



A Novel, Energy-Saving System for Demand-Control Ventilation in Applications of Varying Occupancy

Current Problem: Building air supply and control systems are becoming increasingly important due to increases in energy cost. In various building ventilation systems (e.g. HVAC systems), there are significant challenges in found in air sampling systems from initial sensing to measurement and response. CO₂ sensors are known to drift undependably, and need to be recalibrated every six to twelve months. Electrical pumps that transport air samples are noisy and require maintenance. Read and response time lags real time, resulting in un-optimized room quality and occupant discomfort.

The Solution: This patent pending invention, when coupled with a demand-control ventilation strategy, provides a state of the art solution to insure an area is neither over nor under ventilated, maintaining a healthy building environment conducive to learning and working. This licensing opportunity, described here as a centrally located, multipoint, CO₂ particle measurement system, has been proven to provide a **+20% kWh energy savings**, by conditioning only the amount of ventilation air necessary to maintain good indoor air quality and room comfort for users.

Demonstrated benefits:

- Improved air quality and temperature, supporting wellness of room occupants
- Decreases number of CO₂ sensors 80%+ as well as shortens time between quantifiable monitoring cycles of CO₂ leading to better control of environment
- Elimination of the electrical vacuum pump leading to lower maintenance and a “whisper” quiet system
- System has no moving parts, and is diagnostic for both consistent air flow to sensors and leaks leading to lower maintenance and better quality measures
- Reduces the load on the main supply system and extends the life of bearings, belts and associated equipment
- Savings in installation costs (new build or retrofit) of up to 50%
- Conforms to/meets ASHRE Standard 62.1 occupancy-based VRP schedule

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