Aircuity case study

Northwestern University

Airside energy efficiency plays a key role in strategic vision for campus facilities.

N ORTHWESTERN UNIVERSITY'S, first Aircuity installation came in 2010 to monitor the integrity of a heat recovery system in a lab building. Today the leading research university has implemented Aircuity in total of 8 buildings across two campuses.



The Arthur and Gladys Pancoe Life Sciences Pavilion was one of the most recent buildings to be retrofitted with Aircuity. The University was looking to upgrade the control platform and hoped to fund it by reducing energy consumption. A collaboration between Facilities Management and the Office for Research Safety was formed to ensure the project was a success.

BUILDING PERFORMANCE EVALUATION

Based on the results of past projects, Aircuity Channel Partner, HTS Chicago, worked with Northwestern to plan the infrastructure upgrade and retrofit of all lab floor spaces of the Pancoe building. Prior to the installation, labs were run-

ning near 9 ACH (air changes per hour). At the outset of the project the proposed air change rates were 4 ACH during occupied and unoccupied times, consistent with previous Aircuity system implementations. Instead Northwestern's James McKinney, Director of Facilities Management and Operations and Markus Schaufele Director of Standards, Compliance and Emergency Planning agreed to test the possibility of safely lowering the air change rates to 2 ACH during unoccupied times. The plan was to closely monitor the performance and occupant behavior data for select labs within Cook Hall where a system was already installed. Occupancy was determined by ceiling mounted motion detectors wired into the lab control system.

"The Aircuity systems are working as expected delivering valuable energy savings to the University."

> James McKinney Director of Facilities Management and Operations **Northwestern University**

After a month of monitoring, the data clearly showed that the unoccupied setback strategy worked better than anticipated and that if applied to future retrofits significant savings could be realized with little to no adverse affect upon lab safety. Upon the recommendation of the Office for Research Safety, Aircuity was implemented in the Pancoe building at 4ACH occupied and 2 ACH unoccupied.



SAVINGS, INCENTIVES AND REDUCTION IN DEFERRED MAINTENANCE

Savings in the lab were consistent with those projected by the Aircuity ROI modeling tool. Immediately Northwestern began saving over \$117,000 a year with just over a 3 year payback period (before utility rebates). Pre and post project airflows were confirmed by a third party which showed airflows behaving as predicted. The university received rebates from the local gas and electrical companies equal to about one year of savings, further reducing the payback period. Additionally, the project addressed deferred maintenance at Northwestern by helping to pay for the lab control system upgrade.

Aircuity Benefits in Pancoe Building

- \$117,000 annual savings
- ► Less than 3 year payback
- ► Healthier environment for occupants
- ► More data for Office of Research Safety & Facilities on
- building performance and occupant behavior
- Addressed deferred maintenance by freeing funds
- for Phoenix Lab Control System upgrade

A GROWING PROGRAM

During the next phases of Northwestern's Aircuity airside program, the university is planning to expand the Aircuity installation in the Pancoe building to the vivarium space, expand the system in the Tech Building, and identify current Aircuity installations that are good candidates for the 2 ACH unoccupied setting. Aircuity is also being installed in the new 14-story Simpson-Querry Biomedical Research Building, designed by architects Perkins and Will; Affiliated Engineering MEP Consultant.

CONCLUSION

Aircuity was successfully installed in the Arthur and Gladys Pancoe Life Sciences Pavilion and is delivering even deeper energy savings than originally scoped thanks to the cross-functional team's careful consideration of building performance

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"For select low-emission laboratory operations, Aircuity control provides an alternative to the traditional "one-size-fits-all" approach."

Markus Schaufele Director of Standards, Compliance and Emergency Planning **Northwestern University**

energy efficiency will continue to play a key role in Northwestern's strategic vision for campus facilities as they move forward.

ABOUT NORTHWESTERN UNIVERSITY

Founded in 1851, Northwestern University is one of the country's leading private research and teaching universities with an enrollment of approximately 8,000 full-time undergraduate students and approximately 8,000 full-time graduate and professional students and approximately 2,000 part-time students on campuses in Evanston and Chicago, Illinois, and Doha, Qatar. Northwestern combines innovative teaching and pioneering research in a highly collaborative environment that transcends traditional academic boundaries.

ABOUT AIRCUITY

Aircuity creates measurably better environments while taking a bite out of energy bills. The company's smart automated airside solutions optimize air change rates based on comprehensive indoor environmental data. As a result, commercial, institutional and lab building owners can lower operating costs, improve safety and cut energy use by up to 60%. 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.