MULTITECH

Providing Potable Water for Refugee Camps Across 15 Countries

Greencityzen Pioneers a New Wireless Water Management Solution for UNHCR Refugees Camp in 15 Countries utilizing MultiTech LoRaWAN® Gateways and The Things Industries' network server

Powered by MultiTech

Climate change, epidemic episodes and wars have been moving populations for centuries all over the world. During these tumultuous incidents one thing has remained constant – the importance of water as a fundamental element in human life. With this vital point in mind, the United Nations in 2018 set-up a goal to provide access to potable water for 2 billion people worldwide by 2028. In recognition of its innovative water management solutions, Greencityzen, won a UN tender in 2022 for its first production phase of installation for water management in refugees camps. This first production phase came after an experimentation done in 2020-2021 to validate the technology.

Water Wash Process

The local water wash cycle in refugee camps follows these four steps:

Step 1: The raw water is extracted from the borehole
Step 2: The raw water is treated with chlorine to convert it in drinkable water
Step 3: The drinkable water is pushed up in the water tower using a solar powered pump
Step 4: The water is distributed using the pressure from the height of the water tower

During this process, it is important to get data during each step to improve the quality of service for refugees to avoid illness and the necessity of remote maintenance service.

Challenge

Radio-connected devices are crucial in the context of remote, difficult to access water production and distribution points. The UNHCR requires monitoring of the entire process, from water production to distribution: each settlement owns from tens to hundreds of tanks, and the system monitors the real-time water stock and quality in each tank, mapping them accordingly. In case of water trucking operations, the system can detect the quantity and shipment dates, and will raise an alert in the case of shipment delays. Additionally, the system monitors the energy production and consumption for pumping and reports it in real-time on a dashboard to alert maintenance needs. Groundwater levels in boreholes are also monitored in real-time to anticipate dewatering and eventually manage water trucking operations. Lastly, the system monitors the quality of service in water distribution and sanitation, including availability and waiting time, to better determine the infrastructure's necessary dimensions.

With the real time monitoring, the data can be analyzed immediately and is accessible for all of those that need the data.

The challenge in refugee camps is the lack of infrastructure for electricity and for connected equipment so a stand-alone solution, both for the installed field sensors and radio network, is ideal. LoRaWAN® was selected for its long-range capacity, a longer sensor battery life and its support of easily installed private networks that eliminate the need for cabling through a stand-alone solar package.

Solution

The water management solution is comprised of various LoRaWAN sensors, provided by Greencityzen, installed in every important step of the process:

• Multiparameter weather station to provide weather conditions
• Water level and temperature of the borehole
• Connected water meter for production and consumption
• Pressure on the water network
• Energy consumption of the pump and energy production of the solar panel
• Water quality level after treatment with turbidity, chlorine and conductivity levels
• Level and volume of the water storage in the tank

Challenge

Monitoring all the steps of the water wash process for potable water in remote UN refugee camps.

Solution
LoRaWAN Wireless Sensors & MultiTech Conduit® IP67 Base Station Gateway

LoRaWAN sensors and MultiTech IP67 rated gateways tracking and reporting on all phases of the water wash process.

Benefits

Providing consistent drinking water in refugee camps by tracking all phases of water washing.

The LoRaWAN® infrastructure is composed by solar-powered MultiTech Conduit® IP67 outdoor base station gateways connected to The Things Industries (TTI) network server - The Things Stack. "MultiTech is a historic partner for The Things Industries, and our network server is fully integrated with their gateway to provide already configured equipment ready to use in the field by the local installer. The Things Stack can also manage gateways securely in remote areas in different regions of the world. For example, for this project, some gateways will be installed in Cameroun, Bangladesh, and Iraq, using different LoRaWAN channel plans locally." said Wienke Giezeman, CEO of The Things Industries.

Data management in the cloud is where the data produced and sent by the devices are gathered by the network. Greencityzen platform proposes dashboard and alerts to extract the KPIs & historical data for water production, water treatment and water distribution and consumption. It also provides tools for remote maintenance of the sensors and the equipment involved in the water management process like the borehole, the tank and the pump.

Outlook

This project is an impressive demonstration of the capacity of Greencityzen to use their experience in water management to provide a reliable and strong LoRaWAN solution which can be installed in remote and isolated areas for this critical use case. Integration of the LoRaWAN solution, made possible with sensors and our partner The Things Industries, is the key component to enhance its replicability and can now be used by other humanitarian associations all over the world said Nicolas Beaudoin, Regional Sales Director at MultiTech.

We are extremely proud to have been chosen by the UN and to contribute to their efforts in securing access to drinking water for vulnerable populations. Potable water is already a limited and critical resource, and it is a huge responsibility for us to enable a solution to manage this resource. Thanks to our partnership with MultiTech and TTI, our replicable solution is reliable and secure. Greencityzen's ambition is to make a significant contribution towards the UN's target of providing clean water to 2 billion people by 2028 said Francois Hamon, President at Greencityzen.

About Greencityzen

Greencityzen offers a data-driven solution for water network operations, which includes #pluvial, #sanitation, #watering, and drinking #water.

These IoT solutions are based on sensor instrumentation and business applications that generate insights on the network, resulting in three key benefits: improved operating performance, preservation of resources, and a reduction in environmental footprint. https://www.greencityzen.fr

About MultiTech

MultiTech products simplify the Connected Product and Connected Service journey for OEM's, Service and Solutions Providers. Our standard and customized wireless sensing and communications products use proven, standards-based technologies and open architectures, reducing time, effort and risk for our customers. MultiTech products are easy to integrate, easy to deploy and easy to scale, delivering best in class performance and value. We work closely with our customers, providing expert support, from architecture to integration and deployment. Our U.S. and global manufacturing agility enables us to work in partnership with our customers at any volume. We deliver to your business requirements, from off-the-shelf to pre-configured products or fully customized solutions. For more information, please visit https://www.multitech.com.

About The Things Industries

Greencityzen confidently trusts The Things Industries and The Things Stack as the LoRaWAN Network Server for its innovative water management project. The Things Stack ensures seamless management, registration, and monitoring of end devices and gateways, expertly routing messages to the designated endpoints. By offering a robust, scalable, and efficient solution, The Things Stack accelerates deployment, enabling Greencityzen to focus on its mission of providing clean water to vulnerable populations. The fine-grained access control for monitoring and alerting tools, combined with an extensive partnership ecosystem, empowers Greencityzen to deliver top-notch water management services, making a significant impact on the UN's goal of reaching 2 billion people with potable water by 2028.

For additional information, contact: sales@multitech.com

"We are extremely proud to have been chosen by the UN and to contribute to their efforts in securing access to drinking water for vulnerable population ...Thanks to our partnership with MultiTech and TTI, our replicable solution is reliable and secure. Greencityzen's ambition is to make a significant contribution towards the UN's target of providing clean water to 2 billion people by 2028."

Francois Hamon
President
Greencityzen

MULTITECH

www.multitech.com