CHAPTER 2 - CONSERVATION AND EFFICIENCY: BUILDING SYSTEMS

502.02 DEMAND CONTROL VENTILATION

Silver Sa'fa

INTENT

To promote energy savings in buildings and improve their indoor air quality.

REQUIREMENT

For all new air conditioned buildings with mechanical ventilation and existing buildings where alteration, changes, modification, expansion or restoration are carried out, Demand Controlled Ventilation (DCV) using Carbon Dioxide (CO_2) sensing or by other means to measure occupancy, must be used in spaces larger than 100 m² and having a maximum design occupancy density greater than or equal to 25 people per 100 m². Default occupancy density values from the latest edition of ASHRAE standard 62.1 and 62.2, can be used when the actual occupancy is not known.

CO_2 concentration set-point should be kept below 800 ppm.

An alarm must be triggered if CO_2 concentration rises above 1,000 ppm. This alarm can either be automatically monitored by a central control system, if available, or give a local audible or visual indication, when activated.

For all new and existing buildings with DCV, the CO_2 sensors and systems must be checked and recalibrated as per manufacturer recommendations. Recalibration frequency must not exceed 12 months and must be carried out by specialised companies.

SIGNIFICANCE

While HVAC systems are designed to cater for maximum occupancy, it is not always possible that maximum occupancy levels are reached. For example, spaces like meeting rooms or lecture halls in educational facilities sometimes may not reach the maximum designed occupancy levels. This may lead to excessive use of HVAC and increased bills. Ventilation could be reduced during the hours of operation when spaces are vacant or at less than the peak occupancy.

Demand control Ventilation (DCV) is an integral part of building's ventilation system. DCV is a real time, occupancy based ventilation approach that can offer significant energy savings particularly where occupancy is intermittent or variable from design conditions. Properly applied DCV allows for maintenance of target per-person ventilation rates at all times. High thermal comfort and satisfactory indoor air quality are some of the other benefits of DCV.

APPLICABILITY

This regulation is applicable to all building types. Refer to Table 101.07(1) in Section One - Administration for detailed applicability levels.