mainlink | AXIOMA METERING

# case study

## How Advanced Submetering Enabled Continuous Energy Monitoring and Data-Driven Maintenance at Manchester Tower, Dubai

## About The Project

**Location:** Dubai Marina, United Arab Emirates
**Property Type:** 36-story multifamily residential building with commercial space on ground-floor (built 2007, 336 units)
**Stakeholders:** Stratum Owners Association Management (client), unit owners & residents
**Technology Partners:** Mainlink Middle East Energy Services (full project management and implementation), Axioma Metering (wireless BTU meters), dual wireless LoRa communication, data management platform, mobile app)

## The Challenge

Manchester Tower relies on a centralized chiller system to cool all 336 units via a single energy source (Chiller plant). However, without individual metering, there was no way to determine how much energy each resident consumed.

- No transparency for all involved parties
- High, unpredictable energy bills
- Wasted energy due to the absence of any usage monitoring
- Limited insight into system efficiency or equipment health
- Risk of non-compliance with regulations
- Shorter asset life due to unmanaged cooling system strain
- Without individual billing, residents had no incentive to conserve energy, resulting in inefficient usage and higher overall consumption

## The Solution

The retrofit began with a detailed inspection, followed by an in-depth study to design a feasible solution. Once the design of the wireless BTU metering system was finalized, the complete installation was completed within 45 days, with each meter taking approximately 30 to 45 minutes to install.

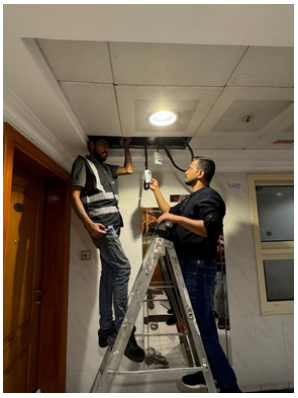
# Executive Snapshot

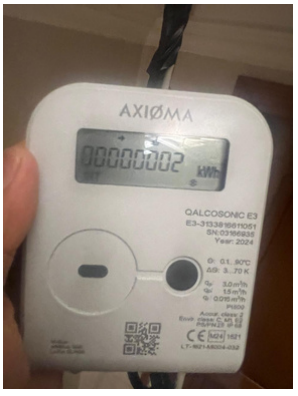
In a retrofit spanning just 45 days, Mainlink deployed an advanced wireless BTU metering system to monitor chilled water energy usage across all 336 units.
The result: advanced and transparent energy management solution aligned with Dubai's regulatory and sustainability requirements.

- **448 BTU** meters installed/retrofitted
- **5 wireless gateways** installed in central corridors
- **45-day total implementation** time, including design, installation, testing, commissioning, and integration with the remote reading data management platform
- **100%** units are monitored for energy efficiency
- **20% estimated reduction** in cooling energy use due to monitoring and behavior change

## System Architecture:

| Component | Quantity | Purpose |
|---|---|---|
| BTU Meters (Qalcosonic E3 wireless meters with dual communication – (LoRa, W M-Bus by Axioma Metering) | 448 | Tracks energy consumption and all related factors: Supply and return temperature, Delta T, Chilled water flow, etc. |
| Temperature Sensors | 2 per meter | Measures supply and return water temperatures for accurate energy calculation |
| Mainlink LoRa Gateways | 5 | Establish scalable wireless network across the building |
| Mainhive Platform | 1 | Centralized meter data management system for real-time analytics, diagnostics, and maintenance |
| Residential Mobile App | Unlimited | Enables residents to track their energy usage and manage consumption behavior |






# The Results: Accuracy, Real Time Visibility, Accountability and Energy & Cost Savings

With real-time data in place, the Manchester Tower management team gained visibility into each unit's energy consumption and the overall performance of the HVAC system. Key benefits included:

## Property Owner & Management

- Real-time energy usage monitoring
- Accurate building analytics through the data management platform
- Easy maintenance and reduced site visits as data is fully remote
- Real-time alerts about hardware and system failures
- Customized alerts for energy loss
- Transparent usage per apartment with accurate billing
- Energy usage monitoring extends building asset life
- Alerts for inefficiencies, or delta T issues via data management platform Mainhive

## Residents

- Transparent billing
- Mobile access to usage data and forecasts
- Incentive to conserve through visibility - estimated 20% energy savings
- Fewer billing disputes and service calls
- Satisfied residents

