### 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; CO₂, formaldehyde, VOC, ozone, radon, and oxides. By scrubbing the indoor air the outdoor air requirement is lowered while maintaining IAQ.

### Energy Saving Opportunity

<table>
<thead>
<tr>
<th>Sector(s):</th>
<th>☑ Commercial &amp; Industrial</th>
</tr>
</thead>
</table>

**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

<table>
<thead>
<tr>
<th>Cost:</th>
<th>$10,000-$20,000/unit (per ~20,000 FT²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Annual:</td>
<td>$2,000</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Market Risk and Barriers:</th>
<th>New technology with less than 5 installations in the USA</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Time to Market:</th>
<th>Currently on market</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Simple Pay-back (Years)</th>
<th>2-3 years</th>
</tr>
</thead>
</table>