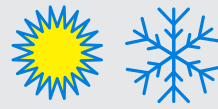


COMPANY
Global Control Solutions

TECHNOLOGY
Basyx Building
Automation System

DEMONSTRATION SITE(S)
Kings Highway Branch Library,
2115 Ocean Ave., Brooklyn

DEMONSTRATION PERIOD
August 2017 to July 2018



SYSTEM(S) INVOLVED

**BUILDING AUTOMATION SYSTEMS,
HEATING, COOLING**



TYPE OF SAVINGS
GENERATED

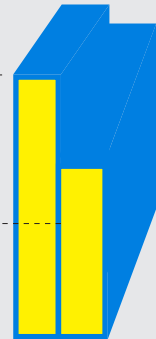
ELECTRICITY, NATURAL GAS

VENDOR'S POTENTIAL
FOR SAVINGS

15-30%

SAVINGS ACHIEVED IN
THIS DEMONSTRATION

15%



SAVINGS

PROJECTED PAYBACK PERIOD:
11 years

Technology Description

Basyx control products, manufactured by Global Control Solutions, provide a platform for universal control of heating, ventilation, and air conditioning (HVAC) and lighting equipment through the Tricomm graphical user interface on a PC-based central processor with real-time monitoring and short-term trending. Sensors for boilers, air-handling units (AHUs), variable air volume terminal boxes (VAVs), cooling equipment, and lighting allow users to monitor mechanical system parameters both locally and through remote access. The Basyx system also features multi-unit time-of-day scheduling, temperature control, lead/lag control, and options for additional electricity usage monitoring and historical reporting.

Optimal Facility Characteristics

- Facilities without a centralized building automation system (BAS) or facilities with an outdated or non-functioning BAS; facilities with HVAC equipment with open protocols for communications and controls.
- Facilities with zone temperature requirements, either for the means of occupant comfort or pre-conditioning the space.
- Accessible sensor ports and connections on HVAC equipment.
 - A facility with an operating schedule which includes unoccupied periods where space temperatures do not

need to maintain comfort conditions and lighting may be turned off.

- HVAC equipment that modulates (i.e. dampers or VAVs).
- Trained facility staff with a moderate level of computer skills.
- Buildings with high cooling or heating loads during unoccupied periods.
- Small- to medium-sized facilities.

Demonstration Results & Discussion

- The CUNY Building Performance Lab Measurement and Verification (M&V) team calculated demonstration project savings of 63,960 kWh, +/-6,465kWh (or 20%) with a savings uncertainty of ~10% at a 90% confidence interval
 - The impact on natural gas usage could not be determined due to a very high calculated savings uncertainty.
- The Basyx graphical interface was relatively simple to understand and navigate, but remote connection was slow and lagged once the real-time interface loaded.
- Trending options were not intuitive and would cause the remote connection to freeze or export empty files, possibly due to a network connection issue.
- Proprietary controls on the AHUs have not communicated with the Basyx system and required additional commissioning since the retrofit.

- Prior to the retrofit, occupants of the facility reported that it was very uncomfortable and facility staff placed several service calls per week due to mechanical and control issues. After the retrofit, service calls have averaged one per month, and temperatures are within the set point throughout the facility. This has resulted in significant savings of both staff time and contracted outside services.

Recommendations for Implementation

- Facility personnel must be trained in the use of the BAS to achieve savings.
- It is important to understand the equipment and systems controlled by the BAS. Some equipment such as packaged roof top units may have proprietary internal control algorithms that do not interface with other BAS controllers. This may limit the overall usefulness and savings that can be achieved with a BAS.
- Ongoing BAS commissioning is critical to successful implementation and to ensure that projected savings can be achieved. Note: Savings from any BAS are the direct result of changes in program controls and scheduling relative to the way that the facility was previously operating.