

New



Biosirus

DCV

Demand Controlled Ventilation Systems

CO₂ Monitored Feedback Control for Optimum fresh-air intake Tremendous Savings in Energy

• **Application:**

- Indoor variable occupancy areas:
 - Retail, Gyms, Auditoriums, Class-rooms, Hospitals/Clinics, Airports, Bus/Rail Terminals
 - Mall or Office Buildings, Indoor Parking garages
- Hot or Cold Climates: where fresh air intake needs substantial heating or cooling
- Older buildings
- High Electricity and/or Gas tariff jurisdictions
- Optimum indoor comfort needs to be maintained



• **Features:**

- Real-time CO₂ monitored feedback for fresh-air intake damper control
- New or Retrofit applications
- Wi-Fi enabled sensors. *Significant reduction in wiring costs*
- Variable Occupancy Savings and Over-ventilation energy savings
- Real-time monitoring, control, alarm notifications, data logging



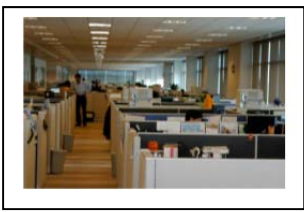
• **How Does it Work:**

- Low levels of indoor CO₂ (< 400 ppm) denotes low occupancy and/or excessive ventilation
- High levels of indoor CO₂ (>1100 ppm) denotes very high occupancy and/or lack of ventilation
- Feedback loop control to Air-handling /damper control based on CO₂ levels

• **Technical Data:**

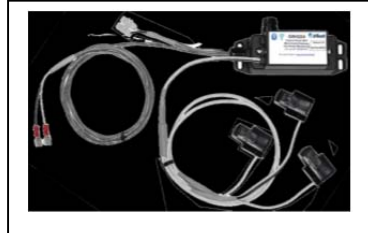
○ **Sensors: CO₂ / Temperature / Dew Point / Current**

- Ultra-low power, self-calibrating LED CO₂ sensor
- Measures up to 10,000 ppm CO₂
- Easy and accurate in-field calibration, and verification
- Secure sub-base for wall mounting
- Wi-Fi enabled (significant reduction in wiring costs)
- Supports multiple Wi-Fi networks (allowing separation of control & enterprise networks)



○ **Connectivity:**

- Wi-Fi to Cloud (for Monitoring and Alarm services)
- Wi-Fi to Internet (for internet connected devices)
- Wi-Fi to Wire (for BACnet, Modbus and SNMP applications)
 - Babel Buster Gateway that can take up to 200 Wi-Fi sensors
- Wi-Fi to local Air-Handling Units
 - Local gateway takes 4 sensors; provides 0-10V on highest sensor value
 - Fault monitoring/notification via additional Wi-Fi sensors or via a Belimo ZIP economiser
- Simple and easy in both new and retrofit applications

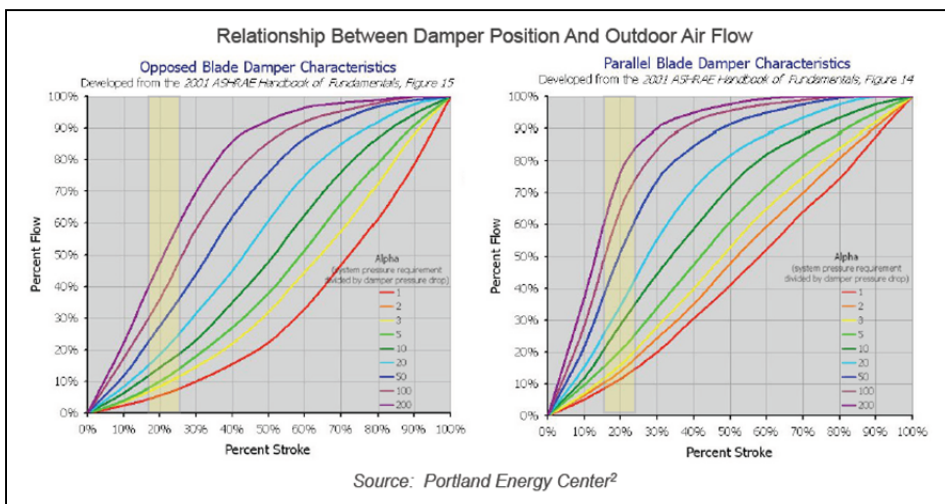


Tech Talk: Outdoor air is a significant component of building heating/cooling costs and comfort

A study by the EPA (in 2005) suggests that many buildings are bringing in more air than necessary resulting in significant energy costs and lower occupancy comforts. Most owners are unaware whether the ventilation is optimum. There is no assurance that what was originally installed will remain the same going forward. The EPA study further notes that (1) 83% of the buildings are likely over-ventilated and (2) building densities assumed in the design stage did not reflect actual occupation densities over the years.

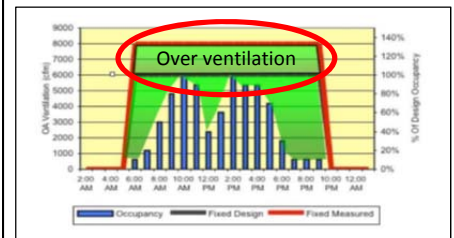
Outdoor make-up air is critical to buildings not only to provide fresh air to occupants (defined by codes) but also to provide adequate positive pressurization to control particulate/dust infiltration and also maintain occupancy comfort. The EPA study found airflow rates quite different from design values (need for periodic monitoring/maintenance).

A third important fact is that given the 20% (outside air) and 80% (recirculated air) rule, many operators think that if dampers are set to 20% throw (or stroke) position then this will yield 20% fresh-air. *This is not correct.* Typically, in both "opposed blade dampers" as well as "parallel blade dampers" designs, its characteristics are such that a 20% percent throw/stroke setting yields a 5-45% intake flow for the former and 10-75% for the latter, based on system pressure requirements and the damper pressure drop. If variable speed drives are interlocked to such manual systems/pressure control, then the building may see the entire range of outdoor air percentages in a typical daily operating cycle.

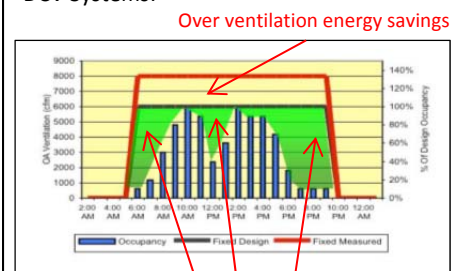


Typical Applications

Fixed Systems:



DCV Systems:



And Savings Too:

DCV systems offer significant energy savings (and better comfort) as intake air is constantly adjusted to suit occupancy through CO₂ real-time measurements/control. *This ensures savings in variable occupancy as well as over-ventilation. A two-for-one benefit.*

Best Value Applications:

- Variable occupancy – Retail, classroom, hospitals, airports, bus/train stations
- Mall or Office Buildings, Indoor Parking garages

Parameters	Platinum Savings	Gold Savings	Silver Savings	Bronze Savings
High Tariff Rate	*****	****	***	**
Diesel dependency	*****	****	***	**
Off-Grid / Remote locations	*****	****	***	**
Electricity Tariff (US\$/kWh)	>0.15	0.12	0.10	0.08
Large AHU or A/C loads	++++	+++	++	+
Variable occupancy	>50%	35-50%	20-35%	10-20%
Typical Pay back (simple ROI)	1 Year	2 Years	3 Years	4 Years



Call us for any details or a trial project

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Biosirus Brochure DCV-1: June 2015