MelRok Energy IoT™

CASE STUDY

Client: Private Health Care Client

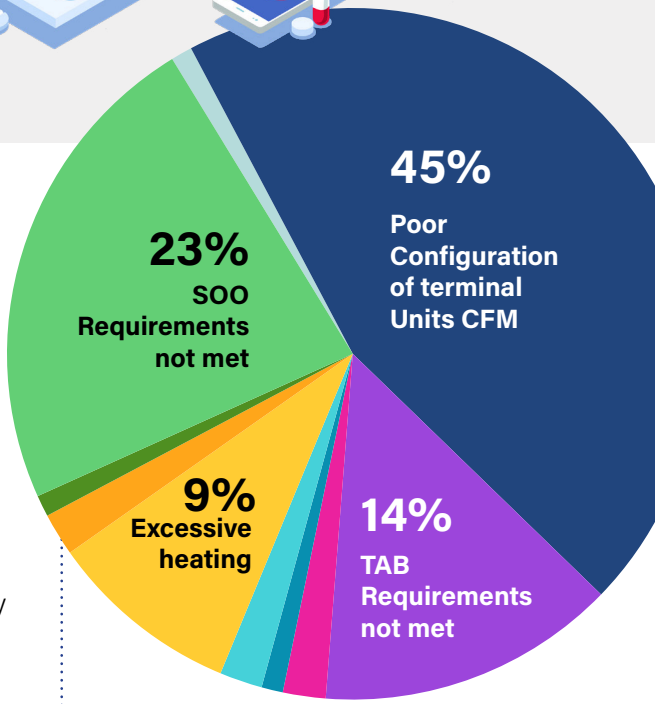
Size: 300,000 ft² Medical Office Facility

Project Scope: New medical facility and recently commissioned state-of-the-art HVAC equipment to meet strict operational conditions for air flow, zone temperature and humidity.

MelRok's Services: Verify commissioning results and to provide ongoing commissioning of critical equipment.

Problem: In 2021, Melrok was contracted by a large private medical client to verify commissioning services on their newly built 300,000 sq.ft. healthcare facility. The client wanted a smarter solution to building system and equipment management because medical/healthcare facilities rely heavily on the condition of their HVAC systems--and are held to the highest/strictest construction and operational standards by Office of Statewide Health Planning and Development (OSHPD). The client needed assurance that their systems were performing optimally and wanted the ability to accurately and timely pin-point to any system that is under performing or in need of service.

Implementation: Melrok was able to customize a solution by integrating our state-of-the-art cloud-based, patented- protected Energy IoT gateway into the existing building management system (BMS). Within hours, the platform detected 85 faults ranging from systems not meeting set points and non-calibrated sensors to a major leak of 1,000 lbs of chiller refrigerant. The pie-chart to the right illustrate system faults, represented in percentages (%), from the building system.



Initial % of Occurrence

- 1% ~ Stuck Actuator or Valve
- 45% ~ Poor Configuration of terminal units CFM
- 14% ~ TAB Requirements not met
- 2% ~ Poor operation of equipment
- 1% ~ Poor hardware design
- 2% ~ Poor reheat coil installation
- 9% ~ Excessive heating
- 25 ~ Chiller sensor calibration
- 1% ~ Poor SOO
- 23% ~ SOO Requirements not met

TAB: Testing, Adjusting and Balancing
SOO: Sequence of Operation
BAS: Building Automation System

Action:

- Reset strategy on chilled water temperature
- Reset strategy on air handler supply air static pressure
- Calibrate chiller temperature sensors
- Fix chiller refrigerant leak

Savings:

Supply Air Static Pressure Reset.....$14,000
Chilled Water Temperature Reset.....$26,000
Est. initial cost avoidance*..... $40,000

*Avoiding the cost of repairs/replacements.

