Massachusetts Technology Assessment Committee (MTAC)

HVAC Air Scrubber

Date reviewed: 10/03/2016

Description of Technology

Buildings maintain a satisfactory level of indoor air quality (IAQ) in accordance to the ASHRAE 62.1 standard. This requires a plentiful amount of outdoor air. Air scrubber technology removes contaminants from the indoor air at a molecular level. Contaminants removed include; CO_2, formaldehyde, VOC, ozone, radon, and oxides. By scrubbing the indoor air the outdoor air requirement is lowered while maintaining IAQ.

Energy Saving Opportunity

Sector(s):	☐	Residential
	☑	Commercial & Industrial
Applicability Criteria:	HVAC systems	
Efficiency Improvement:	Scrubbing the indoor air reduces required outdoor air thus reduces energy used to treat outdoor air	
Energy (%) Savings Potential:	Claimed approximately 20% (of HVAC usage)	
Demand (%) Reduction Potential:	Claimed approximately 40% (of HVAC usage)	

Strengths

- Continuously monitoring IAQ to ensure compliance with ASHRAE 62.1 standard
- IAQ is improved in many cases because scrubbed air often contains less contaminants than outdoor air
- Air scrubber works in parallel to existing HVAC system allowing the system to bypass the air scrubber at any time
- Peak load reduction capability

Weakness

- Sorbent technology is new to commercial building applications and will require specialized maintenance and repair. Yearly sorbent material replacement may be required.
- Actual savings will vary depending on factors including, but not limited to, occupancy, contaminant levels, daily regeneration cycle times, and climate
- Air scrubber system may not fit in all retrofit applications as space is required next to the appropriate duct work
- Cannot use in facilities where cross contamination is a concern e.g., labs or health care.
- Compulsory building exhaust requires minimum outside air to keep the building under slight positive pressure. This may reduce energy savings

Third Party Analysis/ Previous MTAC Reviews

Research Triangle Institute and National Renewable Energy Laboratory have conducted studies on this technology

Suppliers Known to MTAC

- enVerid
- Johnson Control
- RetroCool

MTAC Status

Acknowledged to have energy savings potential and recommended to individual PA for their own EE program consideration.

Market Development Issues

Cost:	$10,000-$20,000/unit (per ~20,000 FT²) Annual: $2,000
Market Risk and Barriers:	New technology with less than 5 installations in the USA
Time to Market:	Currently on market
Simple Pay-back: (Years)	2-3 years