

Nomad Go Customer Success Story: McKinstry

Using AI to make buildings more sustainable, energy efficient & healthier

“By controlling HVAC using dynamic occupancy instead of static schedules, the Nomad Go AI solution at McKinstry’s headquarters saved over 38% energy usage and an equal reduction of CO2 emissions, which is a huge step forward in the decarbonization of buildings. As signers of the Carbon Pledge, McKinstry is excited to work with Nomad Go to offer this solution to our customers and help reach our goal of net-zero annual carbon emissions by no later than 2040.”

– Dean Allen, CEO, McKinstry

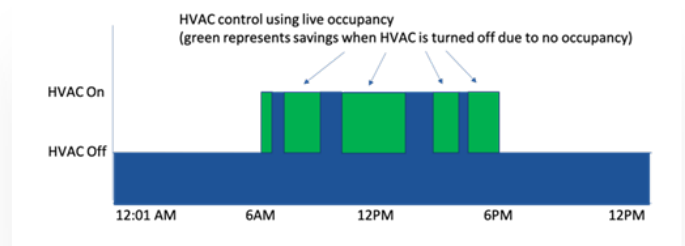
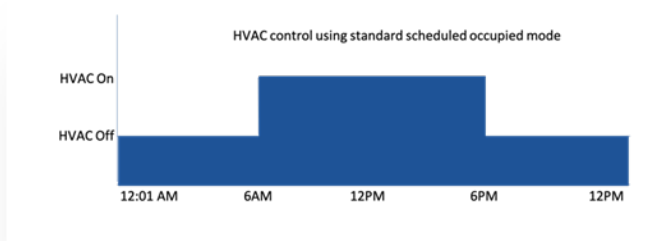
Background:

McKinstry is a national leader in designing, constructing, operating and maintaining high-performing buildings. From new construction and ongoing operations to adaptive reuse and energy retrofits, the company provides a single point of accountability across the entire building lifecycle. Their mission is “To make every building we touch more efficient.” In 2020, McKinstry signed [The Climate Pledge](#), a commitment to be net-zero carbon by 2040—a decade ahead of the Paris Accord’s goal of 2050.

Nomad Go and ATS Automation deployed Nomad Go's Visual Intelligence system at McKinstry's Seattle headquarters to control HVAC using live occupancy data (versus a set operating schedule). This resulted in a 38% reduction in energy use and corresponding CO2 emissions, and an increase in air quality and comfort for occupants.

The Problem:

Buildings account for 40% of global energy use & 39% of greenhouse gas emissions. A key reason why buildings use so much energy is that HVAC is controlled using set operating schedules rather than actual occupancy, leading to spaces being heated, cooled, and ventilated when no one is present. In fact, according to the Department of Energy, this inability to respond in real-time to occupancy results in 15% - 23% of wasted energy and CO2 emissions.



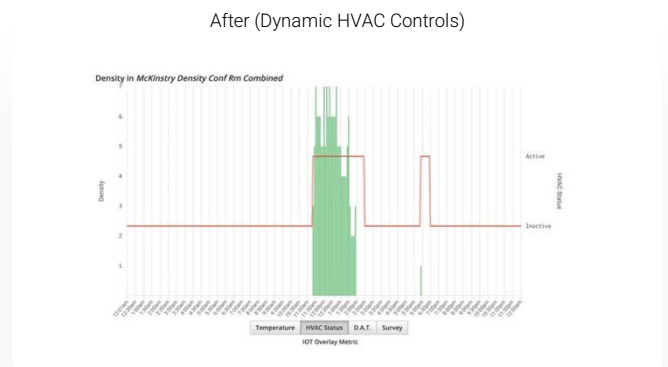
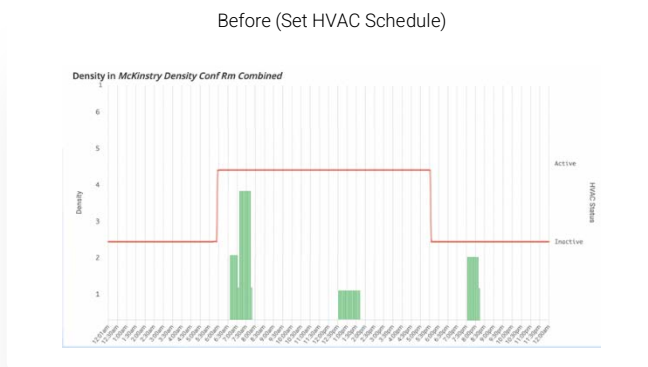
The Solution:

This is accomplished using AI combined with edge computer vision to create a real-time occupancy count converted to MQTT/BACnet that instantly controls the HVAC.



