AIRXCHANGE

IMPROVE BUILDING RESILIENCY WITH AFFORDABLE OUTDOOR AIR VENTILATION

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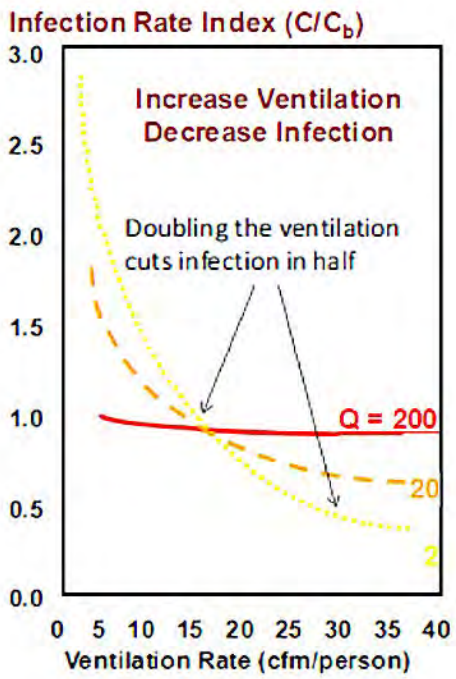
As the recent pandemic has shown, minimum ventilation rates referenced in today's building codes are far too low to provide us with the health and safety protections we need indoors.

Numerous studies have shown that increased outdoor ventilation rates improve our health and productivity while reducing the transmission of germs such as airborne virus and bacteria. For example, one study concluded that doubling the ventilation rates in buildings has the same effect as the flu vaccination.

FIGURE 1



Why? As the curve in Figure 1 shows, every time we double the outdoor ventilation rate, we reduce the concentration and therefore transmission rate of all indoor contaminants by 40% to 50%. This provides the same benefit as would be expected from vaccinating a healthy population with today's average flu shot effectiveness of 40%*.

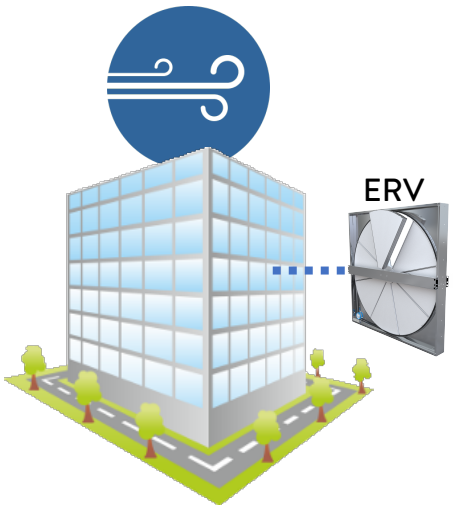
Despite the overwhelming evidence, many building owners perceive outdoor air ventilation to be expensive and are therefore reluctant to take advantage of the benefits.

Fortunately, Energy Recovery Ventilation (ERV) technology makes fresh air affordable, preconditioning up to 80% of the outdoor air with recycled energy (See figure 2). A recent Harvard School of Public Health paper confirmed the benefits of ERV by demonstrating how the technology mitigated most of the energy and environmental impacts of increased ventilation.

*Blackwell Munksgaard (2003). Risk of Indoor Airborne Infection Transmission Estimated from Carbon Dioxide Concentration. Indoor Air 2003; 13: 237-245, 237-245 www.blackwellpublishing.com/ina.

Figure 2 Illustrates the *change in energy costs per occupant per year*, with and without the use of ERV's when increasing ventilation rates above the minimum ventilation standard.

FIGURE 2



Minimum Ventilation Rate (20 CFM / PERSON)

	BALTIMORE	BOSTON	BOISE
(w/out ERV)	$0	$0	$0

Minimum ventilation rates represent the baseline for energy costs – they have no added cost but also no added benefits for improving indoor air quality.

30% Enhanced Ventilation (27.6 CFM / PERSON)

	BALTIMORE	BOSTON	BOISE
(w/out ERV)	$12.35	$15.19	$9.19
(w/ ERV)	-$3.46	-$8.35	-$6.77

Incorporating an ERV when increasing ventilation significantly reduced energy costs and led to net savings for each city

Recommended Ventilation Rate (40 CFM / PERSON)

	BALTIMORE	BOSTON	BOISE
(w/out ERV)	$32.42	$39.87	$24.13
(w/ ERV)	$4.01	$5.81	$1.00

ERV is an efficient solution to affordably maximize the health and safety benefits of fresh, filtered outdoor air.

ERV technology has been cost justified for use in the national energy standard, ASHRAE 90.1 and is widely available for residential, commercial and industrial use. With a growing public demand for healthy buildings, a combination of increased outdoor air ventilation made affordable with ERV technology answers the call for a safer and more resilient building environment.

To learn more about ERV technology or sign up for our free energy analysis software visit airxchange.com.