OXYGEN8

ZebX Tech Demo

Compact and High Efficiency
Energy Recovery Ventilation and DOAS

Agenda

- Introductions
- BC Building Codes & Energy Recovery Requirements
- Industry Trends
- Oxygen8's Ventilation Solutions
- Success Stories

Introductions

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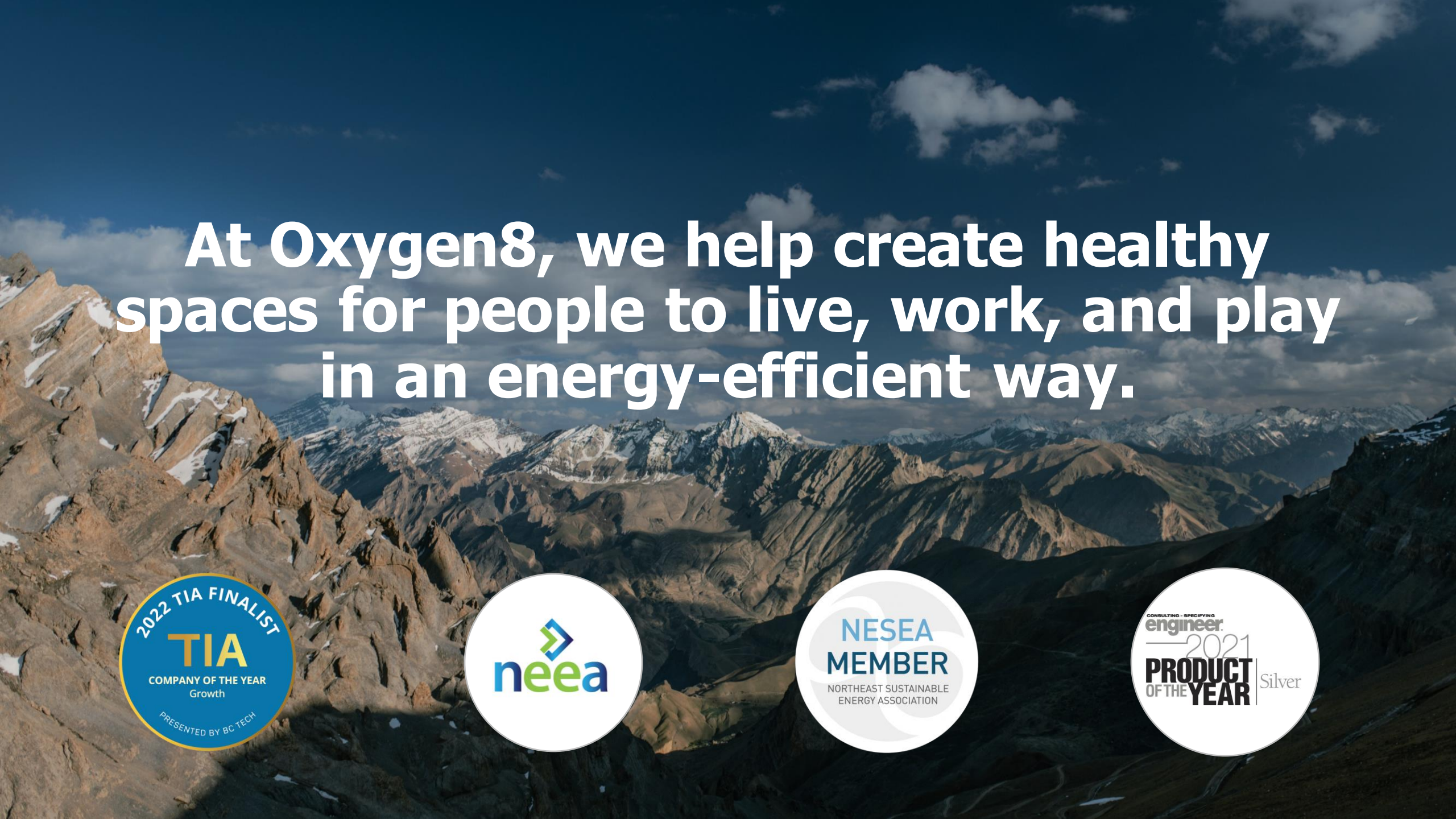

At Oxygen8, we help create healthy spaces for people to live, work, and play in an energy-efficient way.
2022 TIA FINALIST
TIA
COMPANY OF THE YEAR
Growth
PRESENTED BY BC TECH
neea
NESEA
MEMBER
NORTHEAST SUSTAINABLE ENERGY ASSOCIATION
CONSULTING - SPECIFYING
engineer
2021
PRODUCT OF THE YEAR
Silver

Introduction to Oxygen8

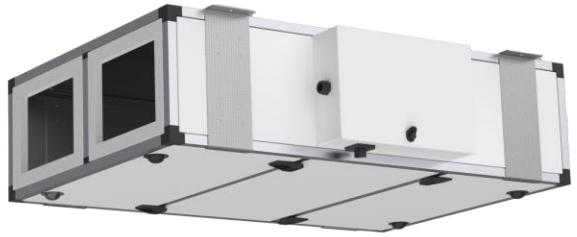
Fresh Air That Fits

Ventilation Solutions

- High Efficiency Energy Recovery Ventilation (ERVs)
- Split Dedicated Outside Air Systems (DOAS) with VRV Integration

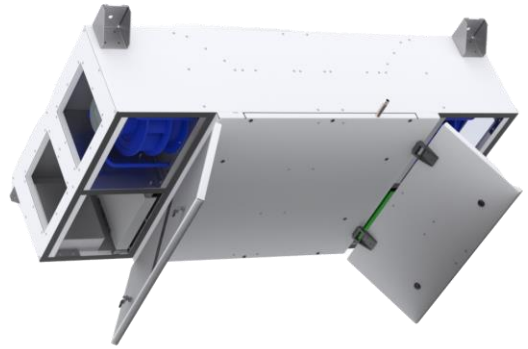
Target Markets

Offices, Schools Sr. Care Facilities, MURBs



Differentiators

1. 100% Outside Air with Low Energy Consumption
2. Compact for Decentralized Ventilation
3. All Electric and High Efficiency
4. Intelligent Solution with DDC Controls
5. Accurate Temperature and Humidity Control



DAIKIN

VIESMANN climate of innovation

Our Growing Team

BC Building Codes & Energy Recovery Requirements

Ventilation Standards: ASHRAE 62.1

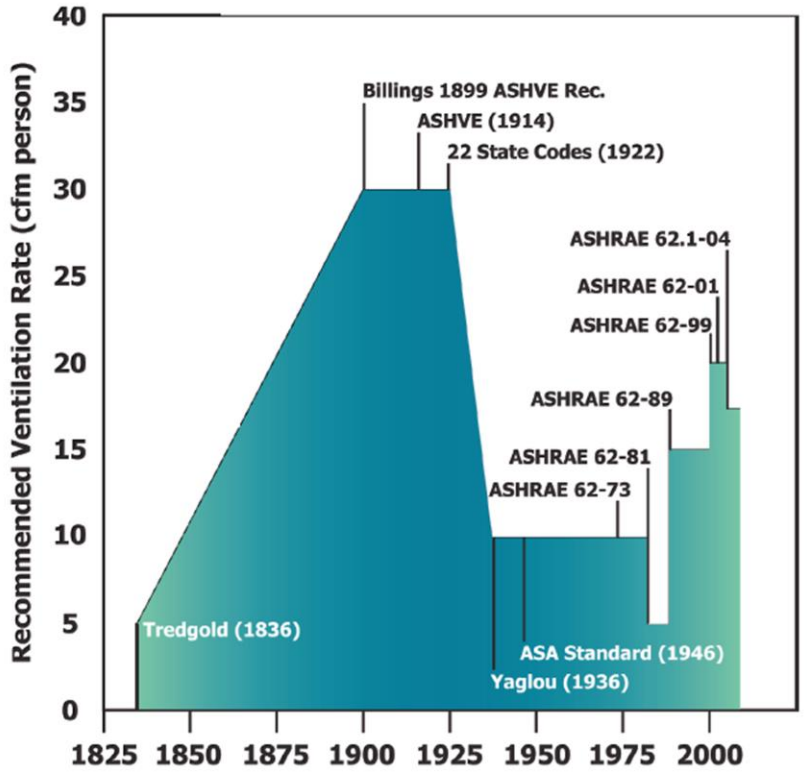


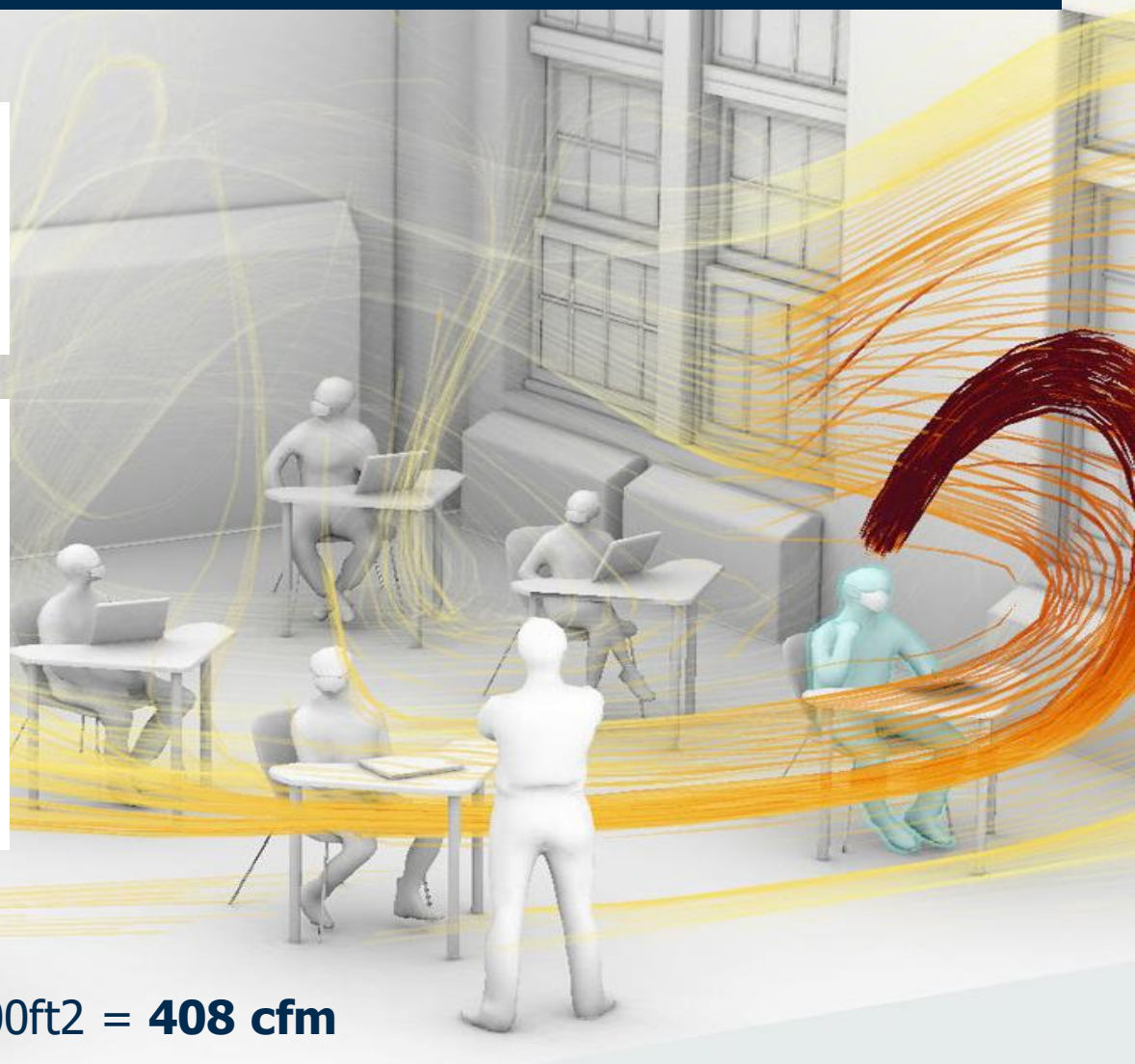
TABLE 6.2.2.1 Minimum Ventilation Rates in Breathing Zone *(Continued)*
(Table 6.2.2.1 shall be used in conjunction with the accompanying notes.)

	People Outdoor Air Rate R_p		Area Outdoor Air Rate R_a			Default Values			
						Occupant Density (see Note 4)	Combined Outdoor Air Rate (see Note 5)		
Occupancy Category	cfm/ person	L/s person	cfm/ft²	L/s·m²	Notes	#/1000 ft² or #/100 m²	cfm/ person	L/s person	Air Class
Residential									
Dwelling unit	5	2.5	0.06	0.3	F,G, H	F			1
Common corridors	—	—	0.06	0.3	H				1
Retail									
Sales (except as below)	7.5	3.8	0.12	0.6		15	16	7.8	2
Mall common areas	7.5	3.8	0.06	0.3	H	40	9	4.6	1
Barbershop	7.5	3.8	0.06	0.3	H	25	10	5.0	2
Beauty and nail salons	20	10	0.12	0.6		25	25	12.4	2
Pet shops (animal areas)	7.5	3.8	0.18	0.9		10	26	12.8	2
Educational Facilities									
Daycare (through age 4)	10	5	0.18	0.9		25	17	8.6	2
Daycare sickroom	10	5	0.18	0.9		25	17	8.6	3
Classrooms (ages 5–8)	10	5	0.12	0.6		25	15	7.4	1
Classrooms (age 9 plus)	10	5	0.12	0.6		35	13	6.7	1
Office Buildings									
Breakrooms	5	2.5	0.12	0.6		50	7	3.5	1
Main entry lobbies	5	2.5	0.06	0.3	H	10	11	5.5	1
Occupiable storage rooms for dry materials	5	2.5	0.06	0.3		2	35	17.5	1
Office space	5	2.5	0.06	0.3	H	5	17	8.5	1
Reception areas	5	2.5	0.06	0.3	H	30	7	3.5	1
Telephone/data entry	5	2.5	0.06	0.3	H	60	6	3.0	1
Multiuse assembly	7.5	3.8	0.06	0.3	H	100	8	4.1	1

ASHRAE 62.1 Minimum Ventilation Rate Procedure

TABLE 6-1 MINIMUM VENTILATION RATES IN BREATHING ZONE
(This table is not valid in isolation; it must be used in conjunction with the accompanying notes.)

Occupancy Category	People Outdoor Air Rate R_p		Area Outdoor Air Rate R_a		Notes	Default Values			Air Class
						Occupant Density (see Note 4)	Combined Outdoor Air Rate (see Note 5)		
	cfm/person	L/s·person	cfm/ft²	L/s·m²		#/1000 ft² or #/100 m²	cfm/person	L/s·person	
Educational Facilities									
Daycare (through age 4)	10	5	0.18	0.9		25	17	8.6	2
Daycare sickroom	10	5	0.18	0.9		25	17	8.6	3
Classrooms (ages 5–8)	10	5	0.12	0.6		25	15	7.4	1
Classrooms (age 9 plus)	10	5	0.12	0.6		35	13	6.7	1
Lecture classroom	7.5	3.8	0.06	0.3		65	8	4.3	1
Lecture hall (fixed seats)	7.5	3.8	0.06	0.3		150	8	4.0	1
Art classroom	10	5	0.18	0.9		20	19	9.5	2
Science laboratories	10	5	0.18	0.9		25	17	8.6	2
University/college laboratories	10	5	0.18	0.9		25	17	8.6	2
Wood/metal shop	10	5	0.18	0.9		20	19	9.5	2
Computer lab	10	5	0.12	0.6		25	15	7.4	1



- Assume: 30 students in a 30’ x 30’ x 9’ classroom
- ASHRAE 62.1: 30 x **10 cfm/person** + **0.12 cfm/ft2** x 900ft2 = **408 cfm**
- Air Changes/Hour: (408 x 60)(30 x 30 x 9) = **3 ACH**

Healthy Buildings and Cognitive Function

NEWS ANALYSIS

Employee Performance Doubled in Well-Ventilated Buildings

Reducing VOCs and adding more fresh air resulted in cognitive test scores that were 101% higher in a double-blind study.

