Reviving Community Gardens with Smart Irrigation

Automate watering, reduce water waste by 90%, and increase crop yields with Milesight UC511

📍 Location：Charlotte, USA

Milesight Partner	Location	Numbers of Devices Deployed	Applications
Touio LLC	Charlotte, USA	UC511*20	Smart Agriculture

Background

In Charlotte, USA, the Mecklenburg County Health Department partnered with Touio LLC to address urban food deserts—communities with limited access to healthy and affordable food. To improve local food availability, the county funded a series of community gardens. However, many of these gardens faced sustainability issues due to inconsistent watering and a lack of available volunteers.

To overcome these challenges, Touio launched the "Intellidrip" smart irrigation project, deploying Milesight Solenoid Valve Controllers at 18 sites. This initiative automates irrigation, reduces water waste, and boosts crop yields through innovative smart agriculture technology.

Challenges

Irregular Watering Schedules

Coordinating a fixed watering routine with community volunteers was difficult, resulting in inconsistent irrigation and uneven crop growth.

Lack of Water Usage Insight

Without clear data on water usage and crop needs, it was challenging to avoid overwatering or underwatering, leading to water waste and inefficient irrigation.

Low Crop Production

Irregular watering and limited irrigation control led to low crop yields, which limited the community garden's ability to provide healthy food to the community.

Solution

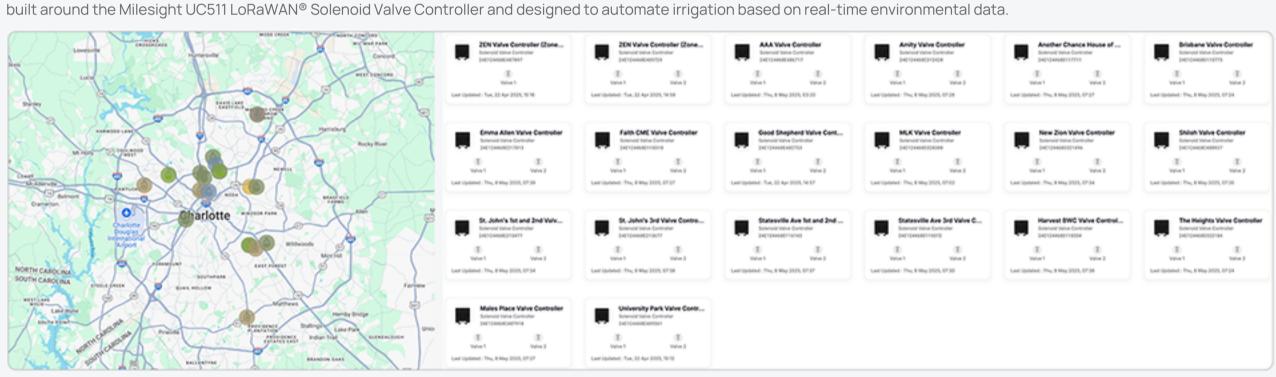Solenoid Valve → UC511 LoRaWAN® Solenoid Valve Controller → LoRaWAN® Gateway → IoT Cloud Platform

To improve irrigation efficiency and crop production, Touio LLC deployed a simple yet scalable smart irrigation solution across 18 community gardens in Charlotte, USA. The solution is built around the Milesight UC511 LoRaWAN® Solenoid Valve Controller and designed to automate irrigation based on real-time environmental data.

The solution includes:
• LoRaWAN® environmental sensors for soil and air monitoring
• Milesight UC511 LoRaWAN® Solenoid Valve Controller for automated valve control
• LoRaWAN® gateways for long-range, low-power data transmission
• Cloud-based analytics platform for remote monitoring, alerting, and irrigation optimization

The UC511 connects directly to a DC latching solenoid to control the valve's open/ close status. It receives wireless commands over LoRaWAN® based on environmental data collected by third-party sensors, such as soil moisture, temperature, and humidity. This enables precise, automated irrigation aligned with real-time field conditions.

Environmental sensors deployed across the gardens collect data on soil moisture, soil temperature, air temperature, and humidity. These sensors transmit data via LoRaWAN® gateways to a cloud platform, where irrigation decisions are made and corresponding commands are sent wirelessly to the UC511 valve controllers.

This wireless setup simplifies installation and maintenance, making it ideal for decentralized community garden plots managed by volunteers. By automating irrigation control, the solution significantly reduces manual labor and water waste, while improving crop health and yields.

The result is a scalable, efficient irrigation system that empowers communities to sustainably grow fresh produce with minimal manual intervention.

Results

90% Water Savings

By automating irrigation based on real-time soil moisture data, the system significantly reduced unnecessary watering, leading to up to 90% water savings across multiple sites.

Increased Crop Yields

Consistent and data-driven watering schedules helped improve plant health and productivity, resulting in noticeably higher crop yields in the community gardens.

Reduced Dependence on Volunteers

The automated system minimized the need for manual watering, easing the burden on limited volunteer staff and improving overall garden sustainability.

Why Choose Milesight

> The customer shared that the Milesight Solenoid Valve Controller was easy to deploy, cost-effective, and consistently reliable - even in harsh weather conditions like rain, high / low temps, and wind. They also appreciated the responsive support from Milesight, which made the deployment process much smoother.
>
> We're grateful to have peace of mind that the crops are being watered properly. The solution gives us more time to focus on other things."
>
> ——Touio LLC

About Touio LLC

Touio is a Charlotte, NC based tech startup focused on providing touchless, intelligent sensing solutions leveraging the Internet of Things. Touio offers SaaS services of their analytics platform, Ginjer, and their wireless network management software, Netsy, to provide their customers with a complete end-to-end IoT experience.