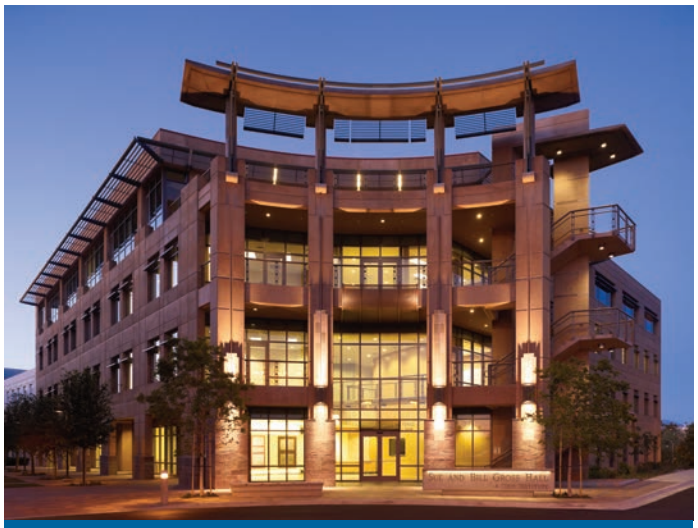
Aircuity case study

University of California, Irvine

Significant Energy Savings through Smart Lab Design and Demand Control Ventilation

The University of California, Irvine (UCI) is one of ten campuses that are a part of the University of California System and is home to over 28,000 students, 1,100 faculty and 9,000 staff members. UCI is among the fastest-growing UC campuses and is consistently ranked among the nation's best universities. Offering a total of 80



Sue and Bill Gross Hall - A CIRM Institute

undergraduate majors and 64 undergraduate minors, recent additions to UC Irvine's academic and professional programs continue to grow with the addition of programs in law, public health, pharmaceutical sciences and nursing science.

As a signatory of the American College and University Presidents' Climate Commitment, UCI is dedicated to saving energy and reducing their carbon foot print. The University committed to build all new laboratory buildings to a minimum of a LEED® Silver rating and established the goal of beating California's Energy Code, Title 24, by 50%. UCI was also among the first to commit to the government's Better Building Challenge. By committing to the challenge the University pledged to become 20% more efficient by the year 2020.

AN INNOVATIVE LAB DESIGN

With laboratories consuming 2/3 of the total energy used on a college campus, and using 100% fresh air ventilation, they are prime targets for energy efficiency measures. Based on this information UCI engineers worked together to create the **Smart Lab** design to significantly reduce energy use in their laboratory buildings. UCI was already receiving significant energy savings through previous installations of Aircuity's centralized demand control ventilation system, OptiNet®, therefore it became one of the core components of the Smart Lab design. Aircuity's Centralized Demand Control Ventilation (DCV) technology continually senses and analyzes laboratory environments and provides ventilation inputs to adjust the air changes per hour (ACH) in those facilities as needed, moving away from a model of constant or fixed ventilation rates. Aircuity Advisor™ Services provides UCI with the ability to monitor multiple locations around campus and aids in continuous commissioning, troubleshooting issues within the space and analyzing energy drivers to achieve maximum energy savings. "What really make the labs smart are the reports and dashboards," says Matt Gudorf, campus energy manager. "Not only can we spot failed components sooner, but we can determine what aspect of the operation is driving energy use and target it."

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> **University of California, Irvine**

AIRCUITY®

ACHIEVING EXCEPTIONAL RESULTS

In 2010 the $80 million, 100,000 square foot stem cell research lab, Sue and Bill Gross Hall: A CIRM Institute, was completed. The Smart Lab design was incorporated into the lab with spectacular results. Not only did the building achieve LEED Platinum certification, but it also

Sue and Bill Gross Hall - Stem Cell Research Center

became the first facility to outperform the California energy efficiency code by 50.4%. Although there are multiple design parameters that make up a Smart Lab, Aircuity's solutions delivered 50% of UCI's total savings.

Based on the resounding success in Gross Hall, the University of California, Irvine rolled out the Smart Lab design to more than a dozen lab buildings on campus. These buildings all saw significant energy savings as well and yielded an average kWh savings of 57%, creating a new best practice for energy efficient laboratory design.

CONTINUED ENERGY SAVINGS

UCI plans to continue utilizing their smart lab design and educating their peers about its parameters and the associated energy savings. The University also recently expanded access to Advisor across campus to help drive continued energy savings and achieve its goals.

The University is currently on track to show a 20% decrease in energy use between 2010 and 2012 and 40% savings on the main campus by 2020, which is twice the goal that the Better Buildings Challenge set forth.

ABOUT THE UNIVERSITY OF CALIFORNIA, IRVINE

Founded in 1965, UCI is a top-ranked university dedicated to research, scholarship and community service. Led by Chancellor Michael Drake since 2005, UCI is among the most dynamic campuses in the University of California system, with nearly 28,000 undergraduate and graduate students, 1,100 faculty and 9,000 staff. Orange County's largest employer, UCI contributes an annual economic impact of $4.2 billion. For more information on UCI, visit: http://www.uci.edu.

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 benefitted 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.

Laboratory Building	Before "Smart Lab" Retrofit			After "Smart Lab" Retrofit		
Name	Estimated Average ACH	VAV or CV	Was more efficient than code?	kWh Savings	Therm Savings	Total Savings
Croul Hall	6.6	VAV	~20%	48%	62%	50%
McGaugh Hall	9.4	CV	NO	57%	66%	59%
Reines Hall	11.3	CV	NO	67%	77%	69%
Natural Sciences 2	9.1	VAV	~20%	48%	62%	50%
Biological Sciences 3	9.0	VAV	~30%	45%	81%	53%
CALIT2	6.0	VAV	~20%	46%	78%	58%
Gillespie Neurosciences	6.8	CV	~20%	58%	81%	70%
Sprague Hall	7.2	VAV	~20%	71%	83%	75%
Hewitt Hall	8.7	VAV	~20%	58%	77%	62%
Engineering 3	8.0	VAV	~30%	59%	78%	69%
Averages	**8.2**	**VAV**	**~20%**	**57%**	**72%**	**61%**

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