Newmark A.I. Powered by Hank Optimized a 175,000SF Class A Office Building

Nome Capital Partners

LOCATION: Cerritos, California

SIZE: 175,000 SF

SERVICES PROVIDED:
– Property Management, Energy Consulting

Nome Capital Partners purchased a newly renovated Class-A Office building in Cerritos, California from Blackstone in the summer of 2019. This building is 98 percent leased with an array of flagship tenants including Time Warner, Prologis, and Regus. To keep with Nome's focus on sustainability, Newmark executed energy assessments after the purchase and found that no equipment upgrades would provide substantial energy savings.

What was noted, was the complexity of the HVAC design, which has a custom-built air handler to service over 250 reheat VAV zones. Maintaining the balance of comfort and energy consumption has always been a challenge in office buildings, but this site presented a larger challenge foreshadowed by a note from the previous chief engineer "run everything at max or you're going to be in trouble"

Challenge

Multiple economizers created issues in controlling fresh air into the building, as the current building management system was unable to properly control the flow between said economizers. This led to inconsistent fresh airflow throughout causing cooling and heating equipment to overrun when outside air should have been used. With one unit responsible to provide cooling to over 250 zones, variable cooling load requirements forced units into extended cooling periods. This led to massive energy waste, as

the existing system was unable to proactively manage building load and forced rooftop equipment to over-temper. This also led to zone temperature swings of 2-3 degrees. As the air handler over-tempered, many of the zones that suffered from consistent temperature swings required onsite engineering intervention every 2-3 hours to curb complaint. The building management system was 100 percent reactive since the only way to stabilize the building was to run all HVAC equipment at max consumption for 14 hours a day. This resulted in excessive energy costs and increased degradation of the equipment.

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Action

At the request of Nome, Newmark and Hank partnered and had the Newmark chief engineer act as the "boots on the ground" to ensure all physical equipment was properly maintained. Hank was implemented and used the power of A.I. to reduce energy consumption and make tenants comfortable.

Hank's A.I. controls all economizers to maintain the indoor air quality in every zone to +110% of Title: 24 requirements -- ensuring a safe building for all tenants.

Hank determines space temperature fluctuations 2 hours in the future using digital twins to forecast for space conditions including solar loading and tenant demand for every space. This allows spaces to report future temperature fluctuations to Hank, which can then be curbed via rooftop tempering without over-ramping the equipment.

By applying Machine Learning to the forecasted space temperatures, Hank is able to make micro-adjustments to rooftop control by responding immediately to forecasted space temperature fluctuation. This enables precise control over the chiller plants, boilers, and air handler to make for predictable supply air temperature during high load periods.

Hank's Machine Learning energy modeling was used to determine the lowest cost settings for all units. Hank takes all equipment features into account and weighs their impact together to determine the most efficient way to run all equipment. This resulted in drastically improved control of all equipment. The most significant changes occurred on the rooftop equipment where over 24-Machine Learning energy models were deployed to drive ideal major equipment efficiency.

Results

20% Overall Building Energy Savings	45% HVAC Energy Savings	60% Better Comfort Control	100% increase in Indoor Air Quality (IAQ)
using AI-driven micro-adjustments to >600-unit settings that resulted in massive overall energy savings for the building	increasing the equipment life 3-5 years on average	as measured from the deviation to active temperature setpoint with average temperature fluctuations <1.5 degrees in all 250-spaces With 22-critical zones that are weighted to ensure <1-degree space temperature fluctuations	with Hank measuring and ensuring proper IAQ down to the space level

"With the Newmark Management team working with Hank, we are seeing cost reduction not only in our energy bills, but also in our HVAC vendors costs"

- Ling Martin
Asset Manager, Nome Capital Partners

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