

## R&D PSYCHROMETRIC TESTING FACILITY

Air Innovations' (AI) psychrometric facility is a two-chamber laboratory that tests the safety, reliability and performance of Air Innovations' products in a controlled environment. The two rooms—for indoor and outdoor conditions—mimic specifications under which AI products will actually operate—many to very tight temperature and humidity tolerances. The facility tests all the different HVAC/R equipment AI designs, as well as the components used in the company's air- and water-cooled packaged, through-the-wall and split systems. The test chamber expedites new product development and brings new environmental control systems to market faster. The lab also is available for contract testing.



*Products under test are subjected to simulated load conditions to ensure optimal performance  
Lab instrumentation includes pressure transducers and static pressure gauges  
Airflow data is collected via codetester or standard airflow hood*

### CAPABILITIES

Temperature	--Lab facility testing capabilities between 0°F and 120°F (-17°C and 48°C)
Humidity	--Controlled by ionic bed electric steam generator rated at 45 lbs./hr. (20.4kg/hr) controlling to +/- 2.5%RH
Cooling capacity	--Up to 33,000 btuh (9.67 kw)
Heating capacity	--Indoor room=14,000 btuh (4.34 kw) --Outdoor room=130,000 btuh (38 kw)
Airflow measurement	--800 CFM codetester (air tunnel apparatus) that automatically calculates CFM, and measures UUT leaving air properties for dry bulb/ wet bulb
Facilities' airflow	--Each room operates 2100 CFM (3567 cubic meters/hr.) of continuously recirculating air
Power measurements	--Yokogawa panel meters measure accurate volts/amps/watts consumed by UUT determine efficiency ratio
Automated data acquisition and control	--Reduces time routinely collecting data and gathers UUT data to provide test reports with calculations made for: temperatures; pressures; performance in btuh; system operating characteristics (superheat, sub-cooling, etc.)
Refrigerant	--Any refrigerant can be used for UUT
Power supply	--Can test products at 115V to 277V, 1 phase, and 208V to 460V, 3 phase, 60Hz --Ability to test 230V/50Hz products
Test protocols	--Can test to various performance and safety test standards such as AHAM, AHRI, ASHRAE, CE, UL
Test cell infrastructure	--Two separate rooms (indoor room and outdoor room) totaling 2880 cu ft. (77 cu. meters) --Constructed of steel frame and muffler-grade internal and external panels --Each features overhead/side entry doors for product loading/personnel --Internal lighting, viewing windows



Test console area



AI 's 40,00 SF facility



AI is near airport and interstates

## INSTRUMENTATION

Capability	Specification
Power	--120V, 208/230V, 277V, 1 phase, 50/60Hz --208/230V, 480V, 3 phase, 50/60Hz
Electric	--Volt-amp-watt meters, Yokogawa panel type
Air samplers	--UUT entering air conditions that are used for conditioning control and performance calculations
RTDs (air-side temps)	--Omega, 3-wire, 100 ohm, Class B acc, range -58°F to 482°F (-50°C to 250°C)
Transducers (pressure)	--Omega, 0-500 psi (34.47 bar) and 0-1000 psi (68.94 bar), 0-10V output, 0.25% acc
Transducers (airflow)	--Dwyer, -1.0" (-25.4mm H <sub>2</sub> O) to +1.0" (25.4mm H <sub>2</sub> O), 4-20 mA output, +/- 1% acc
Thermocouples (refrigerant side)	--Tempco, Type J
Data acquisition	--Q-Corp supplied/supported, using LabView software

## ABBREVIATIONS

Acc	Accuracy	F	Fahrenheit	RTDs	Resistance temperature detectors
AHAM	Assoc. of Home Appliance Manufacturers	Ft	Feet	SF	Square feet
ASHRAE	American Society of Heating, Refrigeration and A/C Engineers	Hz	Hertz	UL	Underwriters Laboratories
AHRI	A/C, Heating and Refrigeration Institute	mA	Milliamp	UUT	Unit under test
C	Celsius	mm	Millimeter	V	Volts
CE	Conformité Européenne	psi	Pounds per square inch	"	Inches

## ABOUT AIR INNOVATIONS

Air Innovations, established in 1986, is a leader in specialty air conditioning, refrigeration and environmental control solutions for end users and original equipment manufacturers around the world. Headquartered in North Syracuse, NY, AI's capabilities range from concept development to prototyping, from sample runs to mass production. The company's systems are custom designs that feature close-tolerance control of temperature (to plus or minus 0.01°C), humidity control (to plus or minus 0.5% stability), filtration and pressurization, and can be configured for a variety of spaces. The company has been the recipient of several awards, including Engineer of the Year (*HPAC Engineering* magazine 2011) and Business of the Year (CenterState Corporation for Economic Opportunity, finalist, 2012), and is one of the fastest growing, privately held manufacturers in America (*Inc. magazine* 2010, 2011). For more information contact:



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