## Subcontractors

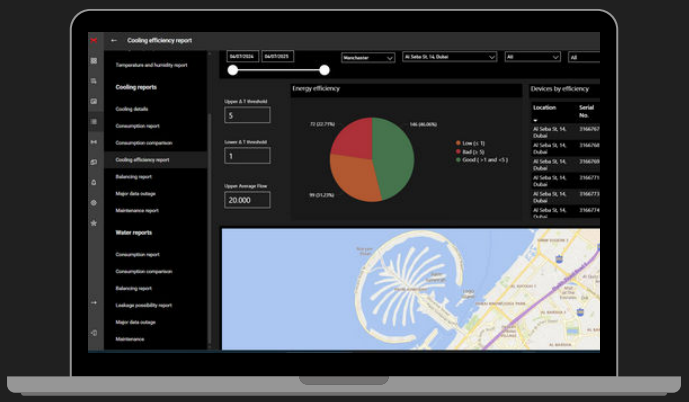
- Faster maintenance response through real-time data insights
- Platform-driven accountability for repairs and upgrades

## Implementation Highlights

| Metric | Result |
|---|---|
| Total retrofit time | 45 days |
| Average installs/day | 15-20 BTU meters per 9-hour shift |
| Downtime per floor | 1 day (communicated in advance) |
| Installation speed | ~30–45 minutes per meter |

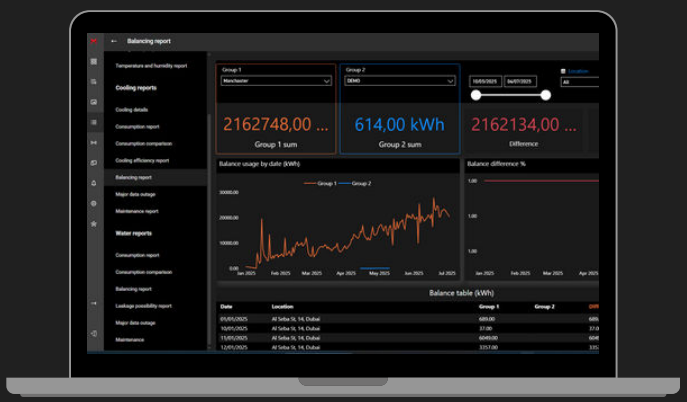
# Data in Action (Data management platform Mainhive Insights)

01.
**Consumption comparison report** to evaluate performance across units or time periods



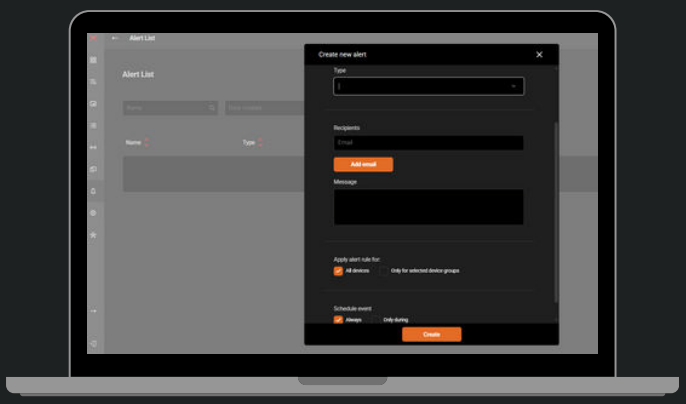
02.
**Cooling efficiency report (Delta T tracking)** for each unit to assess cooling efficiency on a per-apartment basis

03.
**Balancing reports** that compare energy input vs. consumption to detect losses in the system




04.
**Consumption comparison** feature displays cooling trends by metering point, allowing for energy usage comparisons between individual units.

05.
**Alerts** identify inefficiencies such as faulty hardware, leakages, low battery levels, and more. The system also provides customizable alerts, which are automatically sent via email for quick response.




06.
**Network health monitoring** tracks gateway performance, for example spreading factor analysis can reveal weak signal areas or predict possible failures.

## Smart Metering Solution for Future Growth

The system is fully scalable. Manchester Tower can expand with additional sensing devices such as humidity sensors, leakage detection sensors, and air quality sensors to support full smart building integration. For now, the building has already taken a significant step toward smarter building management with Mainlink's BTU metering solution.

> ***"It was a smooth retrofit project. Residents experienced no disruption, as all communication was handled in advance. We're glad that with the remote metering solution, we finally have clear visibility into our building's energy consumption and can now operate way more efficiently."***
> *— Mr. Mounis Nazir, Community Manager, Manchester tower, (Stratum OAM)*

## Key Takeaways

Cooling systems without smart metering lead to high bills, frustrated tenants, challenging maintenance, energy inefficiency, wasted resources, shorter asset life, and high operational costs. These buildings are not sustainable and go against Dubai's sustainability goals.
BTU submetering with remote access offers more than just fair billing - it enables better building performance and maintenance, more efficient energy use, extended asset life, and lower operational costs. In just 45 days, Manchester Tower transformed a shared cooling system into a data-driven, efficient, remote and regulation-ready operation.