Using Ventilation and filtration to reduce aerosol transmission of COVID-19 in long-term care homes

BUILDING FOR HEALTH

HARVARD T.H. CHAN SCHOOL OF PUBLIC HEALTH

HEALTHY BUILDINGS

TARGET IS AT LEAST 5 TOTAL AIR CHANGES PER HOUR

BC Building Code: Ventilation Requirements

- BC Building Code (BCBC) is a provincial regulation that governs how new construction, building alterations, repairs and demolitions are completed.
- Prescribes ventilation requirements based on dwelling type
  - This typically references ASHRAE 62.1 or 62.2
- Applies province-wide, except cities who have opted out (ex. City of Vancouver)
- Carbon pollution standards for new construction are stated

BCBC: Ventilation Requirements Commercial

- Rates at which outdoor air is supplied in buildings by ventilation systems shall be not less than the rates required by ASHRAE 62.1, "Ventilation and Acceptable Indoor Air Quality"
- Equation: Vbz=Rp·Pz+Ra·Az
  - Where
  - Vbz = breathing zone outdoor airflow
  - Az = zone floor area: the net occupiable floor area of the ventilation zone sq ft or sq m
  - Ra = outdoor airflow rate required per unit area as determined from Table 6-1
  - Pz = zone population: the number of people in the ventilation zone during typical usage
  - Rp = outdoor airflow rate required per person as determined from Table 6-1

	People Outdoor Air Rate R_p		Area Outdoor Air Rate R_a		Default Values Occupant Density		
Occupancy Category	cfm/ person	L/s· person	cfm/ft^2	L/s·m^2	#/1000 ft^2 or #/100 m^2	Air Class	OS (6.2.6.1.4)
Occupiable storage rooms for dry materials	5	2.5	0.06	0.3	2	1	
Office space	5	2.5	0.06	0.3	5	1	✓
Reception areas	5	2.5	0.06	0.3	30	1	✓
Telephone/data entry	5	2.5	0.06	0.3	60	1	✓

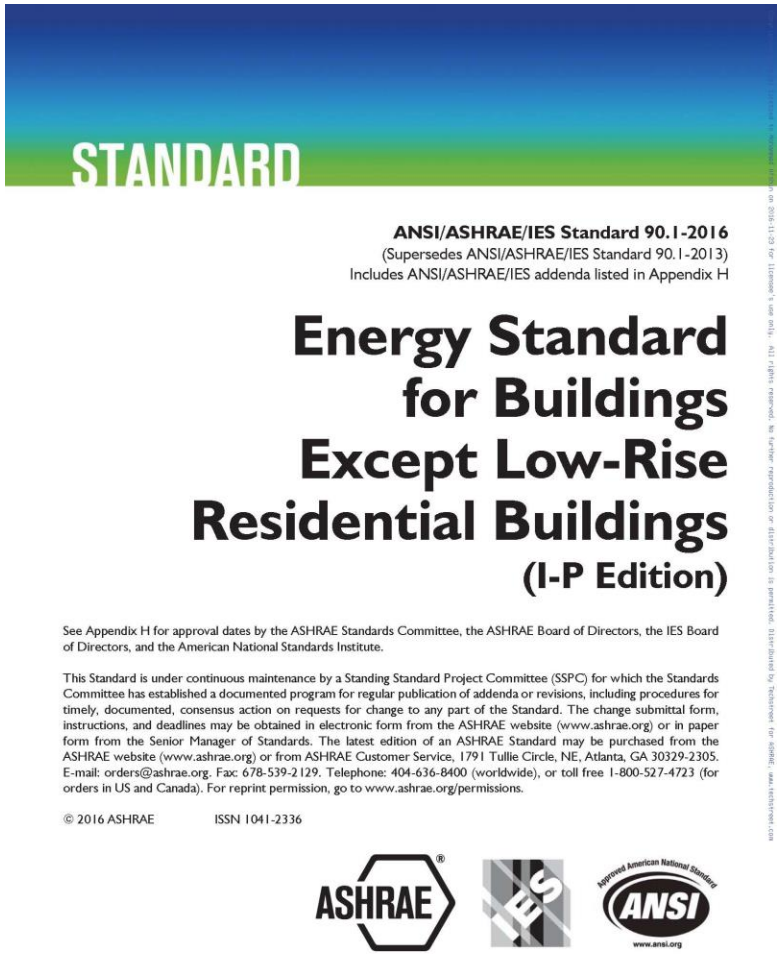
BCBC: Ventilation Requirements Multi-Unit Residential

- BCBC mandates ASHRAE 62.2 requirements for multi-unit residential ventilation.
- This can be achieved through either centralized, semi-centralized, or decentralized ventilation. Decentralized ventilation is becoming more popular.
- The goal based on the requirements below is for IAQ and occupant comfort.

TABLE 4.1a Ventilation Air Requirements, cfm (I-P)

	Bedrooms				
Floor Area, ft^2	1	2	3	4	5
<500	30	38	45	53	60
501–1000	45	53	60	68	75
1001–1500	60	68	75	83	90
1501–2000	75	83	90	98	105
2001–2500	90	98	105	113	120

ASHRAE Standard 90.1: Energy Efficiency



The standard that provides minimum requirements for energy efficiency in buildings

6.5.6.1 Exhaust Air Energy Recovery.

Energy recovery systems required (by table 6.5.6.1) shall have at least **50% total ratio.**

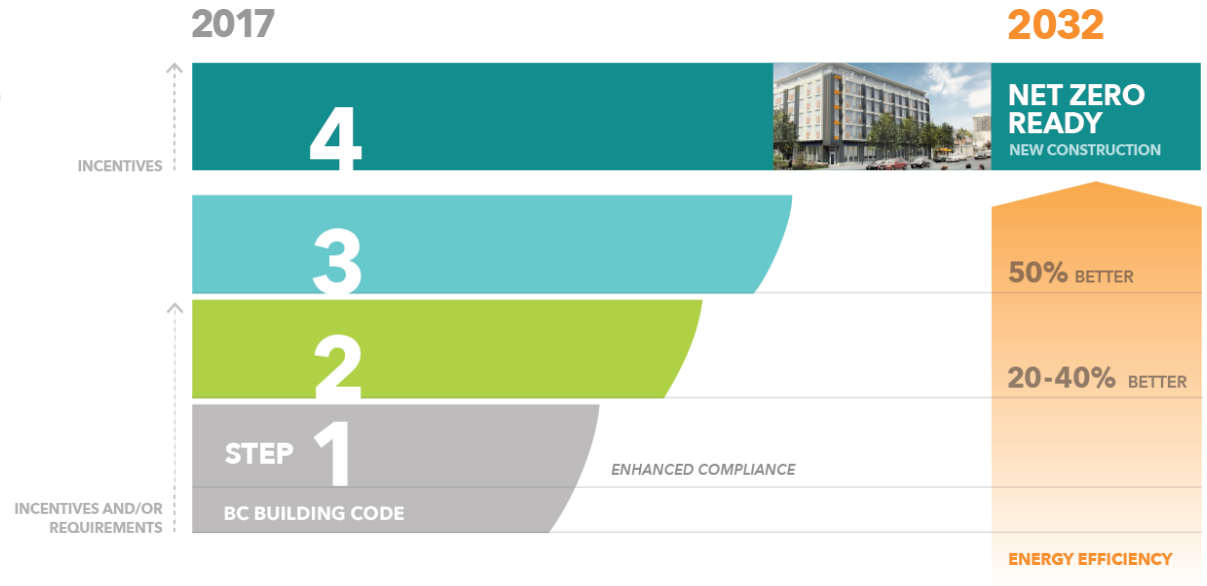
(This) shall mean **a change in the enthalpy of the *outdoor air* supply equal to 50% of the difference between the *outdoor air* and return air enthalpies** at design conditions.

ASHRAE®

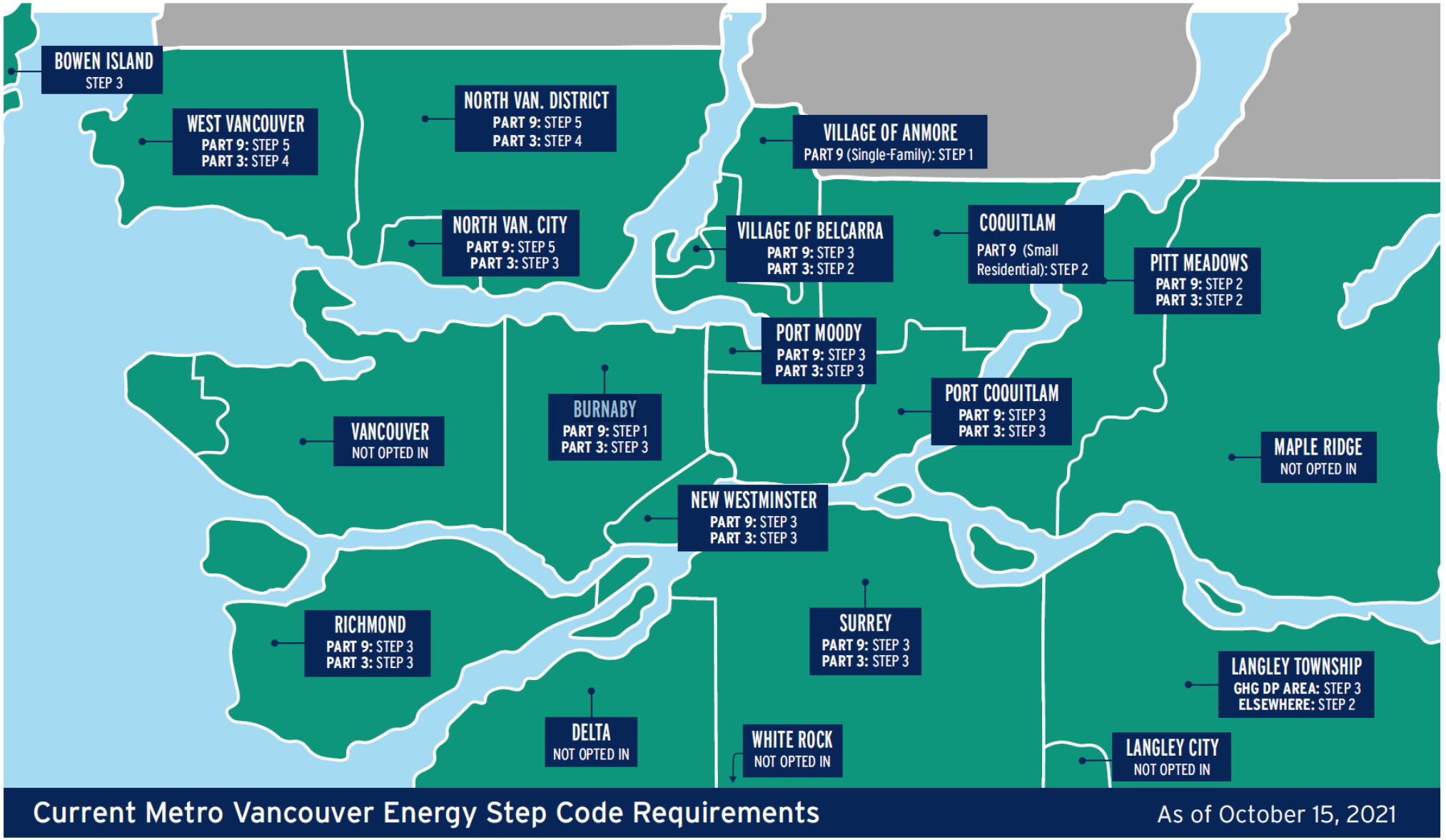
BC Energy Step Code

- Optional compliance path in the BC Building Code that municipal governments can use to incentivize a level of energy efficiency in new construction.
- Depending on building type, there are 4 to 5 Steps in the Code
- **Step 1:** Standard BC Building Code
- **Step 4/5:** Net zero design (similar to Passive House)
- Municipalities adopt each step on their own accord
- Design to encourage a performance approach vs a prescriptive approach
- Provincial BC Energy Step Code has accelerated the level of step code required for Commercial and Residential buildings by 20% for 2022.

ENERGY STEPCODE
BUILDING BEYOND THE STANDARD

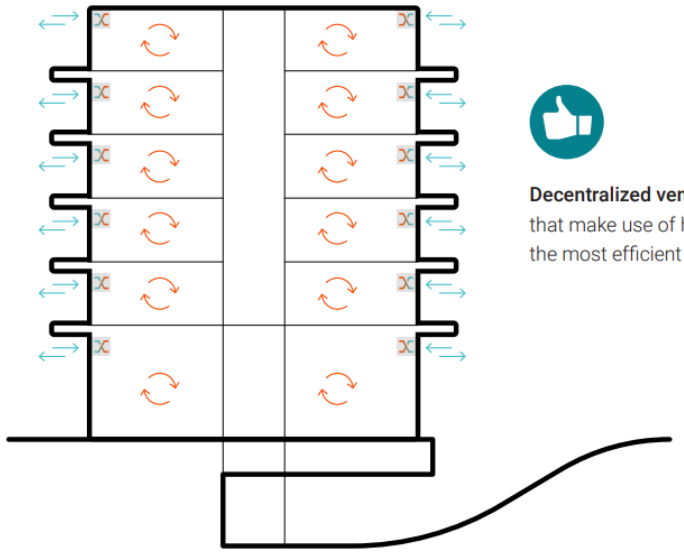


BC Energy Step Code – Adoption Timeline



BC Energy Step Code & Energy Recovery

- Step Code does not require minimum levels of heat recovery efficiency since it is a performance approach metric
- When achieving higher efficiencies on a HRV or ERV, the envelope and glazing doesn't have to be as robust
- Primary metric of focus is the TEDI & TEUI
- By 2032, market for High-Efficiency HRV's (>75%) to achieve over half of HRV sales in Metro-Van



Decentralized ventilation systems that make use of heat recovery are the most efficient

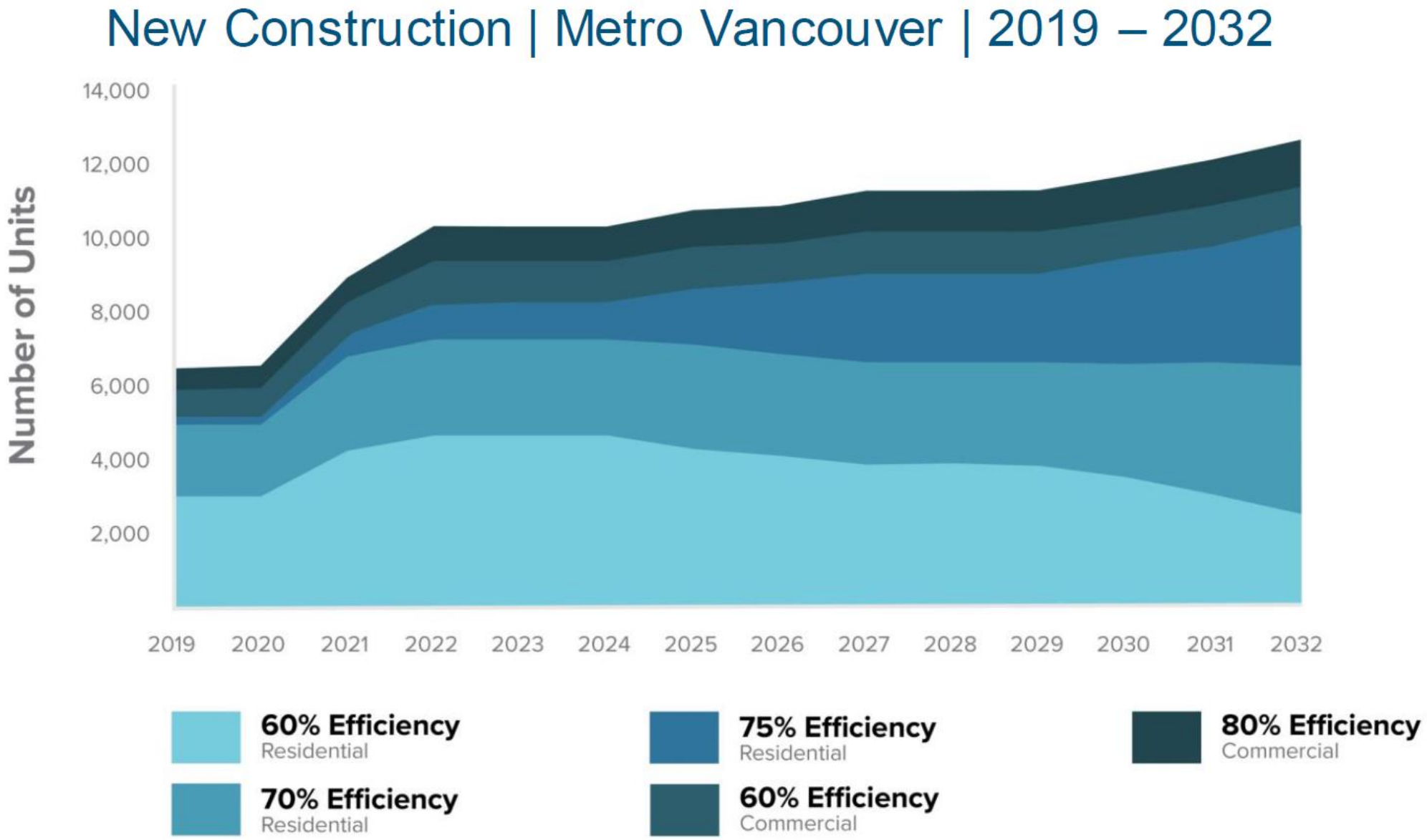
Table 3.2 Modeled heating and cooling energy savings of HRV compared to continuous balanced ventilation with no HRV

Location	Heating Degree Days†	Annual Energy Cost Savings Per Suite and % Reduction in Ventilation Heating and Cooling Energy Due to an HRV‡	
		Gas Furnace & Central AC	Electric Baseboard & No Cooling
Vancouver	2825	$170 (78%)	$300 (67%)
Toronto	3520	$170 (70%)	$580 (66%)
Montreal	4200	$120 (73%)	$360 (67%)

*Provided by BC Housing: https://www.bchousing.org/sites/default/files/rcg-documents/2022-04/Heat-Recovery-Ventilation-Guide-MURBs.pdf

Generally, Step 3 requires >75% SRE and Step 4/5 requires >80% SRE for H/ERVs.

