

Keeping Your Health In Check

Carbon Dioxide



The Problem

Luikart Heating of Newark, OH faced the problem of providing ventilation to a medical laboratory located in the basement of a clinic. CO₂ levels were being recorded in excess of 2,500 ppm and staff were complaining of headaches and a general feeling of illness. Specific types of medical testing had to be halted since the high CO₂ levels could potentially skew the results.

The lab had no ventilation and no room to run ductwork. The space heating and air conditioning was provided by a 5 ton "residential" type furnace.

CO₂ Levels of Comfort in Parts Per Million

Normal outside levels	350 - 450 ppm
Acceptable levels	less than 600 ppm
Increased complaints of stiffness and odors	600 - 1,000 ppm
ASHRAE and OSHA Standards	1,000 ppm
Increased complaints of general drowsiness	1,000 - 2,500 ppm
Adverse health effects expected	2,500 - 5,000 ppm
Maximum allowable concentration over 8 hours	5,000 ppm



"I have experienced significantly fewer migraine headaches since the Venmar CES unit was installed".

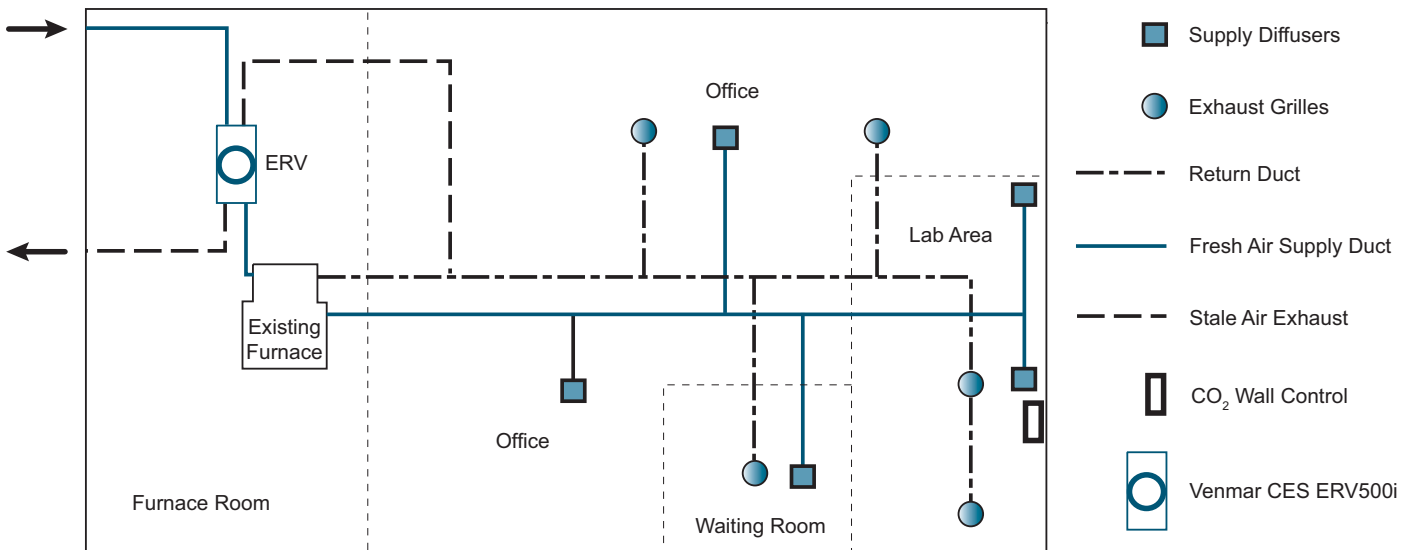
Joyce Straight, Technician

The Solution

Venmar CES representative Peter Walsh of Columbus Temperature Control Company chose a Venmar CES ERV500i to solve the laboratory's problems. The unit was installed to exhaust stale air from the lab via the existing furnace return air duct. Fresh outdoor air was then introduced downstream of the exhaust and distributed to the lab and offices by the existing furnace supply air duct. This method of diluting the stale air is often referred to as dilution ventilation. The Venmar CES ERV500i has an installed height of only 23" [584mm] and was a perfect fit for the limited space available. The Venmar CES ERV500i met the ASHRAE 62-89 ventilation standard for medical laboratories of 20 cfm per person.

The Results

The ventilation provided by the Venmar CES ERV500i has achieved CO₂ levels below 600 ppm which is significantly below the ASHRAE and OSHA recommended standards of 1000 ppm. This reduction in CO₂ levels returned the lab to full production with accurate laboratory testing. There are no longer reports of tiredness or headaches. The lab manager and building owner are now considering the installation of Venmar CES units in the heart rehabilitation exercise area, the examination room and the waiting rooms.



Standards and Requirements

Reference standard	ASHRAE 62-89
Design Airflow	400 - 600 cfm
Building type	Medical Laboratory
Venmar CES Model	ERV500i



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