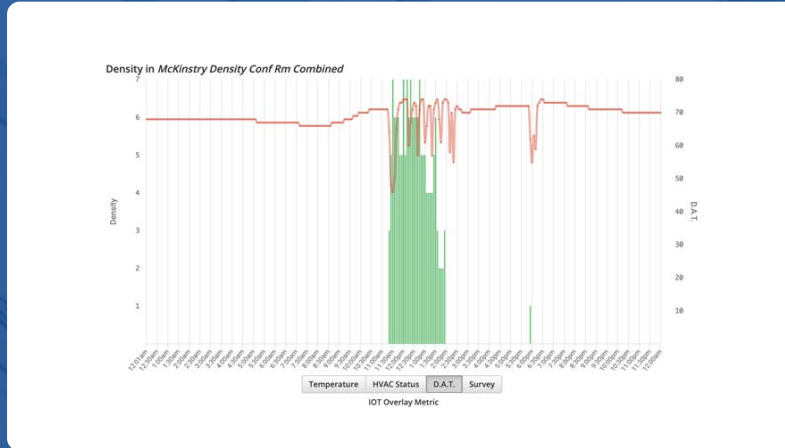
McKinstry deployment results:

Nomad Go and ATS Automation deployed to a number of spaces within McKinstry's headquarters, including the main conference room. Before deploying the solution, the conference room was operating on a set scheduled mode that turned on the HVAC at 6 am and turned it off at 5pm. As a result, the HVAC was running for 45% of the weekday. Below is actual HVAC usage (red line) over one day:



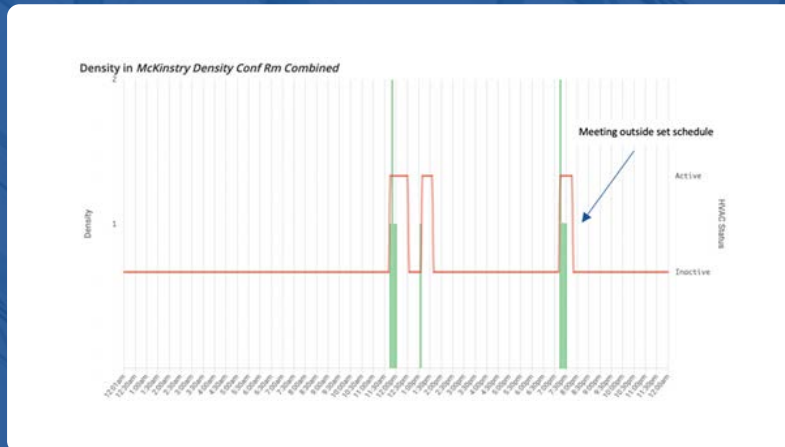
Improved Air Quality

In addition to reducing energy and CO2 emissions, the real-time controls improved air quality by instantaneously ventilating the room based on the number of people in the room. This contrasts with traditional ventilation which waits for CO2 sensors to detect people, which can take up to 30 mins. The chart below shows when outside air was used for ventilation – note that it happens the moment someone enters the room.



Improved Comfort

Additional improvements in comfort and air quality happen when meetings take place outside of set schedule hours. In the case below, there was a meeting at 7 pm. Under the set schedule, which turned off HVAC at 5pm, there would have been no HVAC for the meeting. With live occupancy control, the meeting had the right HVAC settings, ensuring occupant comfort.



Conclusions:

The deployment at McKinstry impacted four key areas that will help buildings become healthier, more energy efficient, and sustainable:

Energy and maintenance cost reduction



By only running HVAC when there are occupants in the room, Nomad Go was able to reduce HVAC usage from 45% a day to an average of 28%, representing the potential for 38% energy savings. Even as people return to the office and there is more occupancy, these types of savings represent a massive opportunity to reduce energy costs and improve sustainability when are scaled to multiple conference rooms, floors, and buildings. In addition, the decrease in HVAC usage reduces the wear and tear on every part of the HVAC system (belts, chillers, etc.) and the maintenance of these systems.

Sustainability:



This solution, which significantly reduces energy usage and corresponding energy-related CO2 emissions, aligns closely with McKinstry's commitment to the Climate Pledge to reduce its annual carbon emissions to net zero before 2040. Based on the energy savings, there is the potential for up to 38% reduction of energy related CO2 emissions from the HVAC system.

Increased air quality and comfort



Since COVID-10, there is a heightened awareness by occupants about air quality. Traditional ventilation systems have built-in delays (up to 30 mins), and set schedules mean meetings outside of the schedule are under ventilated for occupants. By using Nomad Go's real-time occupancy to immediately trigger HVAC and adjust the ventilation based on the number of people detected, high air quality is ensured no matter when a meeting takes place.

Building intelligence



An additional benefit of the system is the ability to use the occupancy data for space planning and other design projects. Previously, building management had to estimate how much a space is used. By using Nomad Go's system, they know exactly how many people use the space on an hourly and daily basis.

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