Heat Recovery Ventilator Market: Metro Vancouver



Understanding TEDI & TEUI

TEDI (Thermal Energy Demand Intensity)

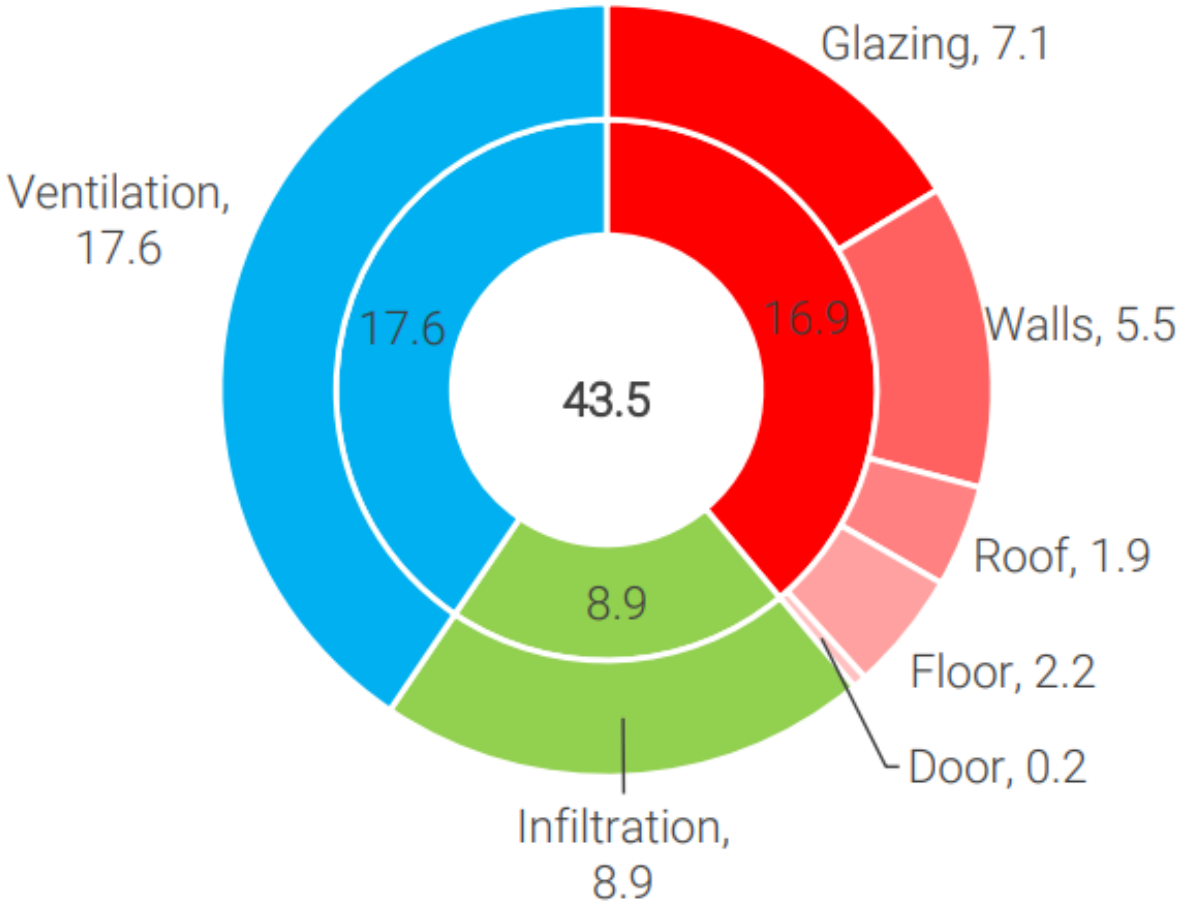
- A measure of the heat required by a building. This is primarily influenced by building enclosure insulation and airtightness and by the ventilation system. A more highly insulated, airtight enclosure with heat recovery ventilation will achieve a better TEDI value.
- TEDI is quantified on a floor area basis. It is the amount of heat load (in kWh) divided by the floor area of the building (in meters squared); the unit for TEDI is kWh/m^2.
- *The Step Code TEDI and airtightness testing requirements ensure that the building loads are reduced to a reasonable level.*

TEUI (Total Energy Use Intensity)

- A metric used to describe the building's total modeled annual energy consumption including heating, cooling, ventilation, plus lighting and plug load energy for larger residential (Part 3) buildings.
- *The Step Code TEUI requirements ensure that the building equipment and systems use energy efficiently.*

For buildings attempting to achieve a low TEDI, heat recovery from ventilation air is essential.

HRV Impact on TEDI



Step 2 MURB

- TEDI Requirement = 45kWh/m^2/year

Step 4/5 MURB (or Passive House)

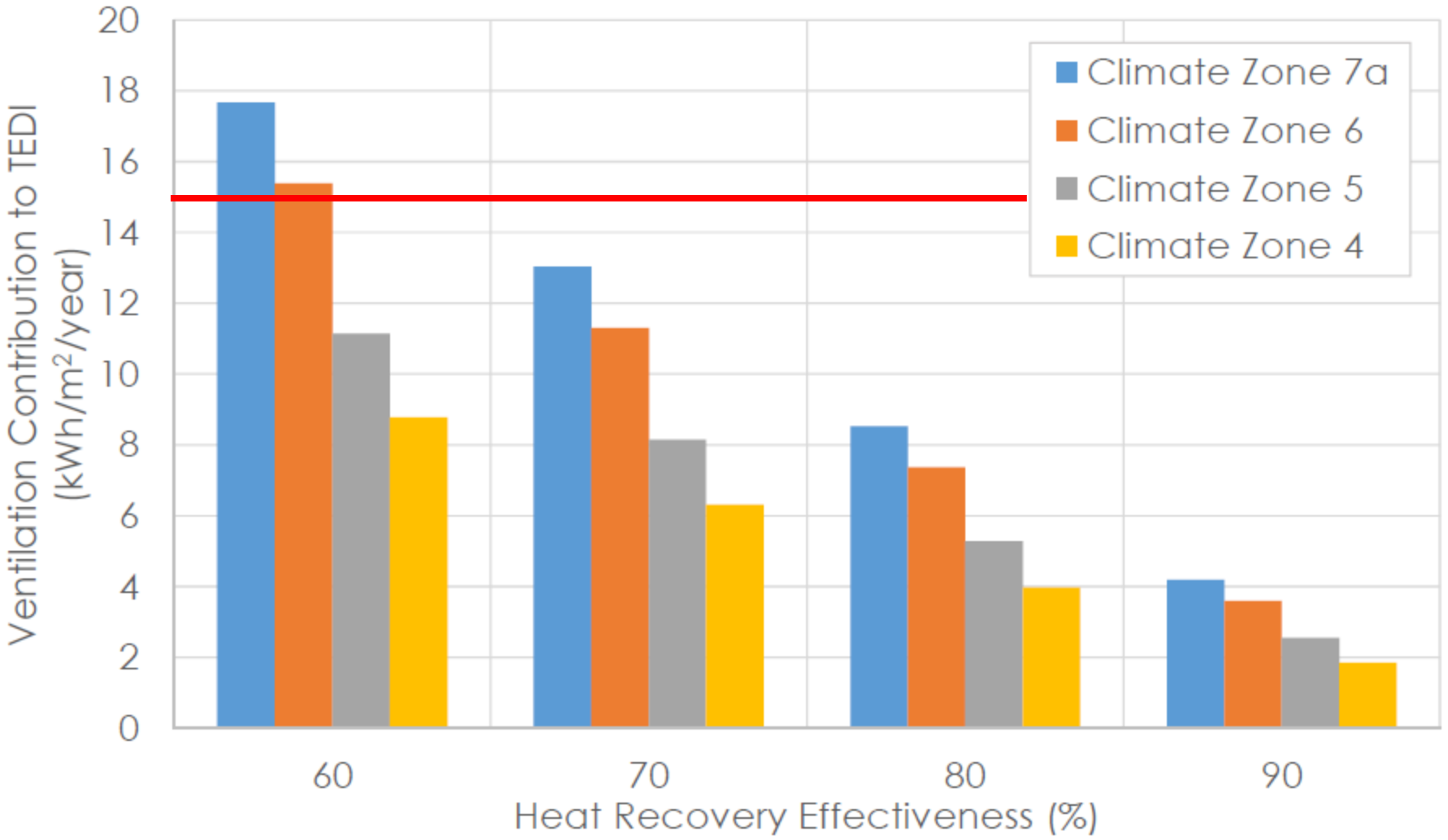
- TEDI Requirement = 15kWh/m^2/year

Compare the big 3 losses

- Ventilation
- Envelope – Infiltration
- Envelope – Assemblies
- Ventilation ~40% of TEDI

*https://edgesustainability.com/improvements-to-tedi-and-the-associated-impacts/

HRV Impact on TEDI



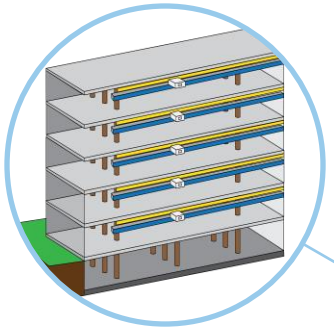
- For Step 4/5, TEDI Requirement = 15kWh/m²/year
- In Climate zone 4, implementing a high-efficiency HRV provides the following contribution to the overall TEDI score:
  - 60% SRE: 8.5 kWh/m²
  - 70% SRE: 6.2 kWh/m²
  - 80% SRE: 4.0 kWh/m²
  - 90% SRE: 1.8 kWh/m²

*Report by Morrison Hershfield
**Zone 4: Vancouver, Zone 5: Kamloops/Penticton, Zone 6: Prince George, Zone 7a: Dawson Creek

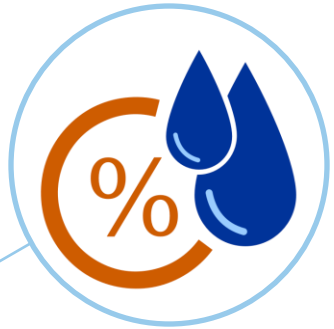
Industry Trends

Industry Trends: Dynamic Times for Construction & HVAC

Drive for Healthy and Energy Efficient Buildings



Decentralized Ventilation



Importance of Dehumidification and Humidification

Electrification of Buildings

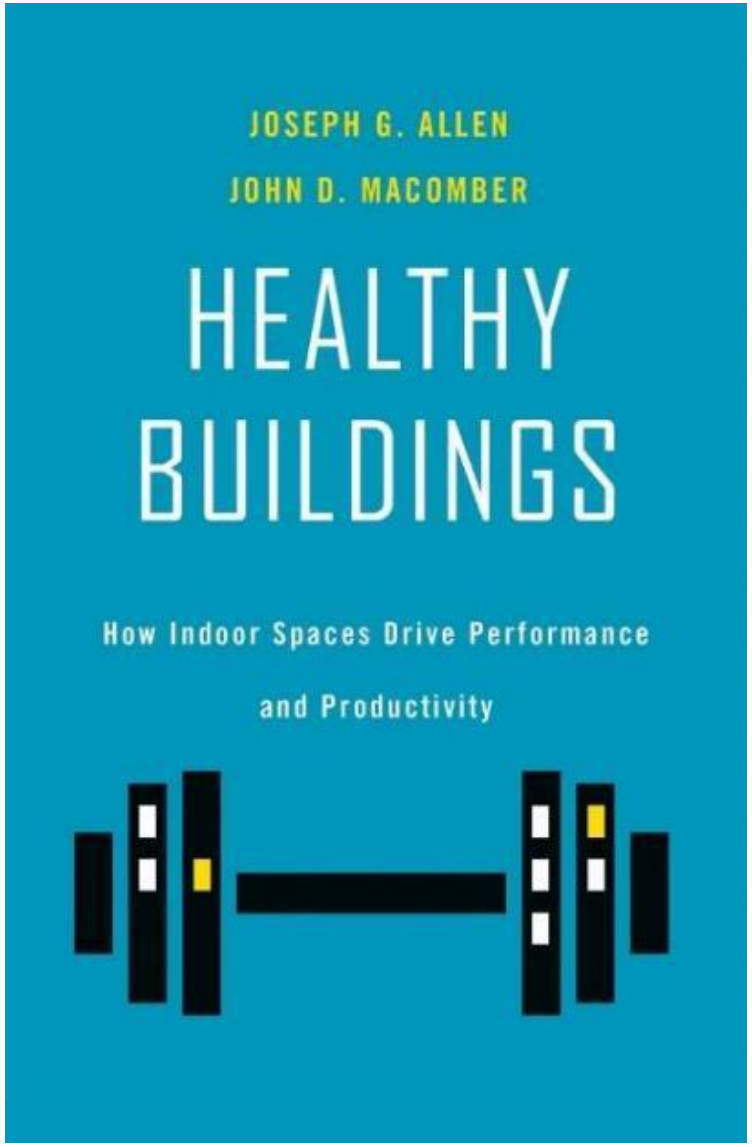
Advancement of Building Codes

Digitalization & Intelligent HVAC

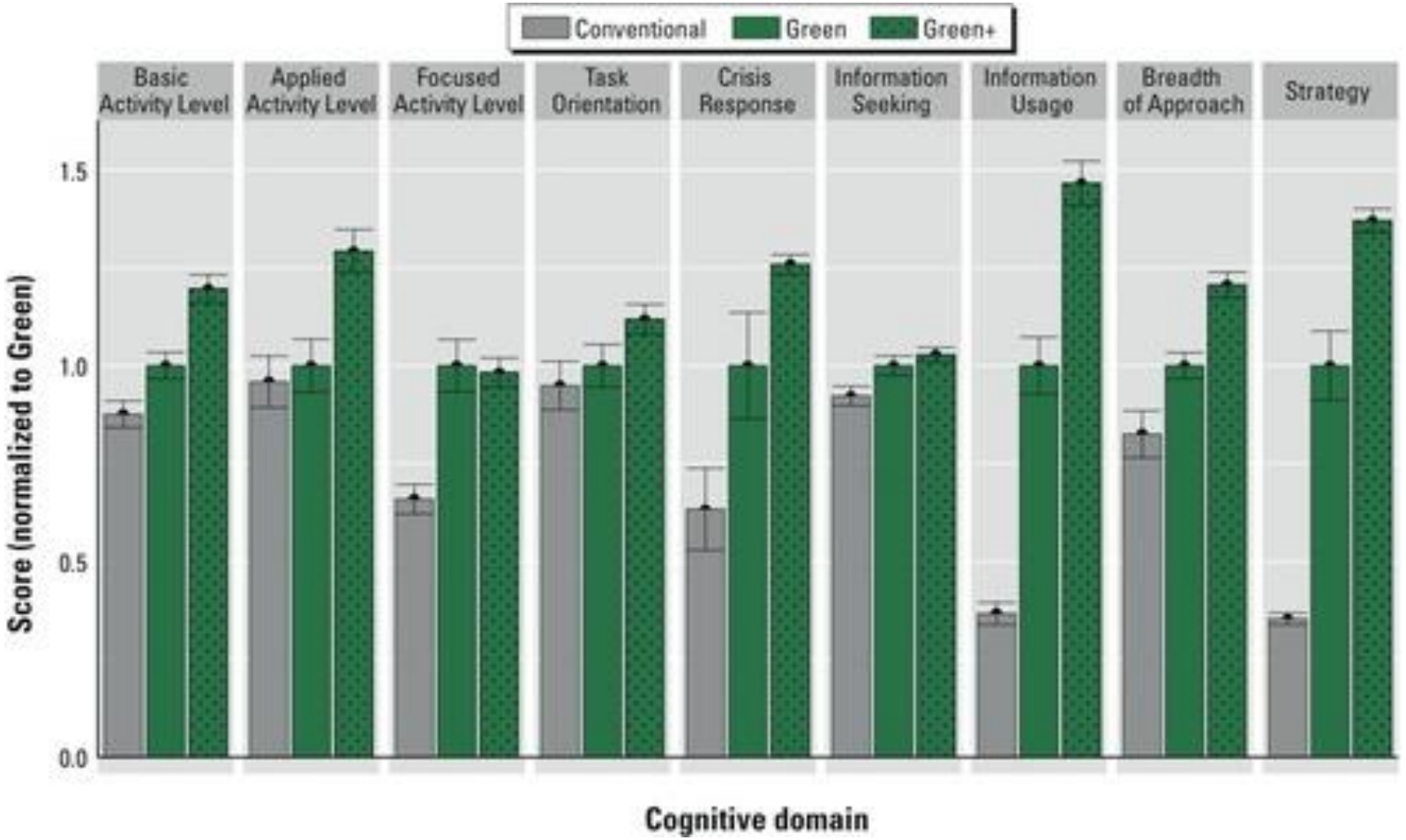
More Awareness on IAQ, Ventilation, and Filtration

https://www.youtube.com/watch?v=1BeEfDLDJSA

Healthy Buildings and Cognitive Function



Associations of Cognitive Function Scores with Carbon Dioxide, Ventilation, and Volatile Organic Compound Exposures in Office Workers: A Controlled Exposure Study of Green and Conventional Office Environments



https://www.forbes.com/sites/jamiehailstone/2022/10/21/can-energy-efficiency-for-buildings-and-indoor-air-quality-ever-be-reconciled/?sh=3431f5651edf

