

Aircuity and Siemens partner to provide safe and efficient laboratory ventilation

Beth Israel Deaconess Medical Center

Beth Israel Deaconess Medical Center (BIDMC) is a teaching hospital of Harvard Medical School, located in Boston, Massachusetts, with a history dating back to 1896. Today, it is best known for its excellence in patient care, dedication to biomedical research, and strong teaching and community service programs. As one of the leading facilities in a city with a rich history of medical and technological innovation, BIDMC had been looking for ways to lower its energy use, reduce its carbon footprint and become a more efficient, sustainable organization.

BIDMC learned of Aircuity and its OptiNet® system, a comprehensive suite of intelligent ventilation measurement and optimization technologies, and decided to install the system in the research laboratories at The Center for Life Science, Boston, where it is the anchor tenant. The state-of-the-art life science building is owned and operated by BioMed Realty Trust, Inc., a life science real estate company committed to providing the highest grade environments with a focus on continually improving efficiency and cost.

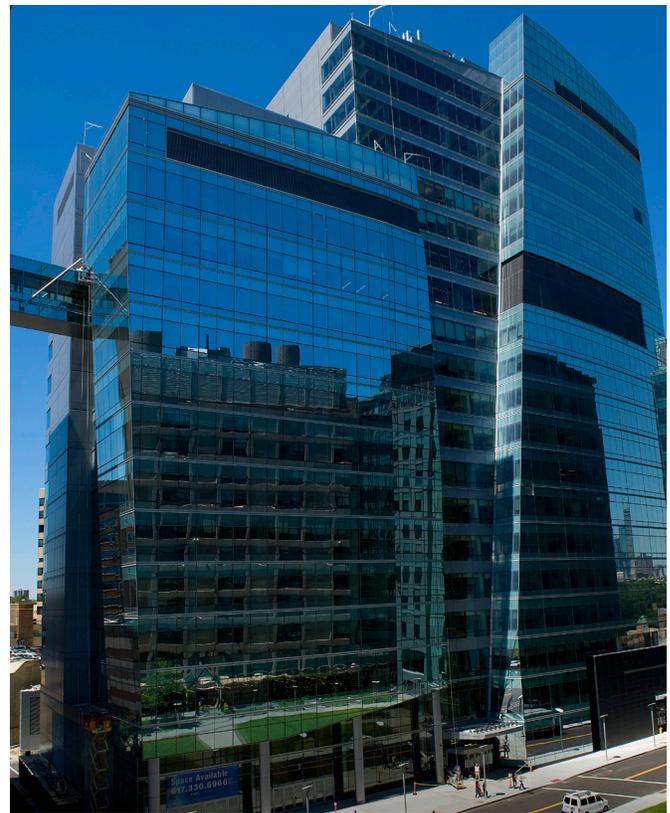
Client Objectives

The industry standard approach for laboratory ventilation is to provide a fixed or constant number of air changes (using 100% outdoor air) to dilute any potential buildup of contaminants within the lab, ensuring the safety of the researchers. This approach can lead to wasted energy, however, by providing too much ventilation when indoor conditions are clean.

BIDMC was interested in implementing a variable air change rate to save energy, but not at the risk of jeopardizing the safety of the individuals working in the facility's laboratories. With the promise of safer, more efficient ventilation in its labs, and an incentive available from BIDMC's electric and gas utility provider, it made sense for BIDMC to get a jump start on its sustainability initiative by tackling the ventilation in its facilities.

Solutions

Aircuity was hired to deliver a turnkey energy conservation project – from proposal to contracting to implementation and use. In turn, Aircuity partnered with Siemens whose APOGEE® Building Automation System is the backbone of the BIDMC building controls, laboratory ventilation controls and energy management strategy. Siemens expertise in laboratory and building controls made it possible to integrate OptiNet and the APOGEE building automation system to deliver the desired variable air change rate. Siemens engineers designed and implemented a seamless BACnet® interface between the two systems.



