

## 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.

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**“The Aircuity systems are working as expected delivering valuable energy savings to the University.”**

James McKinney  
Director of Facilities Management Operations  
Northwestern University

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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 to several additional research buildings. Aircuity is also being installed in the new 14-story Simpson-Query Biomedical Research Building, designed by Perkins+Will, a interdisciplinary, research-based architecture and design firm and Affiliated Engineering, Inc., a multi-discipline technical consulting firm.

## 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 data. Aircuity installations at Northwestern are



delivering energy savings, a measurably better indoor environment and allow multiple constituents access to data previously not available. Air-side energy efficiency will continue to play a key role in Northwestern's strategic vision for campus facilities as they move forward.

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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

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## 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 AIRCUIITY

Aircuity creates smart airside solutions through its intelligent building platform, significantly reducing energy costs and improving the indoor environmental quality for occupants. As the demand control solution, Aircuity optimizes ventilation rates through its patented technology. As a result, commercial, institutional and lab building owners can lower operating costs, protect occupants and verifiably reduce energy use by as much as 60 percent. Founded in 2000 and headquartered in Newton, MA, Aircuity's solutions have benefited over 400 organizations such as Google, Amazon, Eli Lilly, Masdar City, the University of Pennsylvania, and the University of California-Irvine. For additional information on the company and its solutions, please visit: [www.aircuity.com](http://www.aircuity.com).