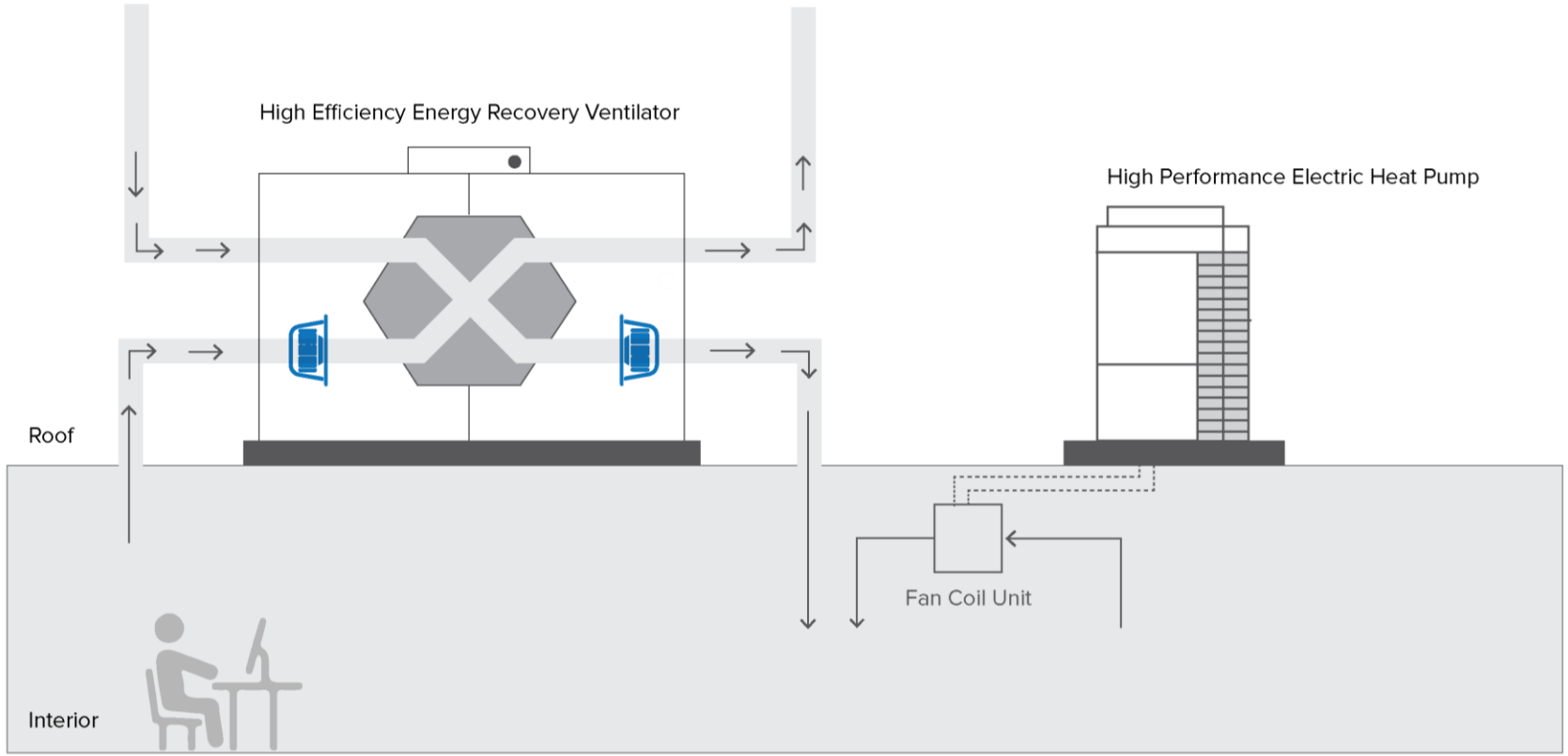
Yes: Increase Ventilation Rates with a Low Energy Penalty

"Increase ventilation rates from 20/cfm/person to 40 cfm/person with a cost of less than $10/person/year"

Joseph Allen

- High Efficiency Energy Recovery Ventilation
- Less Fan Energy: ECM Fans, Lower Pressure Drop from Short Duct Runs
- Free Cooling with By-Pass and Natural Ventilation
- Heat-Pumps with a High COP
- Smart Controls: Demand Control Ventilation

Typical Office Building Sizing Exercise



Ventilation Rate Procedure Calculation

$V_{bz} = R_p \times P_z + R_a \times A_z$

V_{bz} = [5 x 120] + [0.06 x 10,000] = **1,200CFM**

[1,200 x 60] ÷ [10,000 x 9] = **0.8 ACH**

1200 ÷ 120 = **10 CFM/person**

Cooling Capacity of Ventilation Air (@13°C)

$Q_T = 4.5 \times CFM \times (h_2-h_1)$

Q_T = 4.5 x 1,200 x (28.15-22.6) =

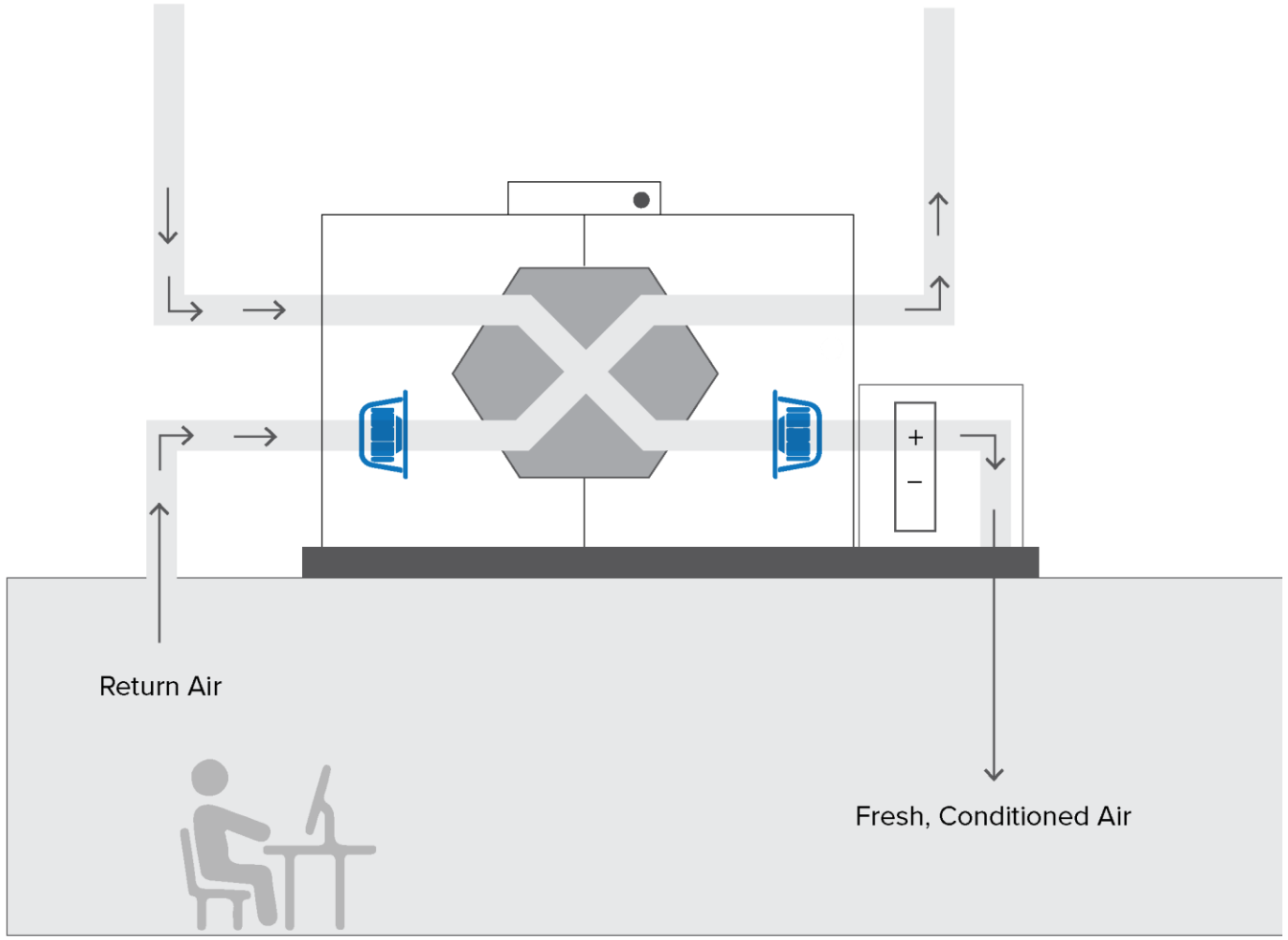
29,970 Btu ÷ 10,000 = 2.99 Btu/ft2 **= 9.4 kWh/m²**

h_1 is the enthalpy of 55F/54F=22.6 Btu/lb

h_2 is enthalpy of 75F, 50%RH=28.15 Btu/lb

10,000ft² [930m²] (9' [3m.] ceilings) | 120 Occupants | ASHRAE 62.1 2019 Minimum Ventilation Rate

Ventilative Cooling



Increase the ventilation rate to the point where heating and cooling is no longer required, while improving the overall IAQ!

	0.8 ACH	1.6 ACH	3 ACH
Ventilation Rate (CFM)	1200	2400	4500
CFM/person	10	20	37.5
Cooling Capacity of Ventilation Air @ 13°C (kWh/m^2)	9.4	18.9	35.5
Additional H&C System Required?	Yes	Maybe	**No**

High Efficiency Split DOAS: Vancouver Conditions

Summer
OA 26.7C DB / 20C WB
RA 24C DB / 17C WB
Winter
OA -9.4C DB / -10C WB
RA 21C DB / 11.7C WB

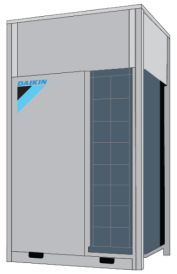
Airflow
SA/RA 4500/4000CFM
ESP 1 in.w.c.

Counter Flow Energy Recovery
77.1% SRE, 67.7% LRE, 70.7% TRE

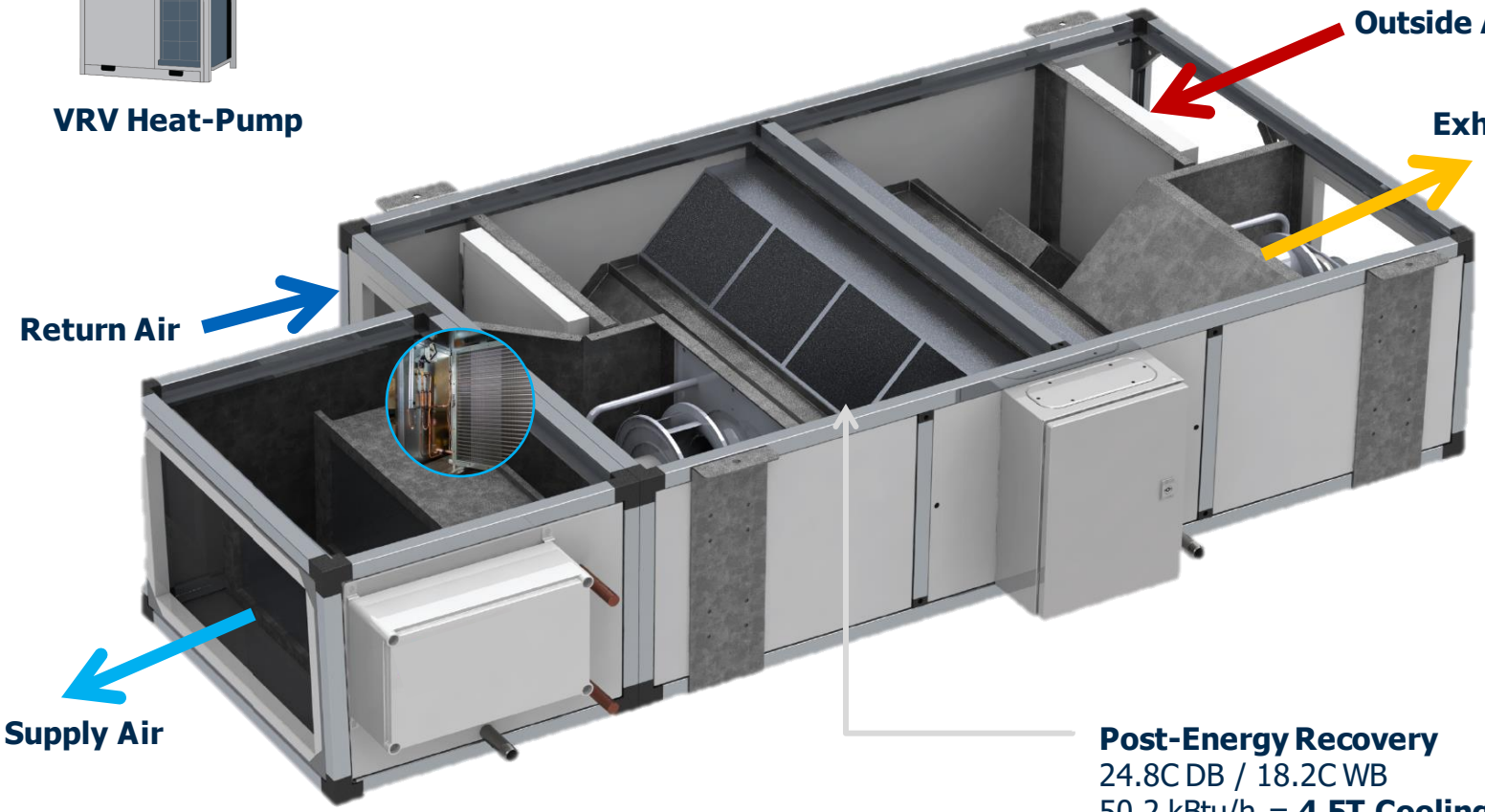
ECM Fans (Supply + Return)
1 W/CFM

Temperature Control
Cooling 13C

Electric Heat Pump
COP 3-4

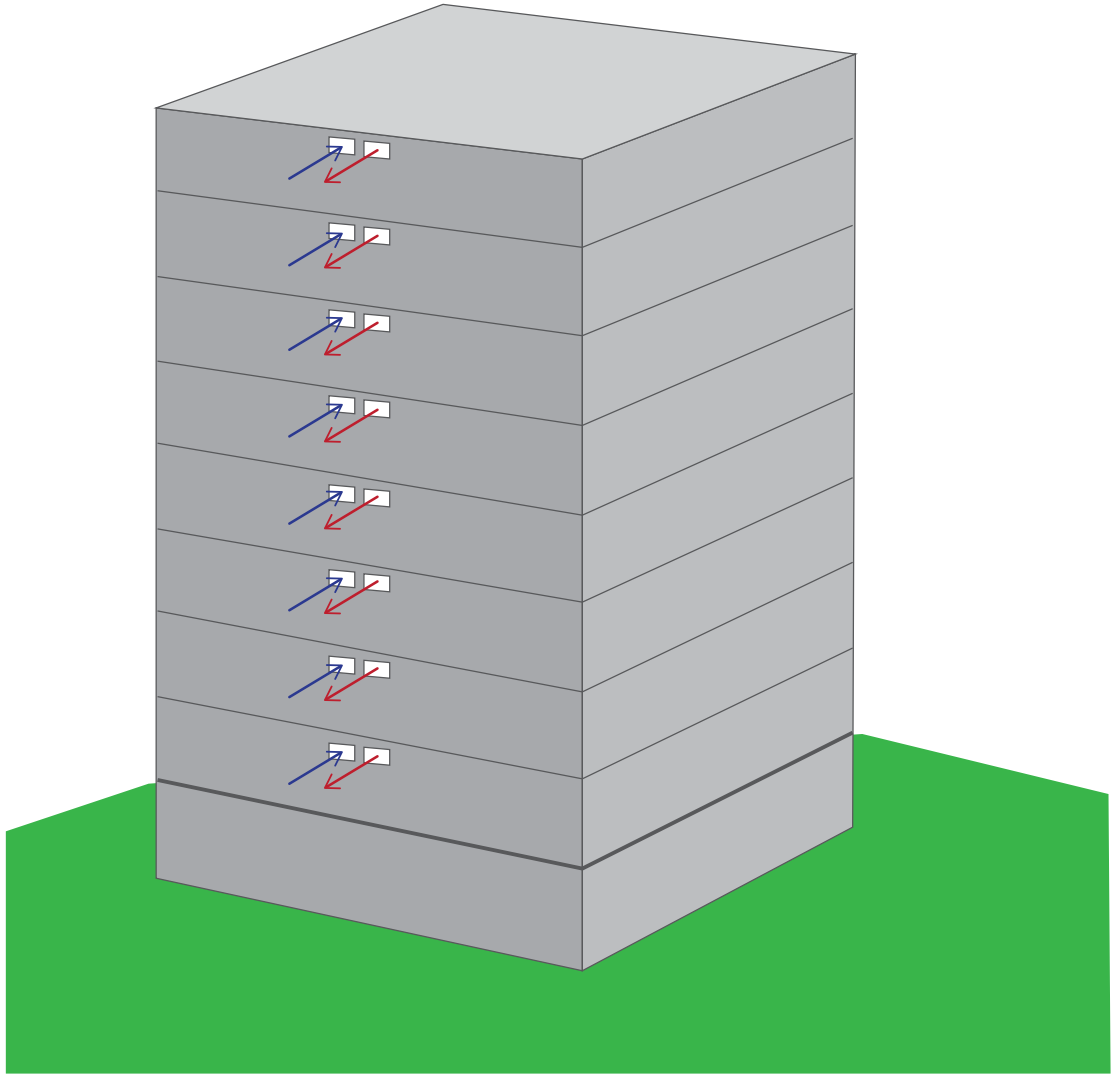


VRV Heat-Pump



Post-Energy Recovery
24.8C DB / 18.2C WB
50.2 kBtu/h = **4.5T Cooling Capacity Savings**

