# Heat and Energy Consumption Monitoring over 100 Residential Buildings

BACnet over LoRaWAN: Easy Integration and Transformation of Building Energy Retrofits in Modern Mechanical and Boiler Rooms with IoT Solutions'

📍 Location: Trieste, Italy

| Milesight Partner | Location | Number of Devices Deployed | Applications |
|---|---|---|---|
| OpenSense | Trieste, Italy | UC100*121+UG56*84 | Energy Efficiency, Smart Building, Smart Boiler Rooms |

## Background

Mechanical rooms and boiler rooms typically host a variety of systems, including cooling, heating, electrical, and plumbing distribution equipment. Traditionally, machinery within the room will operate unsupervised at most of time. The importance of keeping boiler room equipment operating efficiently and the environment safe must not be overlooked in residential communities. In recent years, smart and IoT products are becoming more popular in today's mechanical rooms.

Over 100 existing residential buildings needed an electricity and heat consumption monitoring system. These buildings are residential condominiums where hundreds of people live, so it was not possible to carry out cabling and building work. So, it was needed a wireless system that collected data from the multimeters and BTU meters present in the field, and communicated them to the Niagara controller in the central heating plant.

## Challenges

### Demand of Reliable Wireless Solutions

The system could not be wired, it had to be wireless so as to avoid wiring, problems for tenants, and also reduce costs and implementation times. Furthermore, some devices had to be installed in basements and therefore a strong and stable wireless connection was needed.

### Compatible with Niagara Controllers

The system had to communicate with the Modbus devices present in the field and with the Niagara controllers.

### Unnecessary Manual Cost

With traditional boiler room environments, workers are responsible for manually checking each boiler unit, which can generate significant time and human resource costs.

## Solution



To meet the customer's needs, our partner, OpenSense, worked with Atix have provided a comprehensive and practical IoT solution which includes over a hundred of UC100 IoT Controllers and UG56 Industrial LoRaWAN® Gateway. The UC100 IoT Controller collects data via Modbus from the field instruments in mechanical rooms and boiler rooms. Given that Milesight UG56 Industrial LoRaWAN® Gateway supports for BACnet/IP, real-time data can be seamlessly integrated into existing Building Management System (BMS). Here, LoRaWAN® serves as data channel to the control applications without any changes to BACnet protocol network. All data collected by UC100 is then sent to the various UG56 Industrial LoRaWAN® Gateway via LoRa and finally sent to the Niagara controller via BACnetIP.

## Results

### Ability to Scale with Centralized Platform

Thanks to the Milesight devices it was possible to complete the work quickly, allowing the property to monitor consumption and heat of over a hundred buildings from a single platform, thus allowing better, simplified and more effective energy management. Now it is therefore possible to implement energy saving and system monitoring actions, and all the work was carried out without the tenants being disturbed or suffering any inconvenience.

### Real-Time Monitoring without Interruption

Milesight UC100 IoT Controller can read up to 32 Modbus RTU devices and support Modbus transparent transmission, serving as a converter from Modbus RS485 to LoRaWAN®. Designed for remote control and data acquisition, it supports multiple trigger conditions and actions, and can work autonomously even when the network is unavailable.
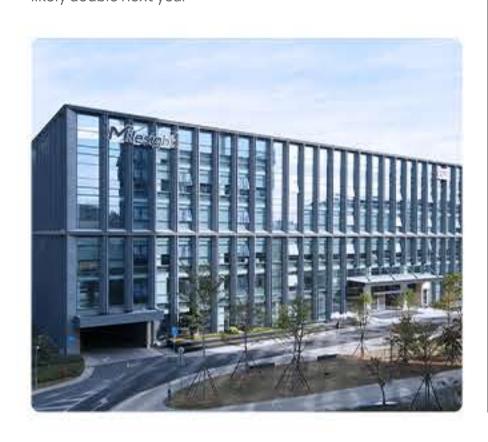
### Easy Integrating with Building Management System Using BACnet

Milesight gateway is able to decode the data of LoRaWAN sensors and map the sensor data into BACnet objects used by BMS system or BACnet devices, which can quickly and easily integrate LoRaWAN® devices to Building Management System.

## Why Choose Milesight

Reliability, ease of integration with Niagara, speed of installation, competitive price and scalability. As the number of sites grows, the system can be repeated easily and quickly.

"A very effective solution that allowed a significant reduction in implementation times, also thanks to the wireless functionality, and it integrated perfectly with the Niagara environment. Furthermore, the number of managed sites will likely double next year"

OpenSense was founded with the goal of becoming a leading reference in the smart building technology market, or rather, the Open Building market. Our aim is to offer software and hardware solutions that make buildings—whether residential or commercial, offices, retail chains, or supermarkets—truly efficient in terms of management and quality of life for their occupants.
Future-Proof Technologies is our mantra. We provide end-to-end solutions that are ready for today's needs but open to the future of smart buildings, a future that we can perhaps only imagine today.
Whether it's energy efficiency, ensuring comfort and well-being in work environments, optimizing building management, or reducing $CO_2$ emissions, we are here! OpenSense, our name, reflects our commitment to being open to the needs of our partners and the market.

Thanks to our partnership with Milesight, we are able to offer comprehensive solutions that address every aspect of building needs, from indoor air quality to consumption monitoring, and more.
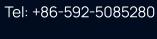
Milesight sensors have enabled us to support our clients quickly and effectively, improving tenant comfort and overall building performance

ATIX is a company that has been operating in the building automation market for over 30 years, with the aim of creating comfortable, safe, and efficient environments. The company is committed to accurately interpreting customer needs to provide innovative solutions for the design of Smart Building Automation systems, combining energy efficiency with living comfort. ATIX offers a wide range of services, including system integration, BMS, energy efficiency platforms, and maintenance. The company utilizes cutting-edge technologies based on Niagara4, which centralize information, report faults, and analyze systems.