TECHNOLOGY APPLICATION AND DEMONSTRATION (TAD) AWARD

FUNDED BY THE U.S. ENVIRONMENTAL PROTECTION AGENCY (EPA)
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SYRACUSE CENTER OF EXCELLENCE
in ENVIRONMENTAL and ENERGY SYSTEMS
OFFICE FOR INDUSTRY COLLABORATION

AiR INNOVATIONS

PROJECT TITLE	Demonstration of an Integrated Energy Recovery Ventilator for Improved Indoor Air Quality and Energy
AWARD RECIPIENT	**Air Innovations, Inc.** 7000 Performance Drive North Syracuse, NY 13212 (www.airinnovations.com)
PROJECT DIRECTOR	Larry Wetzel, P.E., Chairman Cheryl Gressani, M.A., Director of Business Development
GRANT AMOUNT AWARDED	$150,000
PROJECT TERM	2007 - 2008

COLLABORATING PARTNER

Clarkson UNIVERSITY

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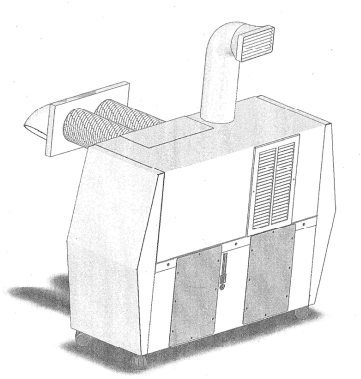
PROJECT SUMMARY

Clarkson University will perform a field study testing the effectiveness of Air Innovations' (AI) Integrated Energy Recovery Ventilator (IERV) on indoor air quality and the health of the room's inhabitants. AI will provide 45 units for deployment; Clarkson will recruit subjects in 45 homes for testing the units in the bedrooms of occupants suffering from asthma or other upper respiratory illnesses. The effectiveness of the units at improving the room environment and the health and well-being of the occupant will be measured.



The IERVs that function as Total Room Air Purification Systems were originally developed under a New York State Energy Research and Development Authority (NYSERDA) contract to integrate the various components of the system into a portable room air conditioner, bringing more fresh air into a room without high energy implications. A significant increase in asthma and sick building syndrome in recent years has been linked to the tightness of buildings resulting from stricter energy efficiency requirements.

The study's subjects will be split into two approximately equal groups. During the first six-week experimental period, Group A has the cleaners and Group B does not. During the second six-week period, both groups have the cleaners. During the third six-week period, Group A turns the cleaners off and Group B keeps the cleaners running. Each room in which the unit is deployed will be equipped with an Air Advice monitor for at least one week during the period when the unit is operating and one week when the unit is not operating. Measurements will be made in as many homes as practical using portable condensation particle and optical particle counters.

To assess the impact of the IERV on the subjects, exhaled breath condensate samples will be collected using the Respiratory Research Inc. RTube system, which non-invasively samples a subject's exhaled air for measurement of pH and other biomarkers. Subjects exhale normally into the RTube, and the moisture from their breath is condensed in the collection chamber. Each subject will collect a pair of tubes every sixth day for the 18 weeks of the study, with the first collected just before going to bed and the second collected on awaking in the morning. After collection, the chamber will be sealed and stored in a freezer before transport to Clarkson for analysis. For a selected period, a personal heart rate monitor will be worn by the subjects to examine heart rate as a measure of sleep restfulness. Clarkson will analyze the resulting data to ascertain the effect of the IERVs on air quality and acute respiratory system response.

The IERVs include high-efficiency particulate air (HEPA) filters to capture airborne particles that can harbor micro-organisms and other allergens. The result is an integrated, packaged, portable air conditioner that heats and cools the room, brings in fresh air, filters out pollutants, and creates a positive pressure in the space to keep airborne pollutants from other spaces from entering the room. The result is expected to be a very clean environment that provides relief to asthma suffers and improves their health and productivity.

Units will be deployed in subjects' homes in July, and testing will continue through November. AI and Clarkson will begin analyzing the results of health, environmental and energy impacts in December. The final report will be completed in March 2008.