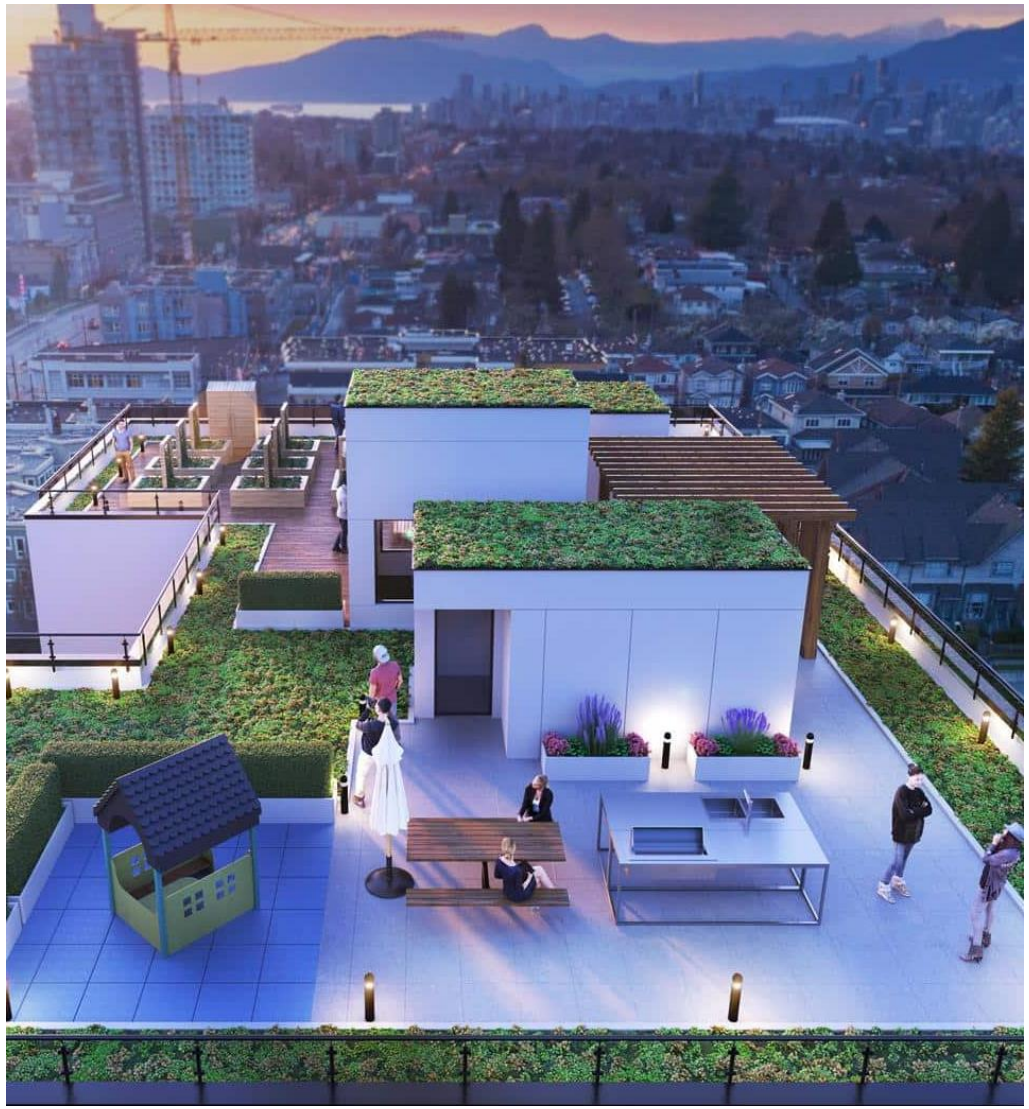
Decentralized Ventilation: What is It?



Decentralized System Construction

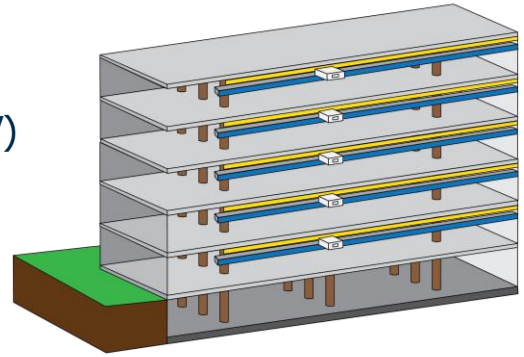
- Distributed mechanical system designs turn one building into many buildings constructed on a single structure.
- Many complexities associated with large systems, like stack effect, are mitigated by drastically shrinking system size.

Decentralized Ventilation



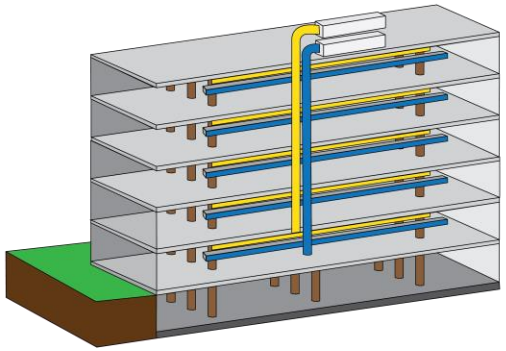
Advantages

1. Frees up roof space for rooftop terraces
2. Easier to control flow of air to zones (DCV)
3. No vertical duct chases
4. Longer equipment life inside
5. Low fan energy (with short duct runs)
6. Does not require roof penetrations
7. No smoke/fire dampers
8. Redundancy
9. No need for helicopter or crane lifts
10. Easy to install in ventilation retrofits



Disadvantages

1. More filters to change
2. Need space in the ceiling, wall or small mechanical room
3. Additional louvers to building envelope



Financial Incentives for Very High Efficiency DOAS

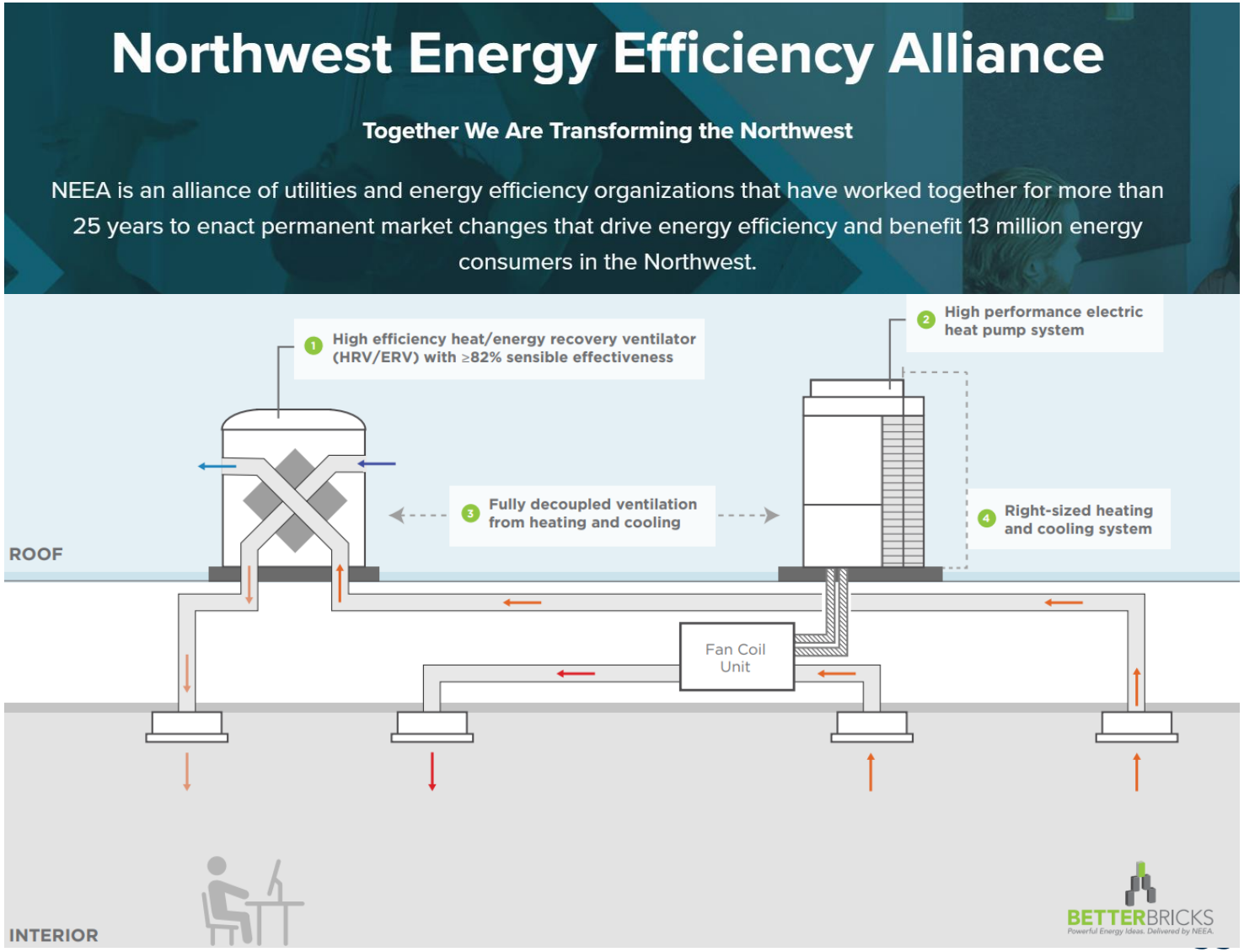
NEEA: Washington, Oregon, Idaho and Montana

> 82% SRE

Approved List of OEMs

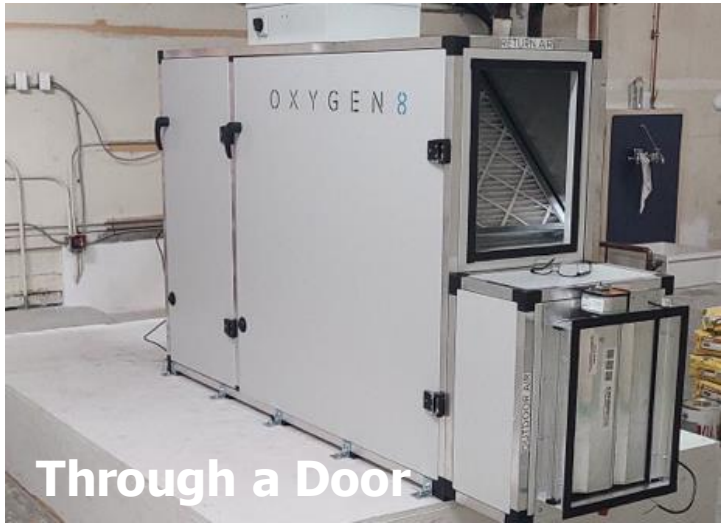
Recommendations

- Variable Speed Fans
- Bypass: Free Cooling
- MERV 13 Filters
- Oversized Ductwork
- Supplemental Heating/Cooling through ERV



Oxygen8 Ventilation Solutions

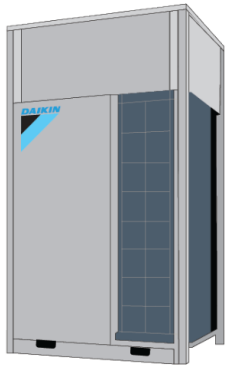
Fresh Air That Fits



Very High Efficiency DOAS

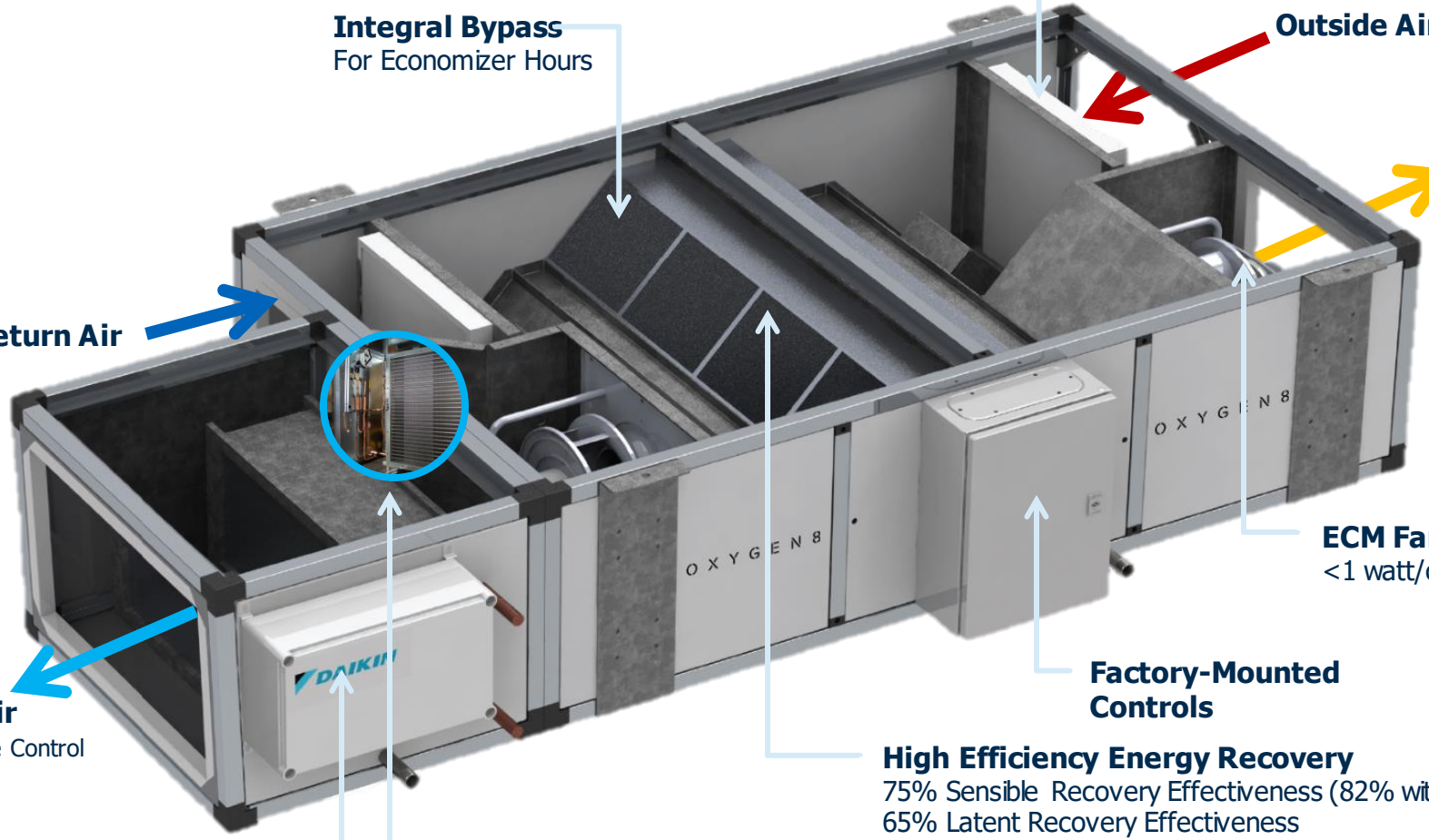
100% Fresh Air with High Air Changes Per Hour at a Low Energy Penalty

1. Free Up Valuable Roof Space
2. Better Air Distribution Control
3. No Vertical Duct Chases
4. Longer Equipment Life
5. Fresh Air That Fits (Easy Retrofits)



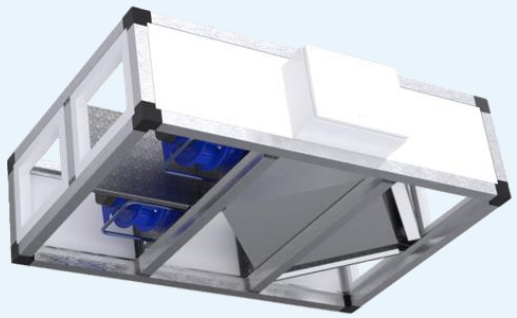
VRV Heat-Pump
COP-3-4

Supply Air
Temperature Control

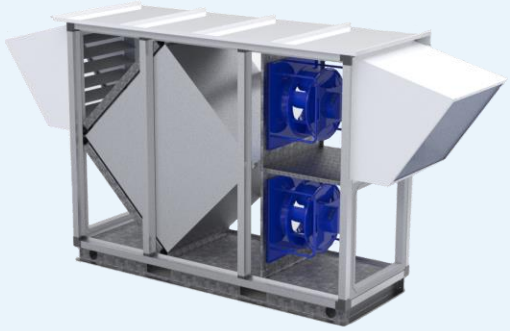


Ventilation Solutions

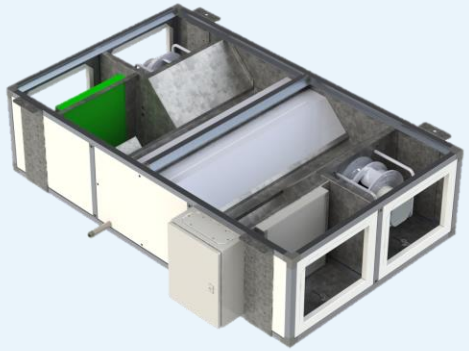
Commercial Solutions



Nova Indoor DOAS (325 - 3500 cfm)
Cross-flow ERV Core



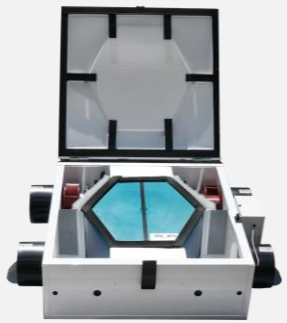
Nova Outdoor DOAS (500 – 10,000 cfm)
Cross-flow ERV Core



