



Building and Asset Tuner For installations with no BMS

Background

Sites with no Building Management System (BMS) typically have a disparate range of packaged roof top units and split systems, or central plant with a range of air handling units. Currently, wall-mounted thermostats or Infrared remotes are adjustable by managers or occupants who control these units. There are significant opportunities to optimize control of these units based on humidity, outside air temperature, and occupancy status. Negawatt Building Optimisation proposes a solution to upgrade to smart thermostats that will improve comfort of occupants, reduce energy usage by implementing control and set point algorithms based on real time conditions, decrease peak demand charges, as well as provide visibility into the portfolio of sites.

Customer Challenges

Customers are looking for an energy efficiency solution that will:

- Improve customer comfort
- Improve overall energy management strategy
- Reduce energy usage and operational spend
- Provide visibility into the portfolio
- Reduce peak demand/capacity charges

Solution

Negawatt Building Optimisation proposes to install new smart thermostats with occupancy and humidity sensors that control the Roof Top/Packaged Units and Split Systems. These controllers optimize temperature set points based on current outside air temperature and humidity conditions. Additionally the controller will adjust the space temperature set points based on occupancy, utilizing recovery time algorithms so that when the zone becomes occupied, it will reach a comfortable set point within a programmable time period. Utilising real time conditions allow these controllers to save energy when the space is unoccupied, and provide optimal occupant comfort and energy usage during occupied times.

Additionally Negawatt Building Optimisation offers live demand curtailment to reduce peak demand/capacity charges on the utility bill. This feature will read energy usage data from the individual facility and implement a variety of curtailment strategies to reduce the peak demand/capacity charges on the utility bill.

Finally, Negawatt Building Optimisation will provide a web-based portal to view and adjust settings at each site location. Managers can log in to adjust set point thresholds, recovery times, as well as various other features to fine tune the conditioning requirements and find the ideal “sweet spot” of maximum energy efficiency and occupant comfort. Configuration is fully customizable; permissions can be set to restrict user access, occupancy schedules can be adjusted, as well as a variety of other easy to use functionality that is accessible anywhere you have an internet connection.

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Scope Of Work

Negawatt Building Optimisation provides all hardware, software, and remote programming to configure the solution, and ensure the customer is fully trained. Hardware includes a real time energy metering and outside air temperature module, an Onsite Hub to communicate between all devices and the Negawatt Gateway, as well as Controllers (wired or wireless depending on site) with occupancy and humidity sensors that will control the split systems and packaged/roof top units that condition the space. The Onsite Hub connects via a secure IP connection to the centralized Negawatt Gateway to manage all of the sites, and connect to our cloud based software platform. Negawatt Building Optimisation will provide all ongoing support, training and upgrades as part of this solution, and provide full hardware replacement beyond the manufacturers warranty period. This ongoing support includes: reviews with site personnel, evaluating equipment performance, energy savings reports, additional training, and fine-tuning of equipment settings.

Negawatt Building Optimisation will also coordinate with a third party installer, or your preferred installer, to perform all on site work to set up and ensure system is operating correctly.

Negawatt Building Optimisation Deliverables

- Configure all equipment, hardware, and web portal for each site.
- Configure system for real time demand curtailment
- Provide programming and instruction manuals for Controllers
- Pre Program Controllers with agreed upon schedules and setback temperatures
- Gather site and equipment data from site personnel and available documentation
- Coordinate with metering provider to automate validated NEM12 energy data exports.
- Pre Program Controllers with agreed upon schedules and setback temperatures
- Connect to the Negawatt Gateway and Cloud Service
- Train personnel on use of platform
- Monthly energy “report card” and consultation with energy analyst

Customer Deliverables

- Provide internet connectivity at site for connection of Onsite Hub
- Communicate with energy analyst relaying site feedback, any necessary changes.

Third Party Installer Deliverables

- Mount Controller and reuse wiring from current thermostats to connect to HVAC unit.
- Mount Onsite Hub and plug in to local area network on site for Internet connectivity.
- Install Outside Air Temperature Sensor via hardwired connection to Controller
- Install CT around power meter feed via hardwired connection to Controller
- Install Temperature Probes in discharge air ducts via hardwired connection to Controller
- Call Negawatt Building Optimisation while on site to coordinate install and commissioning of devices.

Upgrade Options

Upgrade options are available and can be integrated into the automated controls and algorithms, these include:

- Wireless/Hardwired Occupancy Sensors – remote occupancy sensors to monitor areas for motion, body heat and ambient light and control devices accordingly
- Reed Switches – wireless reed switch to determine when/if windows/doors are open and control accordingly
- Wireless Outlet control – measure energy consumption and remote control on/off of individual power point
- Wireless Light Switch – Replace existing light switch with switches capable of remote on/off