The Aircuity system's Lab Demand Control Ventilation (Lab DCV) technology continually senses and analyzes laboratory environments and provides ventilation inputs to Siemens integrated Lab Room Controllers. The APOGEE system adjusts the ventilation rates (air changes per hour, ACH) in those facilities as needed, moving away from a constant volume sequence to a variable air volume control sequence.

By reducing the air changes when lab conditions are determined to be clean, and increasing the ventilation only when needed, these systems help to maintain safe and energy-efficient ventilation in the hospital's research and lab facilities. In addition, OptiNet's continuous monitoring provides BIDMC lab managers with critical information about their airflow and any particulates in the air that can then be used to analyze and improve lab procedures.

The intelligent input gathered by the OptiNet system and communicated to the APOGEE system, gave BIDMC the assurance that the ventilation rates could be lowered by real-time measurement of the laboratory environment, and increased if contaminants were sensed.

Together, Aircuity and Siemens applied their expertise and technologies to provide BIDMC with a comprehensive energy efficient solution for its research and lab facilities.

Results

BIDMC decided to implement the project in two phases: phase one would entail installing Aircuity's technology on floors 4, 6 and 7. If all went as planned, the organization would then roll out the system on floors 9 and 10.

After implementing variable exchange rates on those first three floors, BIDMC quickly began to realize lower energy costs and a safer indoor environment for its staff. "As a result of the work done on the ventilation system, BIDMC was able to realize significant savings within the first three months of completing phase one of the project," says Mark Lukitsch, Utilities and Energy Manager at BIDMC.

With phase one complete, BIDMC has been able to go back and review the project and calculate whether the solution lived up to its promise and delivered savings. What it

found was that BIDMC was realizing the energy cost savings very quickly – so quickly, in fact, that BIDMC is on track to pay for this investment in less than one year.

As the organization looks toward phase two, even additional savings are projected, with the possibility of using the system in other buildings belonging to BIDMC. Through Aircuity's partnership with Siemens, BIDMC was able to reduce its annual energy consumption in these laboratories by \$270,000, while lessening its carbon footprint and still ensuring that safety came first at its lab and research facilities – a true win-win situation for all.

About Beth Israel Deaconess Medical Center

A teaching hospital of Harvard Medical School, Beth Israel Deaconess Medical Center is renowned for excellence in patient care, biomedical research, teaching and community service. Located in the heart of Boston's medical community, it hosts nearly three quarters of a million patient visits annually in and around Boston. The medical center is renowned for excellence in surgery (including general, cardiovascular, thoracic, gastrointestinal, solid organ transplant and vascular surgery), with minimally invasive approaches to many procedures.

BIDMC is also known for treatment of cardiac conditions, cancer and pulmonary and thoracic disorders; and for their expertise in neurosciences, gastroenterology and liver disease, obstetrics and women's health, podiatry and emergency and trauma medicine. BIDMC is the official hospital of the Boston Red Sox. For more information, please visit: <http://www.bidmc.org>

About Aircuity

Aircuity is the smart airside efficiency company providing building owners with sustained energy savings through its intelligent measurement solutions. By combining real-time sensing and continuous analysis of indoor environments, the company has helped commercial, institutional and lab building owners lower operating costs, improve safety and become more energy efficient. Founded in 2000 and headquartered in Newton, MA, Aircuity's solutions have benefited organizations such as the University of Pennsylvania, Eli Lilly, Masdar City, the Bank of America Tower and

the University of California-Irvine. For additional information on the company and its solutions, please visit: <http://www.aircuity.com>

About Siemens

As a leading provider of energy and environmental solutions, building automation and control technologies, fire safety and security system solutions, the Building Technologies Division of Siemens Industry, Inc. makes buildings safe, flexible and efficient. As part of an international corporation, Siemens is able to provide world-class solutions in conjunction with local support. Each of its offices are a full-service branch staffed by sales professionals, on-site technical service specialists and project management teams that deliver complete building solutions.

Siemens is a leader in safety, compliance, and energy management and specializes in laboratory and critical environments. For more information please visit: www.usa.siemens.com

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