

RAKStars Success Stories



MIDOMET
smart metering

RAKSTAR
Success Stories



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Project Summary

In the city of Catanzaro, Italy, a Hydro Control project was planned to monitor water consumption, identify water leaks, and predict water network maintenance for the whole area. For that purpose, a LoRaWAN®-based solution was the best choice. The company MIDOmet utilized end nodes that are connected to a MiDo transmitter, which communicates with a WisGate Edge Max (RAK7249) installed in the area that then sends the received data via LTE to the remote management system. The low-power and effective IoT solution built by MIDOmet for the Hydro Control project covers the entire distribution area and successfully implements an efficient and suitable management system for the city.



Company Profile

MiDomet develops innovative systems for Smart Metering: electronic devices and energy management cloud computing services, for monitoring the production and distribution of various resources such as water, gas, and heat.

The company's goal is to respond to both the needs of water and energy distributors and those of domestic users (regarding the distribution of consumption within condominiums).

MIDOmet's systems are interoperable, self-powered, easy to use, and complete with data transfer connectivity service and management to provide a complete, scalable, and effective platform.



The Challenge

The company was tasked to develop a LoRaWAN network for a Hydro Control project from the Pitagora Consortium, the managing body of the ICT Hub. The project was to cover the whole city of Catanzaro. A research and development project, aimed at the design and implementation of an artificial intelligence platform for:

- monitoring water consumption;
- identify water leaks and/or theft, and;
- predict necessary water network maintenance

RAK Product used:

- **RAK7249** WisGate Edge Max



“ *The WisGate Edge Max RAK7249 gateway responded very well to the need for the project. Being a device suitable for outdoor installation, complete with all accessories and with fairly low consumption, robust, performing, and highly reliable.* ”

The Solution

The project aimed to create a network of IoT sensors installed on water meters in the users' homes, and longitudinal to the network, as well as the development of a cloud-based platform for storage and Big Data processing.

The trial was based and fulfilled on the water network of the Municipality of Catanzaro.

MiDo's solution for the project was an architecture based on LoRaWAN technology. The end nodes - water meters and pressure sensors, were connected to a LoRaWAN 868 MHz radio transmitter - the MIDOmet Radio Pulse Transmitter. It then sends the gathered data to a RAK7249 WisGate Edge Max LPWAN gateway with LTE connectivity deployed in the area. From the gateway, the information is passed to the remote management system.

The novelty of this experimental phase was to set up an autonomous infrastructure from an energy point of view. The gateway installation site is a pole made available from the Municipality which, unfortunately, is not powered. It was necessary to allow the device to be self-powered with a photovoltaic panel for a reasonable number of days and not to be structurally neither too bulky nor too heavy so as not to create excessive stress on the pole.

The WisGate Edge Max fit very well with the needs for the project. Being a device suitable for outdoor installation, complete with all accessories and with fairly low consumption, robust, and highly reliable. The photovoltaic system to power the gateway was organized as follows

1. 100 W, 12V Polycrystalline Photovoltaic Solar Panel;
2. IP66 wall box, Gray, Polycarbonate, 400 x 300 x 210 mm
3. 2x 25 Ah, 12 V Super Cycle batteries;
4. Adjustable mounting brackets for solar panels designed for off-grid solar systems;
5. Double input 12V POE / Solar battery charge regulator.



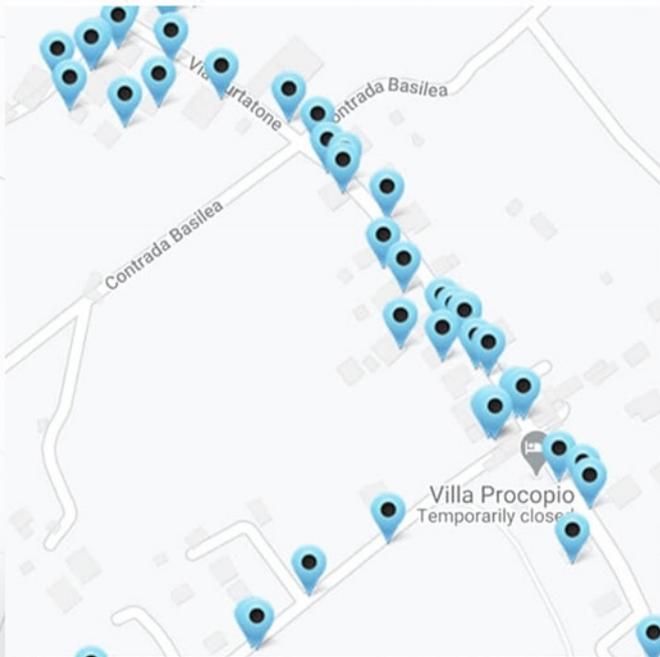
The Outcome

The distance coverage reached by the gateway is about 3km and excellently covers the entire distribution area of the transmitting nodes.

With the 100 W panel for charging and the two 25 Ah batteries, for a total power of 50 Ah, it is sufficient to provide for the energy demand of the gateway, and autonomy equals up to 8 days.

The results MIDOmet achieved with their solution were more than enough to deem this project successful. They managed to:

1. Include 100 domestic users equipped with DN15 and DN20 meters to which it was connected through the MIDOmet Radio Pulse Transmitter.
2. The supply and intermediate line that supplies the district under analysis generates the water balance by comparing the water injected into the network and the outflow.
3. On these two points, large-caliber Woltmann meters were installed and connected via their pulse emitter to the MIDOmet Radio Pulse Transmitter.
4. Establish two pressure measurement points, one upstream and one in an intermediate point of the water network being tested. At these two points, MIDOmet Pressure transducers have been installed which have been connected to the MIDOmet Radio Analog (an extended version of the MIDOmet LoRa Pulse which, in addition to the remote reading of meters or digital inputs, provides an analog input for monitoring of sensors such as pressure, level, quality).





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Achieving Goals TOGETHER



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About RAKwireless:

Shenzhen RAKwireless Technology is a pioneer in providing innovative modular IoT solutions for the three critical elements of IoT edge devices - computing, connectivity, and node sensing. Our patented, modularized, and simplified design that combines one, two, or all three elements help address diverse IoT applications and accelerate businesses' time-to-market.

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