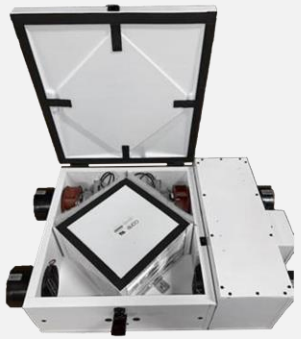
Ventum H DOAS (300 - 3000 cfm)
Counter-flow ERV Core/Bypass

Residential Solutions

Salda HRV (100-300cfm)
84% SRE, Passive House Certified
Counter-flow Core



Vita HRV (130 cfm)
Counter-flow core



Pura ERV (130cfm)
Cross-flow core | US ONLY

+440 Projects Won/Shipped/In Production

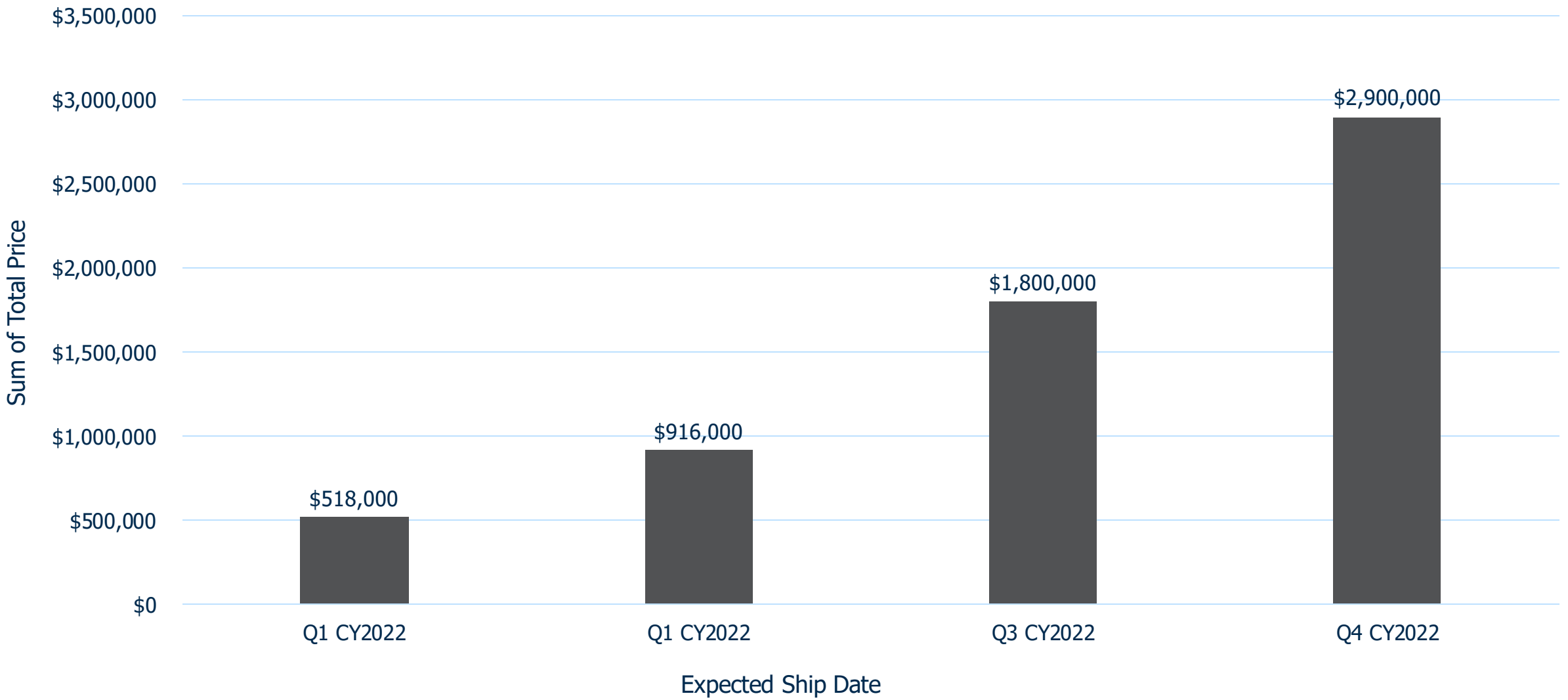
98 SCHOOLS

140 OFFICES

+200 Other Applications

Airport, Banks, Cannabis, Cemetery, Churches, Clinics, Community Centers, Day Cares, Fire Station, Fitness Studios, High-Rise Residential, Hospitals, Hotel, Libraries, Medial Clinics, Mid-Rise Residential, Military, Mixed-Use Residential, Museum, Retail, Senior Care, Shelters, Town Halls, Restaurants

Increase in Revenue and Production Throughput



Local Success Stories


SENIOR CARE
VENTILATION RETROFIT

Slalom Office in Marine Heritage Building

LOCATION: Vancouver, BC

SITUATION: The office space in this historic building downtown Vancouver required a ventilation retrofit to bring fresh filtered air into the space.

SOLUTION: 1 Nova C24

WHY: IT FIT JUUUUUST RIGHT
The low-profile Nova unit was ideal for the tight installation space in the office building mechanical room.

Student Residence Retrofit

Our First Project!

LOCATION: Monashee, BC

SITUATION: The 28-year old student residence housing 186 students had minimal ventilation, a sloped roof, concerns about COVID-19 and minimal space in their mechanical room.

SOLUTION: 4 x Oxygen8 Nova with Daikin VRV Integration

WHY: Investing In The Future
To mitigate risk of COVID-19 in the dorm rooms, air is delivered to each room at ideal conditions. The Oxygen8 Nova units are ceiling mounted in the mechanical rooms and decoupled DX coils in the attic are ducted to a DOAS connected to VRV condensing units.

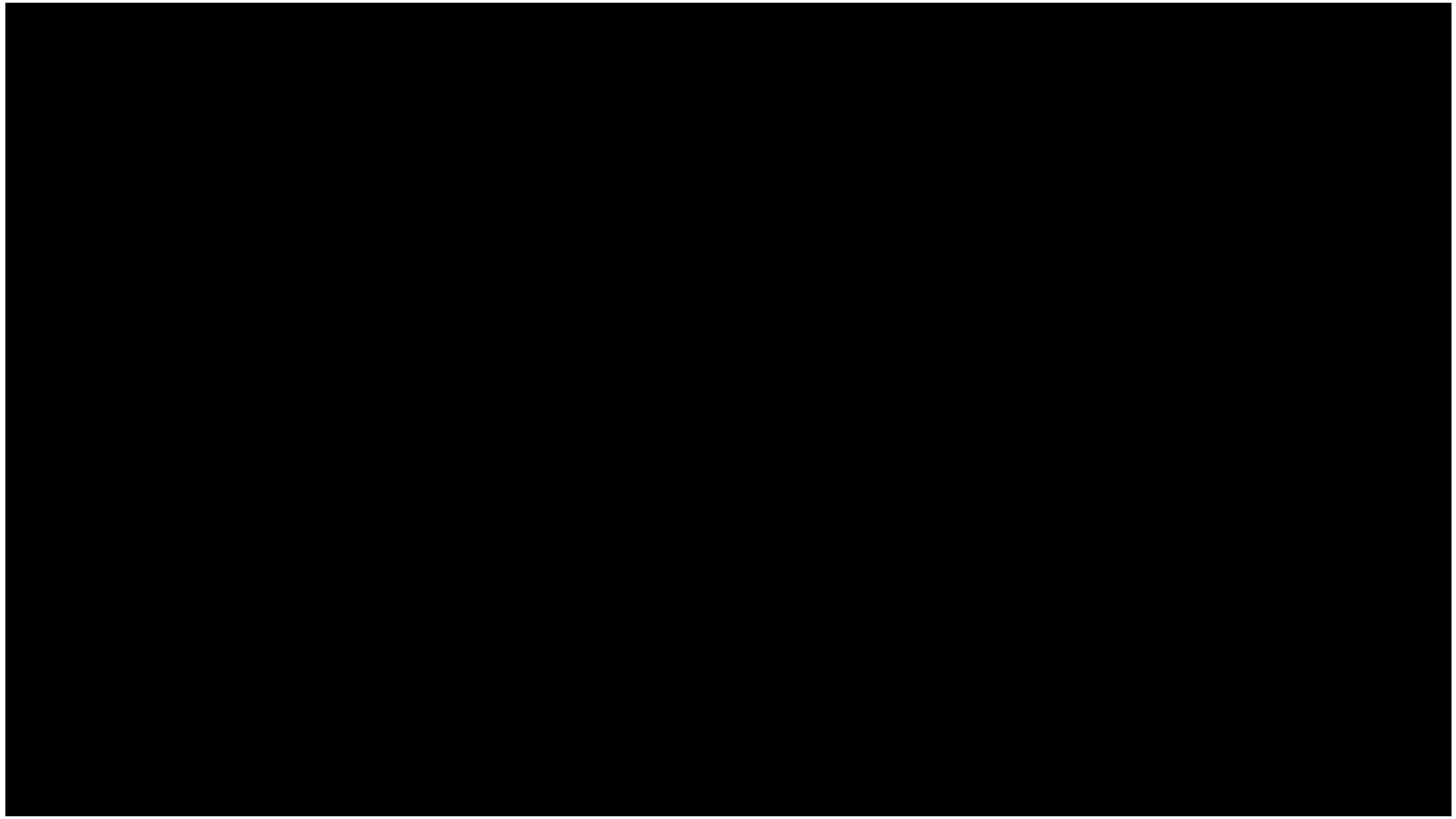
Student Residence Retrofit, UBC

Innovative Fitness Studio Ventilation Retrofit

CO2 Levels dropped from 2000 ppm to 800 ppm after installing the Oxygen8 System

Check out the case study on our YouTube channel!

444 Kootenay | Multi-Family Residential



Oxygen8's First Large Volume Multi-Family Residential Project!

190 Vita Units will be installed in two towers at Kootenay and Boundary Rd.

New Office Tower 1166 West Pender, Vancouver

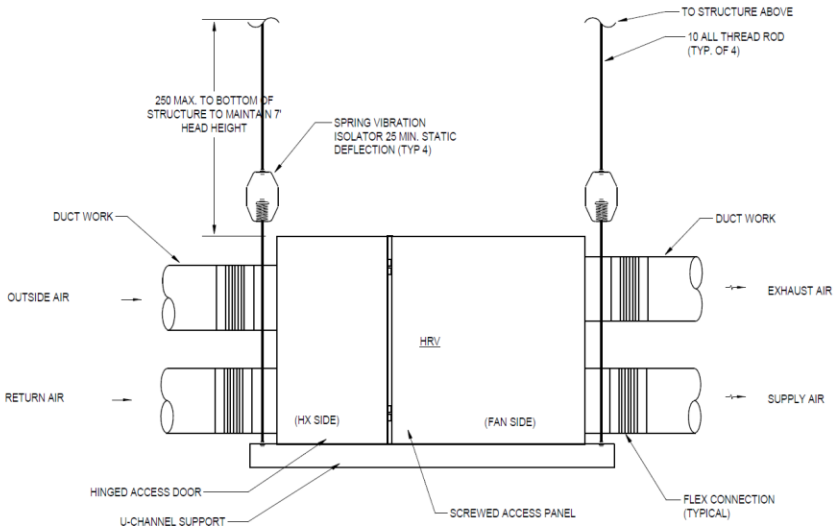
Oxygen8 is Basis of Design for this project.

Cascading series of **green terraces on the top nine floors** is possible with decentralized ventilation

To reflect the realities of workspaces following the pandemic, **each floor of the building features dedicated fresh air systems**, superior air filtration and the WELL rating system designed to assess health and wellness features.

