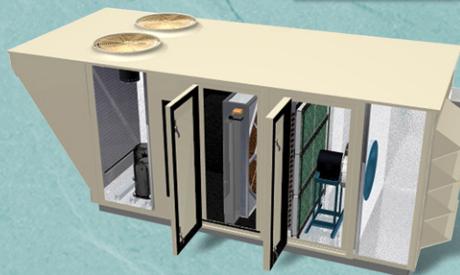


Thermally Activated Technologies

The U.S. Department of Energy is committed to provide a versatile array of clean, reliable, and affordable building HVAC technologies based on fueled operation or pollution-free waste heat recovered from distributed power generation.

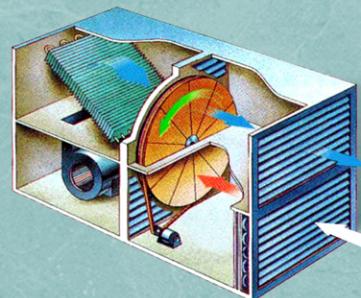
Goals:

- Efficiency** – 85% utilization of fossil fuel thermal energy
- Reliability** – Reduced electric peak grid demand
- Applicability** – Develop advanced designs for thermally-activated systems, subsystems, and components
- IAQ** – Allow recommended fresh air ventilation rates while controlling humidity levels and reducing potential for indoor mold and mildew
- Economy** – Reduced operating costs for the building owner/operator

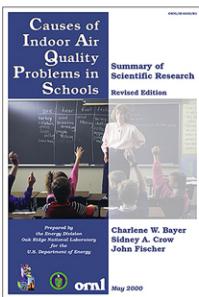


New Program Activities:

Field verification installations of hybrid desiccant/vapor-compression systems. Advanced heat transfer research to reduce the size, cost, and pressure drop of heat exchangers for waste heat recovery applications.



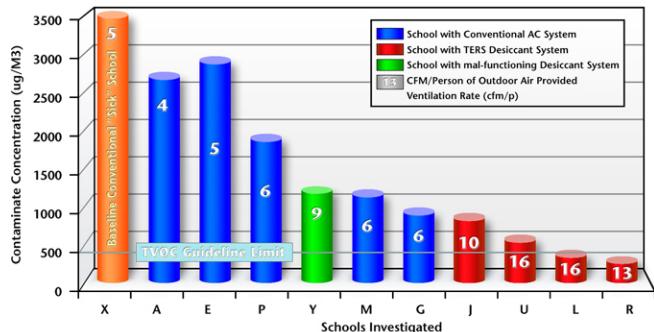
Fresh Air Ventilation and School Indoor Air Quality



Objective – Show link between fresh air ventilation rates and humidity control on school classroom Indoor Air Quality

Key Findings:

- Humidity control vital to maintaining IAQ in school classrooms
- Ventilation rates > 10-15 cfm/person needed for acceptable IAQ levels
- Established baseline IAQ levels in southeastern U.S. schools
- Basis set for more efficient HVAC designs for school classrooms
- Documented ability of desiccant TAT systems to provide adequate ventilation rates and humidity control in schools - impossible with packaged rooftops
- Demonstrated basis for energy savings from desiccant air pre-conditioning systems in schools



Premise:

- 10 Schools - 5 matched pairs - 5 conventional AC & 5 desiccant pre-conditioning
- No known IAQ problems in any school at beginning of study
- 2 years of periodic IAQ sampling in school classrooms
- Nationally recognized Schools IAQ Specialists for analysis

Advanced Heat Transfer Testing and Development

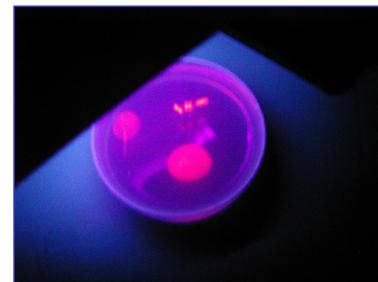


Heat Transfer Test Facility

- Capable of testing several types of heat exchangers
- Flow visualization for diagnosing problems
- Focused on waste heat recovery applications
- Goal is reduced size, cost, and pressure drop

Heat Exchanger Maldistribution

- Advanced technology focuses on using phosphor paint
- Technique is non-intrusive
- High degree of accuracy
- Fast response



Phosphor stimulated by absorption of energy

