AirVantage DCV-AV Case Study:
Institute of Culinary Education

To celebrate their 40th anniversary, the Institute of Culinary Education relocated to a 74,000 square foot facility located in lower Manhattan. Six lecture spaces and twelve state-of-the-art teaching kitchens extend over a single expansive floor that includes 41 ELX hoods controlled by a custom-programmed AirVantage system, 38 ranges, 54 sinks and 66 refrigerators/freezers - that's equivalent to 18 restaurants!

Initially designed as office space, it was not well suited for the extreme mechanical requirements of a huge foodservice facility. In addition to the location, Space, utilities, gas, grease traps and kitchen exhaust were especially challenging for this project.

Operating on a single integrated exhaust system, AirVantage's unique damper optimization enhances the airflow, minimizes exhaust volumes and maintains capture and containment while providing optimal energy savings to each individual ELX hood throughout the facility. In addition, due to equipment use diversity, AirVantage allowed capital cost reductions to supply exhaust systems and duct work.

Gaylord's ELX & AirVantage System significantly reduced ICE's energy footprint! Designed at 50,030 CFM, metering has confirmed a 74.6% reduction on supply and exhaust fan energy consumption, a net 48% total exhaust rate reduction producing an estimated $40,000 annually in fan energy savings alone not including space heating and cooling costs.

Facility
- 74,000 square feet
- 12 Teaching Kitchens & 6 Lecture Spaces
- (1) Integrated Kitchen Exhaust Duct
- (2) Parallel Fans, (2) PCUs/Common Plenum

Gaylord's Project Scope
- The ICE project encompassed 41 ELX hoods controlled by a custom-programmed AirVantage system to manage the demands of 9 of the 12 teaching kitchens.
- Design for an optimized learning environment with reduced hood and kitchen noise.
- Reduce overall energy costs.

Exhaust Hoods
- 41 ELX

Grease Filters
- XGS Extractors

Supply and Exhaust System (50,030 CFM)
- (2) Parallel 30 HP PCU's w/ ESP and Odor Control
- (3) 7 ½ HP Dedicated MUA Units
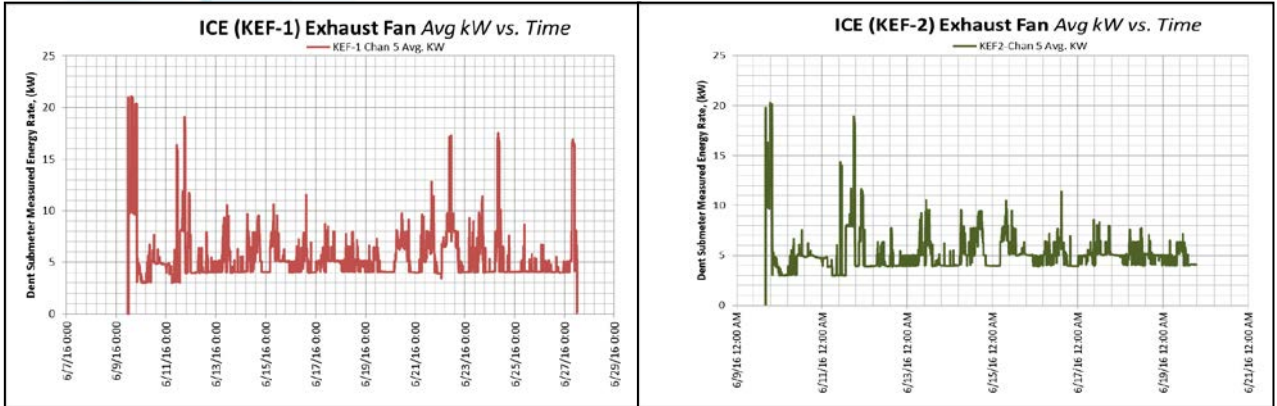
Kitchen Equipment:
- All culinary teaching kitchens are equipped with gas, induction and French top burners, representing the full range of preferred cooking methods across the globe.

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Study Result Information Data

Location: ICE, NY, NY. Data taken from 6/9/2016-6/27/2016. Submeter (3) Dent ElitePro. Heat/yr 8,161,253,000, BTU/yr – NickleFisher $/kWh $0.18. Cool/yr 512,942,000, BTU/yr – NickleFisher $/Therm $0.95. 343 Days/yr. 24 hrs/day, Cooling Set point 72F, Heating Set point 68F.

Institute Of Culinary Education		
Without Gaylord AirVantage Controller Installed		
Total Maximum Design Exhaust Ventilation Rate	50,030	CFM
Exhaust and Makeup Fan Power	56.50	kW
Exhaust and Makeup Fan Energy	1355.92	kWh/day
Annual Cost at 100% - Exhaust & Supply Fans ($0.18/kWh)	$ 83,714.57	$
Annual Cooling Cost at 100% - COP 3.5 (512,942kBTU/yr)	$ 7,731.18	kW
Annual Heating Cost at 100% - (8,161,253 kBTU/yr)	$ 86,146.00	kWh/day
With Gaylord AirVantage (DCV-AV) Controller Installed		
Average Exhaust Rate Reduction	48.15%	(%)
Average Fan Energy Consumption Reduction	74.65%	(%)
Average Supply and Exhaust Fan Load Reduction	42.2	kW
Average Supply and Exhaust Fan Energy Reduction	1012	kWh/day
Average Estimated Yearly Heating Reduction	3,929,643	kBTU/yr
Average Estimated Yearly Cooling Reduction	246,982	kBTU/yr
Operational Energy Savings		
Average Estimated Yearly Fan Energy Savings	$ 40,308.57	($)
Average Yearly Electrical Heating Cost Reduction	$ 3,722.56	($/yr)
Average Yearly Cooling Cost Reduction	$ 41,479.30	($/yr)
Average Total Yearly Savings (not including energy rebates/incentives)	$ 85,510.43	($/yr)
Gaylord Pricing Before Rebates & Incentives	$ 186,655.00	net
Years Payback with AirVantage System vs. Constant Volume System	2.2	Years