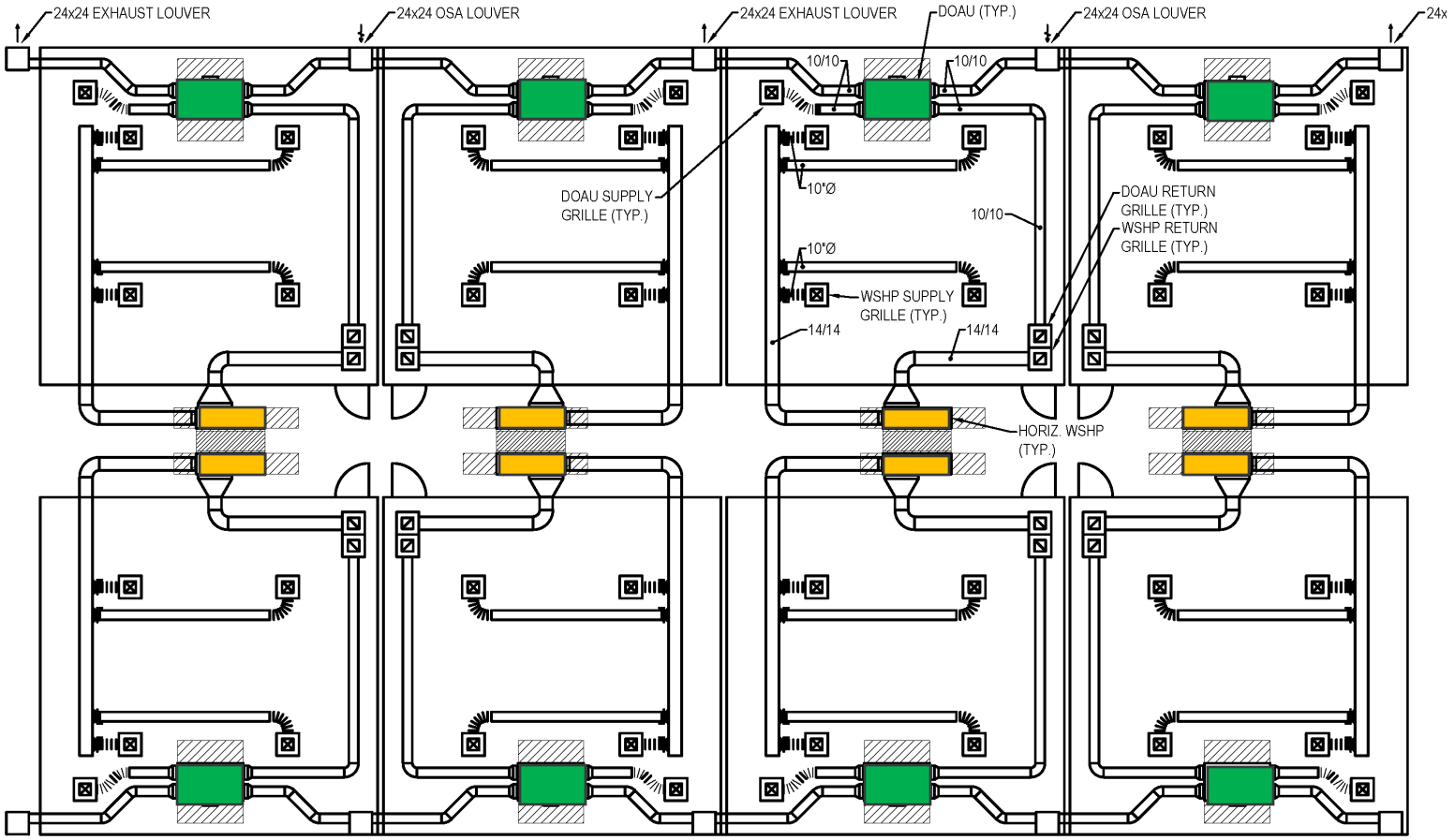
RELIANCE PROPERTIES

Hines



Skyline Elementary School: Tacoma Washington

Oxygen8 High Efficiency HRVs (29 Units)
and Daikin Water Source Heat-Pumps



New Ventilation Solutions

Ventum Lite Counterflow Core H/ERV

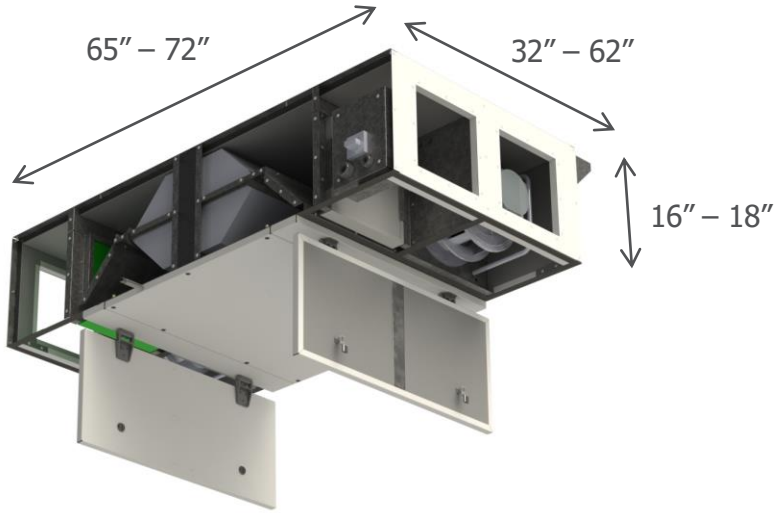
450 – 1200 cfm

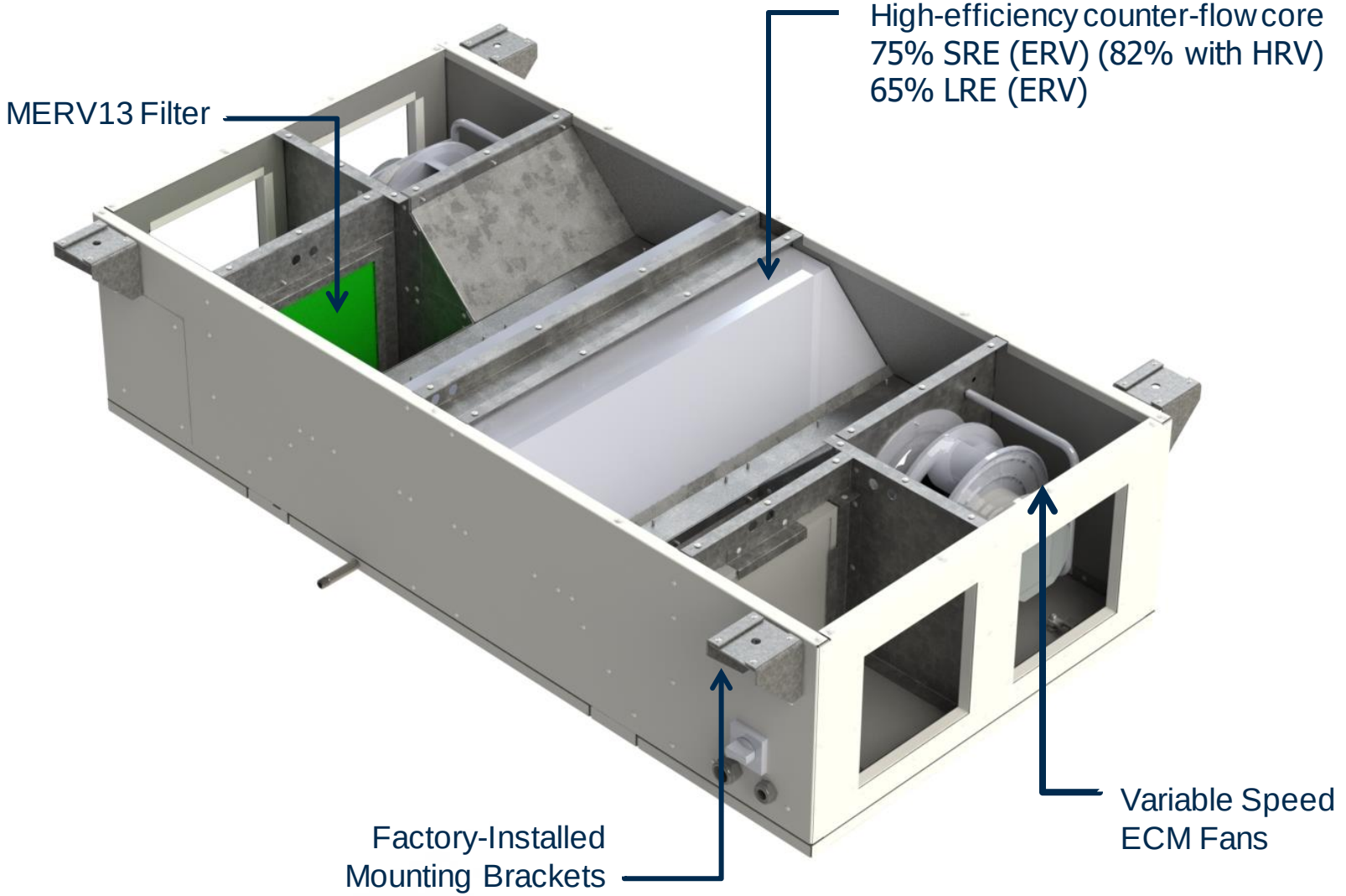
Standard Terminal Strip Controls

Ceiling Mounted

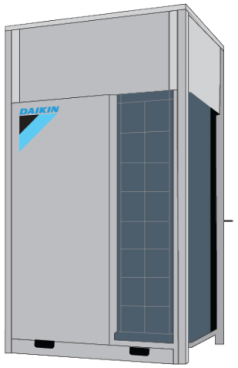
75.7% Sensible Recovery Effectiveness

Cost Competitive High-Performance H/ERV for School and Office Applications

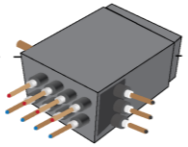




DOAS with Dehumidification using Hot Gas Reheat



VRV 4X Air Source Heat Recovery
COP-3-4



Branch Selector Box

Outdoor Air
DB 95F / WB 78F / 47% RH

Exhaust Air

Return Air
DB 75F / WB 62.5F / 50% RH

Supply Air
DB 72F / WB 60F / 52% RH

Temperature and Humidity Control

Reheat Coil

Cooling Coil

HGRH Controller

DB 55F / WB 54F / 94% RH

Post-Energy Recovery
DB 80.95F / WB 68.8F / 54.7% RH

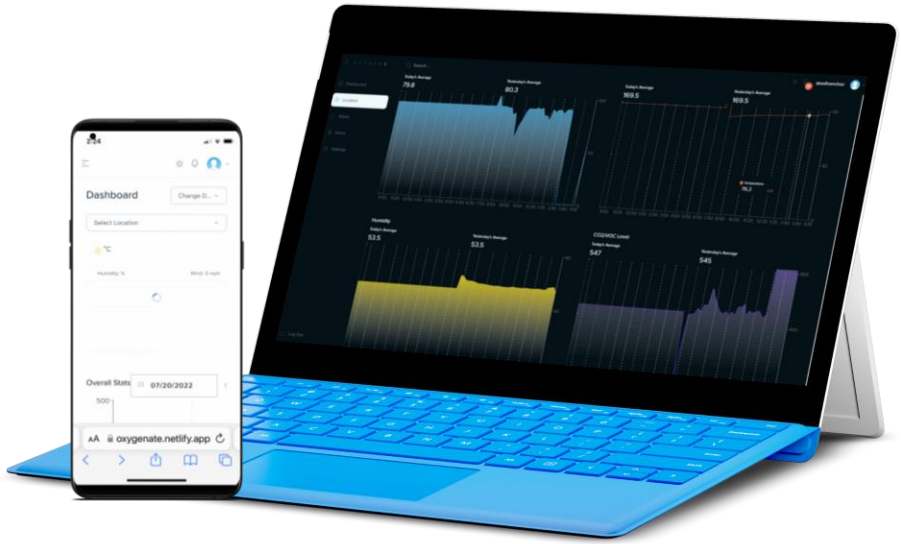
Project Highlight: Bucknell University Dorms

Ventilation Retrofit for Bucknell University Student Dormitory
First Hot Gas Reheat Project with Daikin

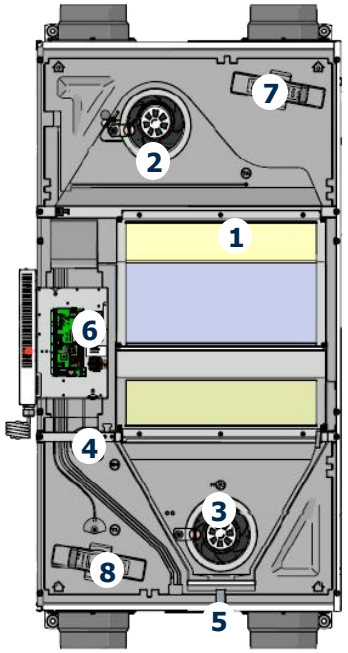
IAQ Dashboard

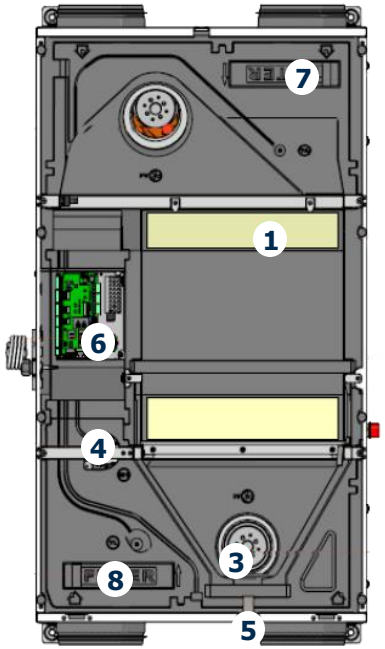
Maintain Optimal Indoor Environments by Monitoring IAQ in Real-time

- CO2, VOCs, PM2.5
- Air Changes Per Hour
- Relative Humidity
- Temperature



Salda XP – Passive House Certified H/ERV



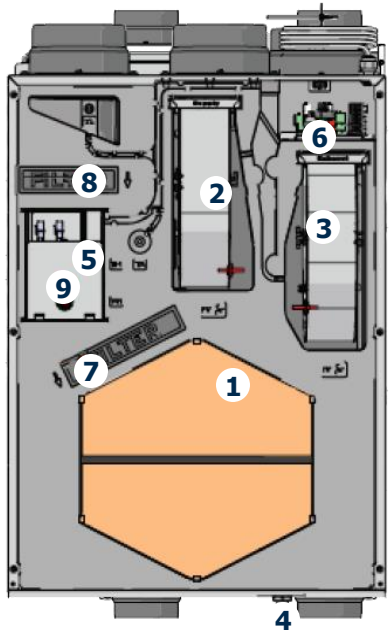


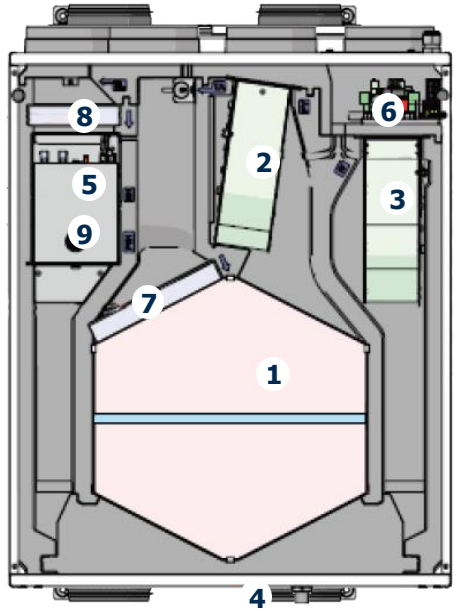
1. Counterflow Heat Exchanger
2. Supply Fan
3. Exhaust Fan
4. Bypass Damper
5. Drain Connection
6. Controller,
7. RA Filter Pocket
8. SA Filter Pocket

CERTIFIED COMPONENT
Passive House Institute

Model	Size (L x W x H)	Airflow (cfm)	Passive House Airflow (cfm)	SRE	Orientation	Passive House Certified?	Weight (lbs)
2XP	42.7 x 23.2 x 9.8	18 – 129	56 – 82	85%	Horizontal	Yes	66
3XP	54.4 x 26.9 x 12.7	29 – 206	61 – 146	85%	Horizontal	Yes	117
4XP	54.4 x 26.9 x 12.7	59 – 341	N/A	85%	Horizontal	No	117

Salda XV – Passive House H/ERV





1. Counterflow Heat Exchanger
2. Supply Fan
3. Exhaust Fan
4. Bypass Damper
5. Drain Connection
6. Controller
7. RA Filter Pocket
8. SA Filter Pocket
9. Bypass Damper

CERTIFIED COMPONENT
Passive House Institute

Model	Size (L x W x H)	Airflow (cfm)	Passive House Airflow (cfm)	SRE	Orientation	Passive House Certified?	Weight (lbs)
2XV	23.4 x 12.4 x 28.8	18 – 109	27 – 68	85%	Vertical	Yes	59
3XV	23.6 x 21.2 x 35.4	29 – 218	63 – 160	85%	Vertical	Yes	86
4XV	23.6 x 21.2 x 35.4	59 – 341	N/A	85%	Vertical	No	86

Coming Soon

Vita ERV with Heat Pump Integration

30 – 100 cfm

High performance, indoor applications

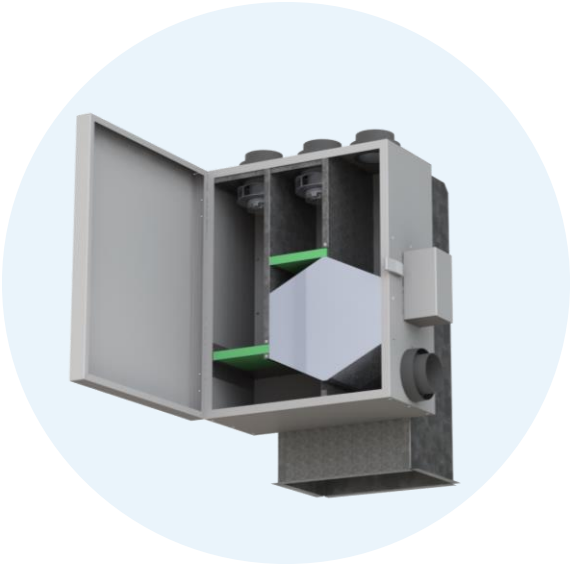
75% SRE @ 80 cfm

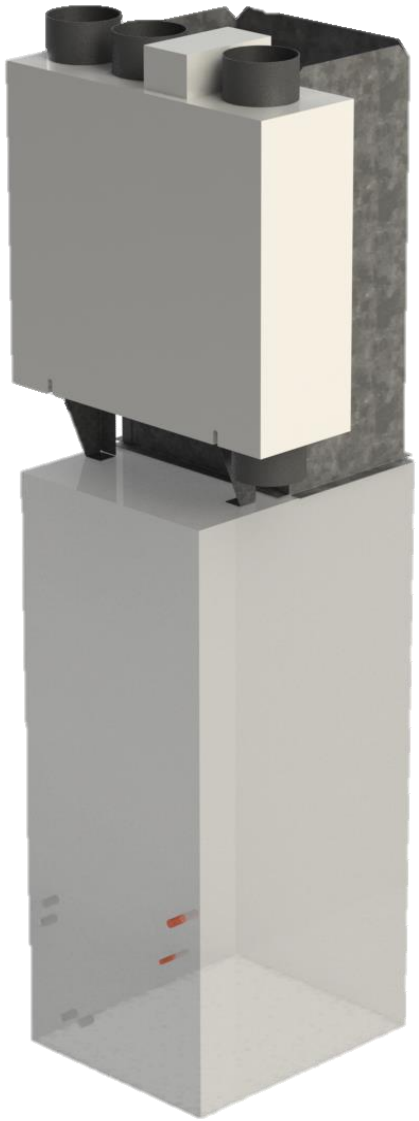
Vertical mounted E/HRV designed to be mounted onto a vertical VRF configured fan coil

Dimensions

7.5” Depth x 23.25” Length* x 24” Width

*Excluding supply plenum





Horizontal ERV for MURB with Heating & Cooling Integration

Initial prototype design will be based on hydronic installation, with DX available in future

