving water and other input resources. The system also helps farmers reduce or eliminate soil salinization, fertilizer runoff and overall environmental impact.

WaterBit entrusted LoRa devices to serve as the wireless backbone of their datacollection and control network for several reasons. Its robust transmission characteristics allow the Carbon nodes to communicate reliably at distances without the operating costs associated with Cellular data. This reduces growers’ deployment cost by allowing them to use a fraction of the wireless gateways needed to cover this acreage using ZigBee, Wi-Fi or other wireless technologies.

In addition to its superior range and performance, LoRa devices offer industryleading power consumption allowing the system to operate consistently on energy generated by a small solar panel, even when the solar panel is under plant foliage. Once installed, WaterBit’s LoRa-enabled AIS system operates for years without requiring maintenance.

“ The benefits start to add up to substantial savings. Reducing water usage is a huge benefit, especially considering the volatility of water prices in California. ”

Kevin Dees, Controller, Devine Organics



BENEFITS

The Devine Organics team first installed WaterBit on 40 acres of asparagus in December of 2017. In their first season of use, they achieved a five percent reduction in gas emissions from pumping water and truck trips to check fields, and a six percent reduction in water use. The 750,000 gallons in water savings is equivalent to 43,000 Americans skipping a shower for a day. The farm also nearly doubled its yield from 800 to 1,500 pounds per acre.

HOW IT WORKS:



The step-by-step process of WaterBit's LoRa-enabled solution

About Semtech

Semtech Corporation (Nasdaq: SMTC) is a high-performance semiconductor, IoT systems and cloud connectivity service provider dedicated to delivering high-quality technology solutions that enable a smarter, more connected and sustainable planet. Our global teams are committed to empowering solution architects and application developers to develop breakthrough products for the infrastructure, industrial and consumer markets.

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