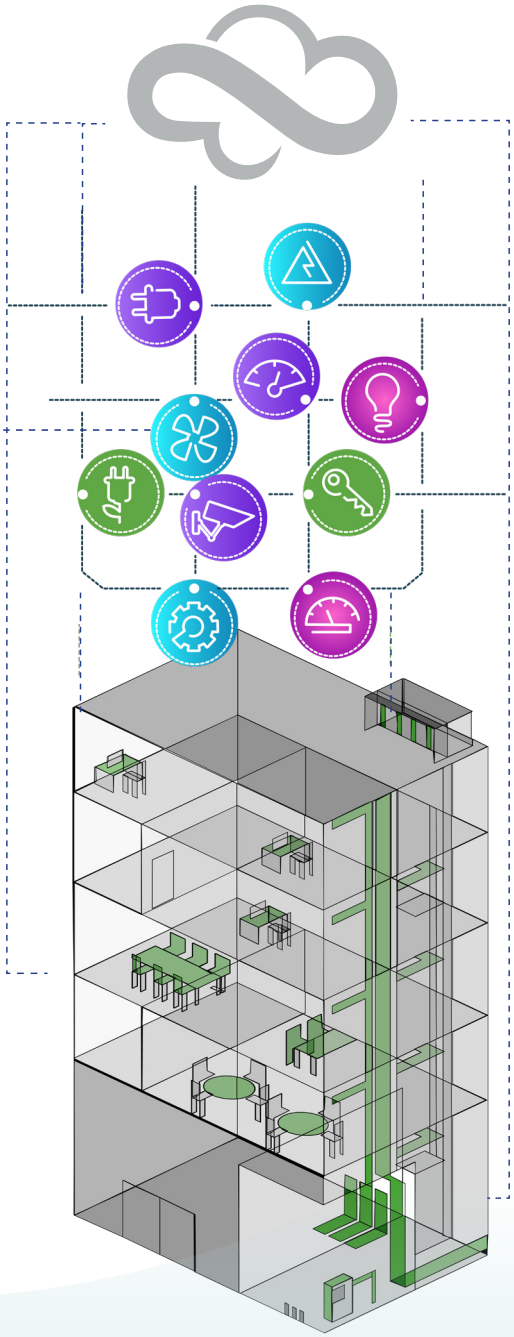
Summary: The MelRok system was able to detect major system failures estimated at roughly $40,000 in repairs and replacement costs. As a result of our successful implementation, we are now providing on-going commissioning and reporting for the medical facility and are working toward on-boarding the client's entire building portfolio.

"It is truly 'night and day'. I can't believe how much time we've saved. Our teams are now well-versed in the AI system and are looking forward to finding new ways to be more efficient with it."

-CLIENT

How it Works:

The MelRok platform uses a patented Energy IoT gateway to automatically identify, connect with, and collect data from systems and sensors in buildings. The gateway sends the data using secure communication channels to the MelRok cloud, where artificial intelligence (AI) is used to discern and tag the thousands of data points coming from the building every minute. MelRok creates a virtual building in the cloud, a digital twin of the physical building, to continuously assess the performance of the building and its systems, detect faults, and predict failures.



Industry-wide Problem:

The traditional way is timely, costly and has a higher risk of system failures and human errors.

Building commissioning services have been an accepted and required practice to validate, document, and ensure compliance with the design intent for a facility's heating, ventilation, and air conditioning (HVAC) systems, but it is proven timely, costly and has a higher risk of errors. Traditional building commissioning consists of hiring trained/certified engineers and technicians to spend hours (daily) to perform tests, collect data, and analyze and weeks to produce a report.

Commissioning buildings is a manual and expensive one-time event. Costs range from $\$1/ft^2$ to more than $\$5/ft^2$, depending on the facility. Some facilities require a re-commissioning after several years of operation. Most importantly, because of the sheer number of systems and quantity of data to analyze, conventional commissioning is prone to errors and is often reduced in scope, meaning that not all systems are checked.

Going AI with MelRok

Integrate in hours, receive instant data/reporting, minimize system and human errors and increase cost savings by 20% (average and depending on building and system).

MelRok changed the nature of commissioning from a manual and labor-intensive process, to an automated process based on machine learning and artificial intelligence. The MelRok platform is used to collect facility and system data every minute and make it available to the cloud-based algorithms. MelRok's intelligent algorithms compare the equipment data and calculated performance metrics with industry standards (e.g., ASHRAE 36), vendor specifications, and most importantly the building's specific design intent and operational requirements to commission the building continuously and automatically, more accurately and more thorough than ever before. The platform can be customizable to any size or type of building(s).

MelRok Energy IoT™

Patented Protected Energy Management System

Contact Us

Click below or give us a call to schedule a Demo.
(855) 635-7651 | www.melrok.com

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