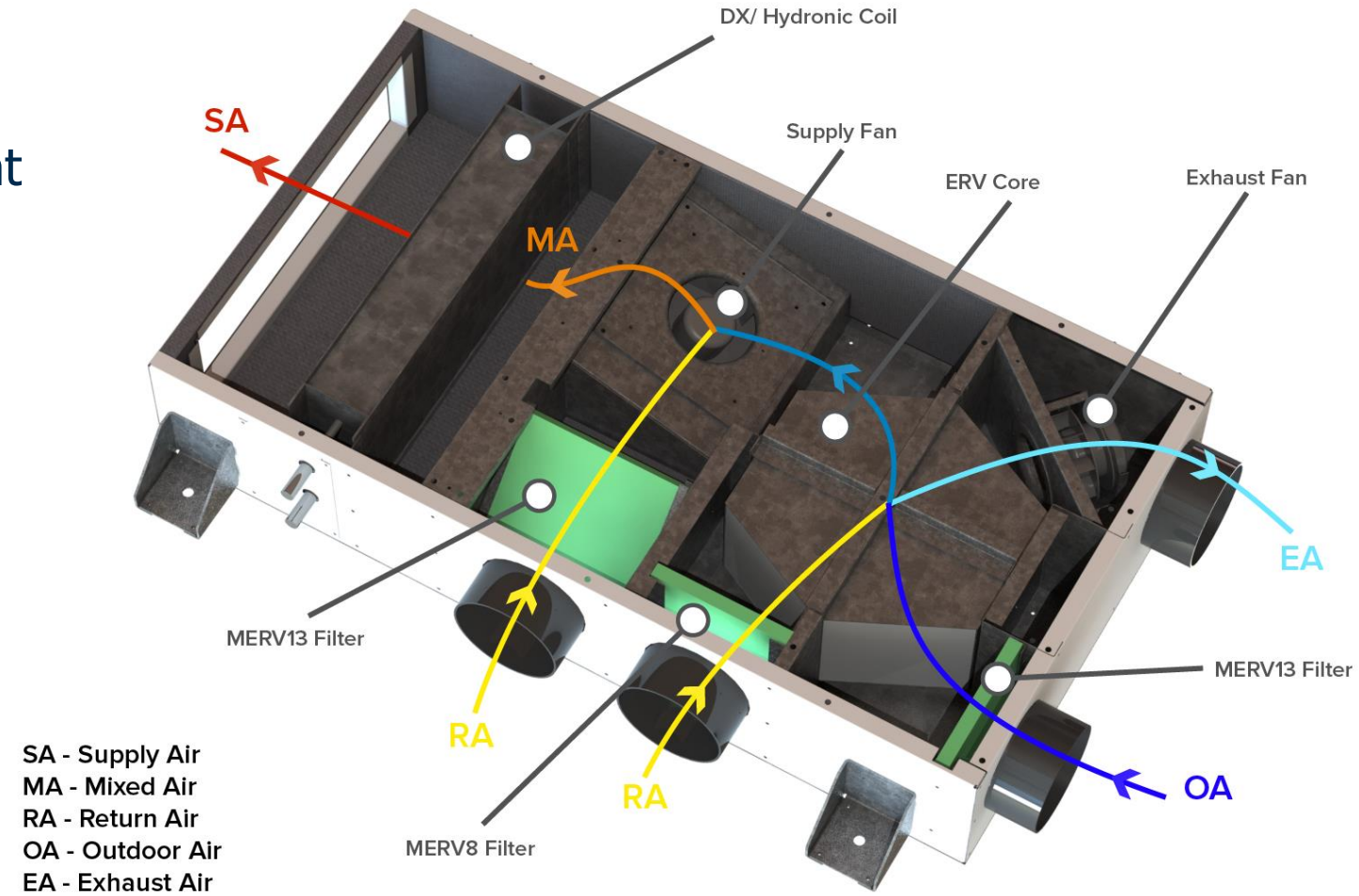
EPP molded casework in development

Airflow Capacity

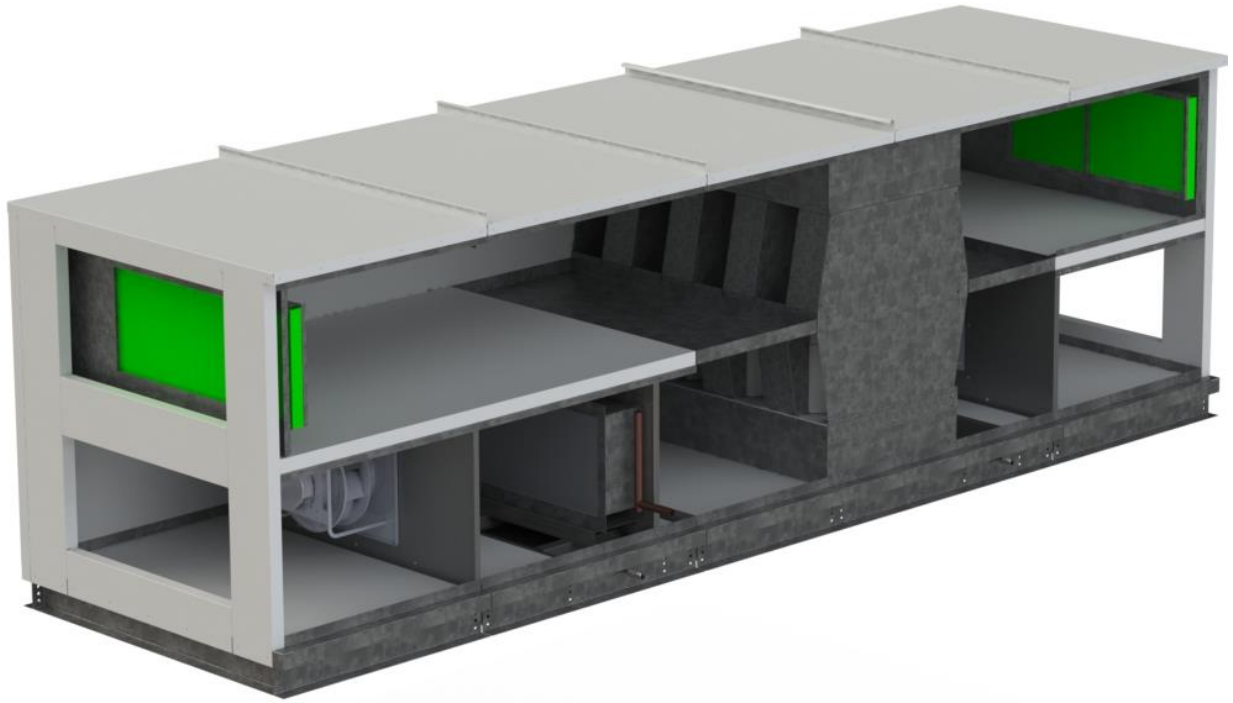
OA – 50 cfm

RA – 250 cfm

DX Coil



Ventum V



High Performance Solution

ERV: 75% SRE | 70% TRE

HRV: 82% Sensible Recovery Effectiveness

Passive House Certified

1,800 – 10,000 cfm

Integrated Coils

Optional Recirculation

Optional Air Scrubbing with enVerid integration


Yale
NOTICE
SAFETY GLASSES REQUIRED
A CAUTION

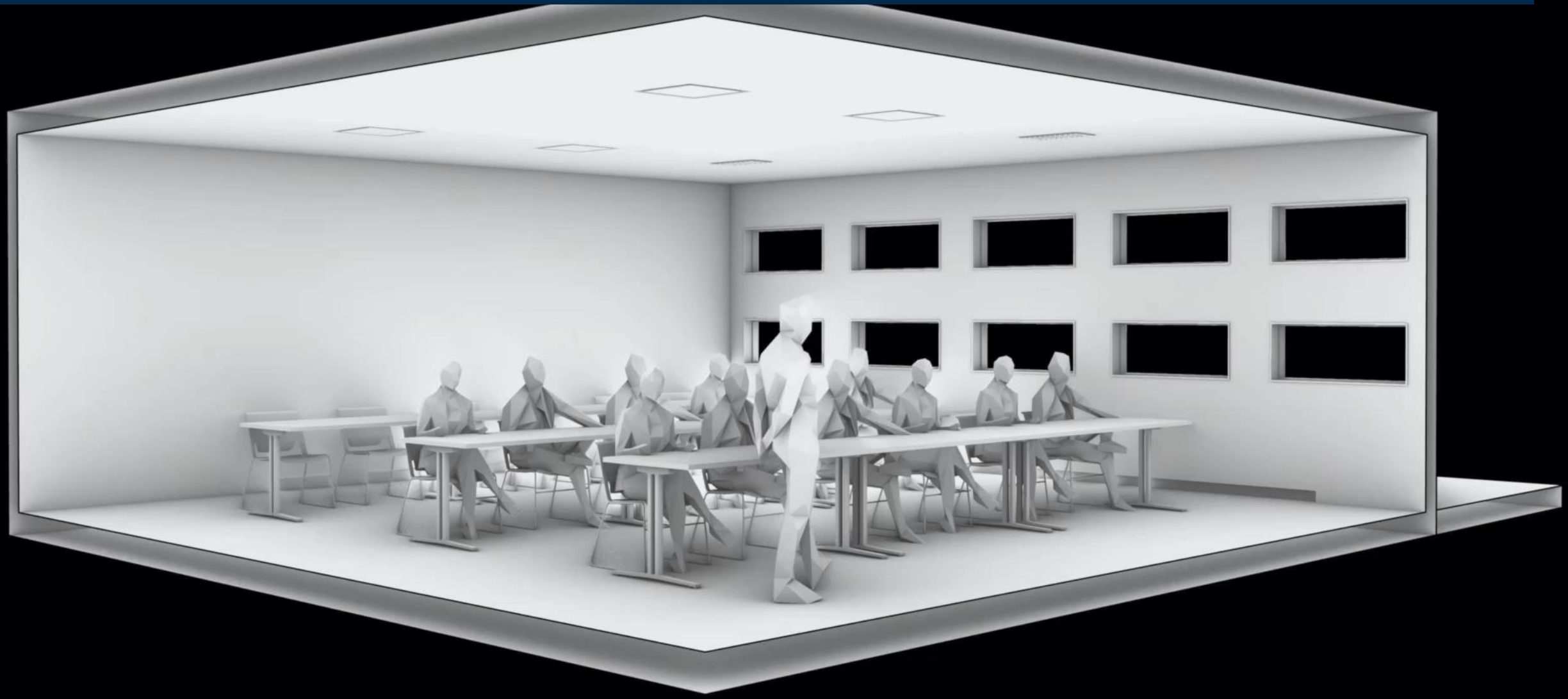
OXYGEN8

Thank You!

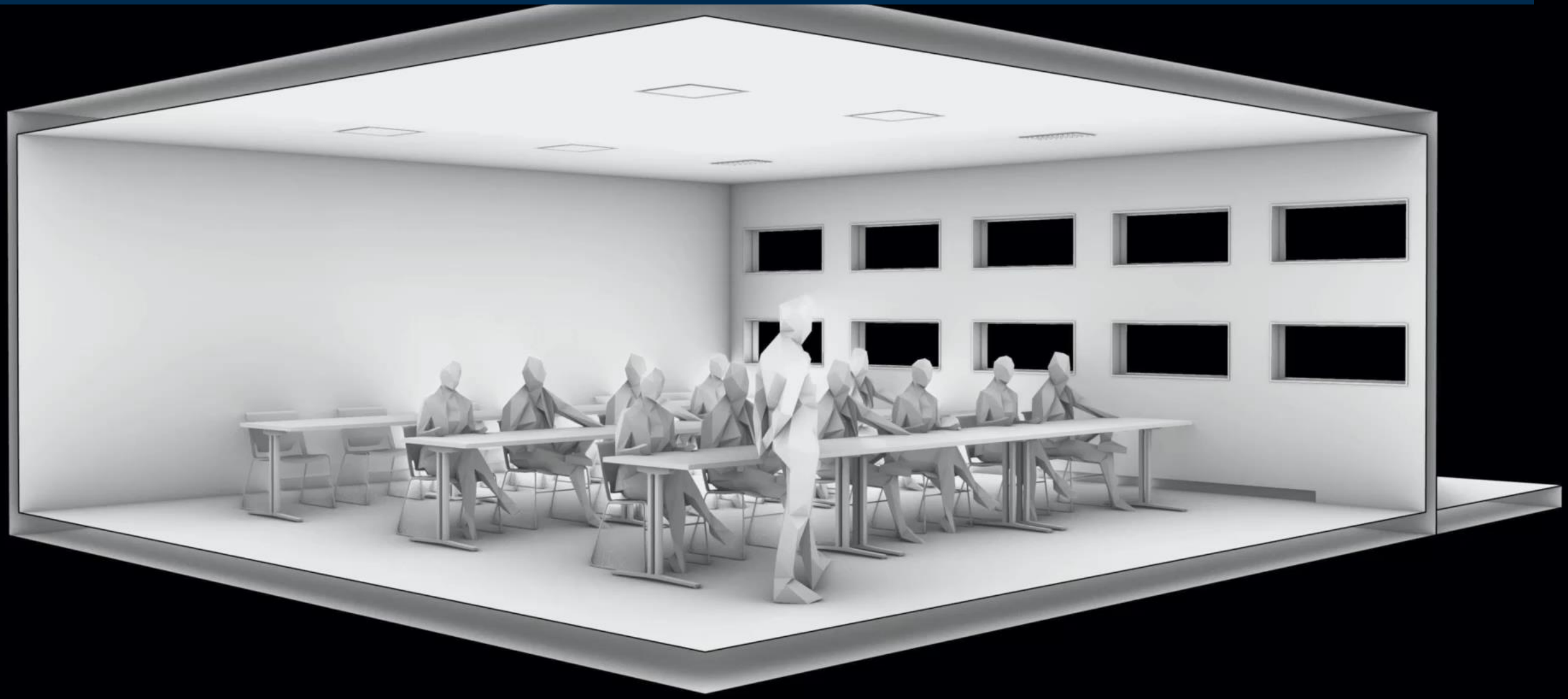
Connect with us on LinkedIn
linkedin.com/company/oxygen8canada/

Visit us Online
oxygen8.ca

CFD Analysis: Traditional Overhead Ventilation



CFD Analysis: Displacement Ventilation



Importance of Relative Humidity

HEALTH

The Right Level of Humidity May Be Important Weapon in Fighting Coronavirus, New Studies Show

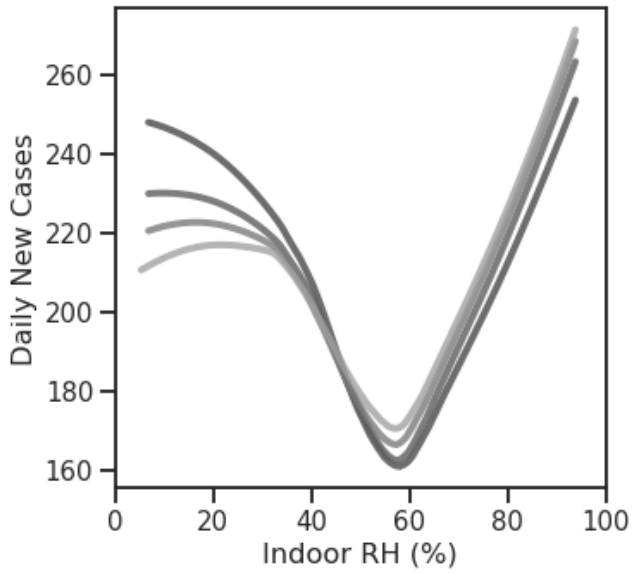
BY **DAVID H. FREEDMAN** ON 6/2/20 AT 5:30 AM EDT

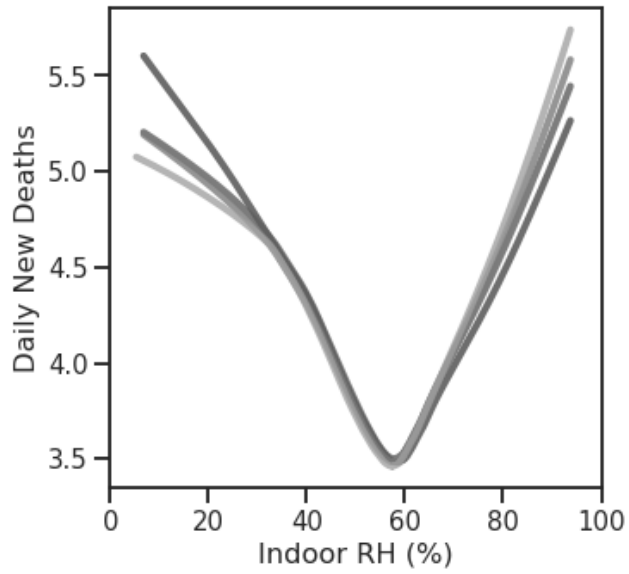
Humidification (Winter)

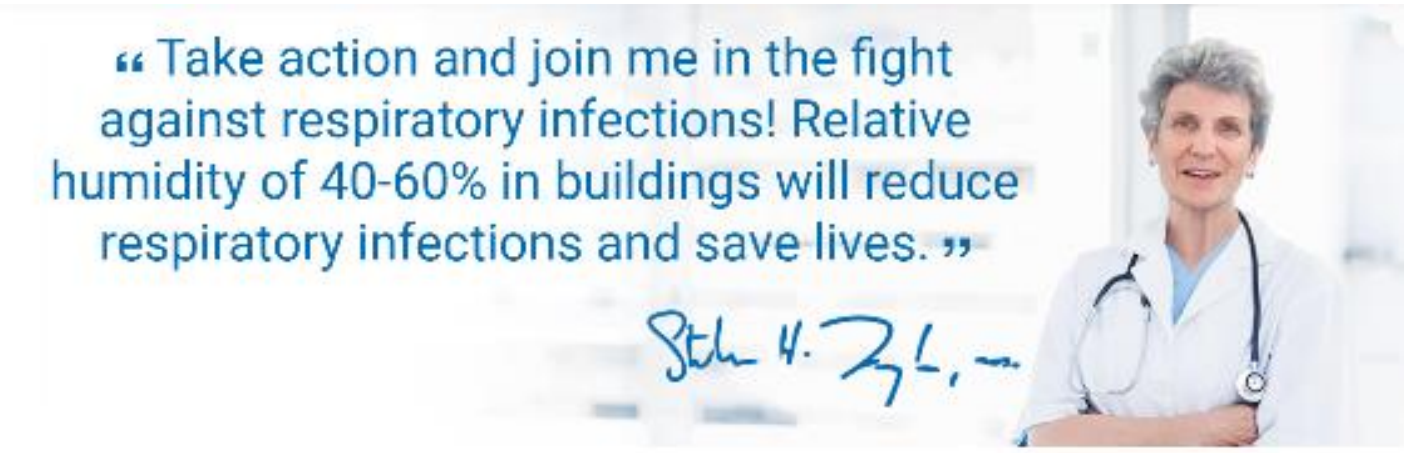
- Active (Steam)
- Passive (ERV)

Dehumidification (Summer)

- Active (Heat-Pumps and Hot-Gas Reheat for Low Energy Dehumidification)
- Passive (ERV)







TEDI & TEUI Requirements by Climate Zone and Step Code

	TEDI (kWh/m²/year)			TEUI (kWh/m²/year)		
Zone	Step 2	Step 3	Step 4	Step 2	Step 3	Step 4
4	45	30	15	130	120	100
5	45	35	22	130	120	110
6	50	35	22	135	120	110
7A	55	40	22	135	120	110
7B	60	50	35	150	140	125
8	90	75	60	180	160	140