



Ennova

WEBINAR

Understanding the Benefits of Heat Pumps

January 30, 2025



Agenda

10:00 am – What's New from Enova

Andrew and Chris, Key Account Advisors, Enova Power Corp.

10:10 am – Understand the Benefits of Heat Pumps

Ed Carney, President, Kilmer Environmental

10:50 am – Final Thoughts

* feel free to ask questions throughout the webinar *

A smart friend you can rely on.

Andrew Bennett



Andrew has been helping businesses find energy solutions for more than 15 years. With a background in engineering technology and energy management, coupled with a data-driven approach, Andrew has the knowledge to solve your tough energy challenges.

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✉ andrew.bennett@enovapower.com

Chris Drygala



Born and raised in Kitchener-Waterloo, Chris has 13 years of experience in energy management and customer service. As a Certified Engineering Technologist with a Sustainable Energy and Building Technology diploma from Humber College, Chris knows the questions you need to ask for the solutions you need.

📞 226-220-2935

✉ chris.drygala@enovapower.com

What's New from Enova:

- **Fall e-Billing Campaign for oneROOF**

- November 4 – December 13, 2024
- \$6,250 to oneROOF Youth Services



- **New and Enhanced Save on Energy Programs**

www.saveonenergy.ca/For-Business-and-Industry/Programs-and-incentives

- 12-year funding commitment from the Ontario government, 2025 – 2037
- Now includes incentives to install solar PV systems, not eligible for net metering
- Coming soon: Expanded Energy Management Program
- What and how much am I eligible for? Let us help you!



Understanding the Benefits of Heat Pumps

Presented by:



Ed Carney
Kilmer Environmental

An aerial photograph of a city skyline, likely Toronto, featuring the CN Tower prominently on the right side. The city is densely packed with various high-rise buildings and residential structures. In the background, a large body of water is visible under a clear blue sky. The text "What Is A Heat Pump?" is overlaid in the center of the image in a large, white, sans-serif font.

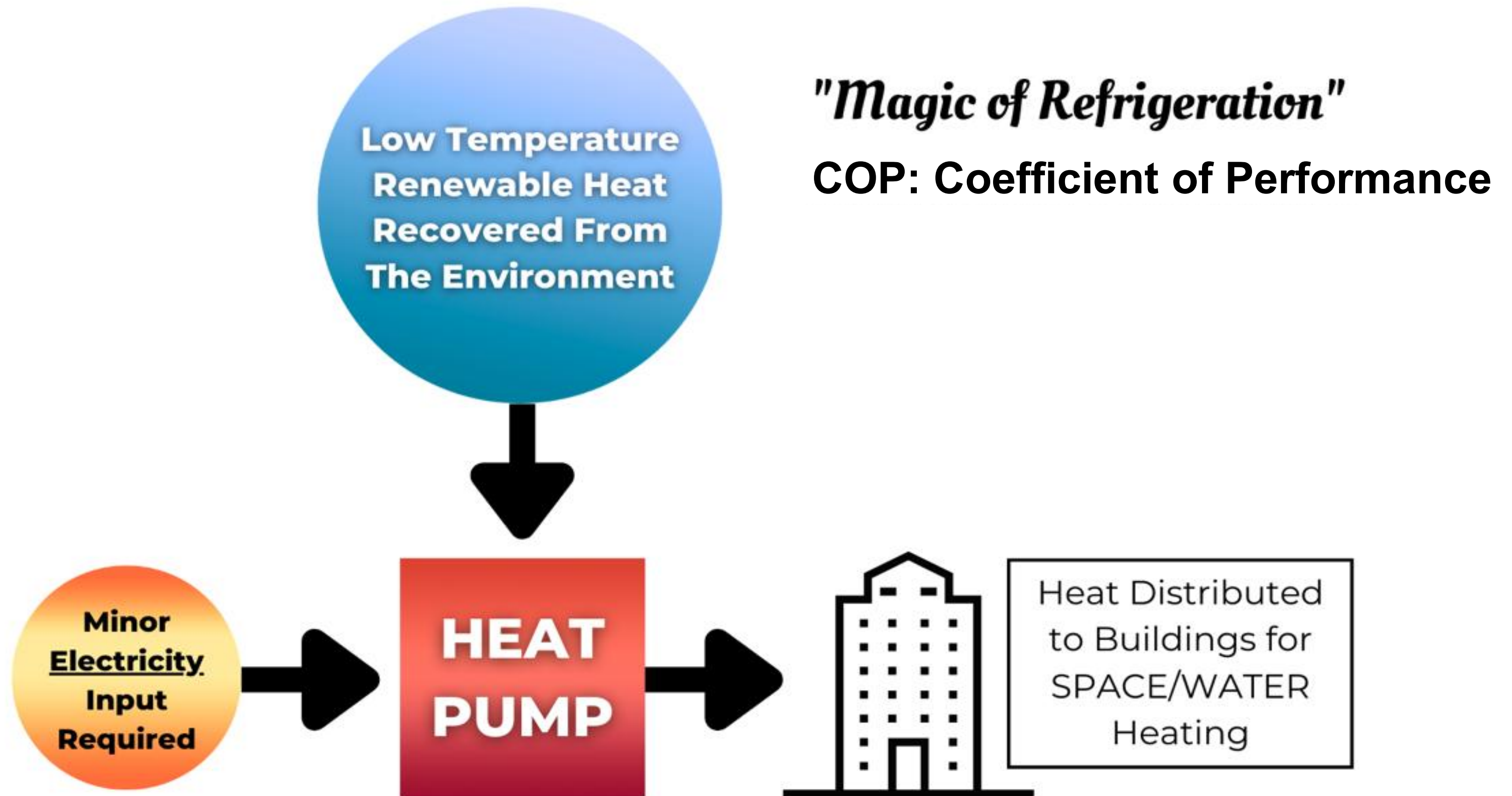
What Is A Heat Pump?

What Is A Heat Pump?

Commercial & Residential
Heat Pumps



What Is A Heat Pump?



What Is A Heat Pump?

Coefficient of Performance: Ratio of Heating Capacity to Power Input

Heat Pump COP = 2.0 to 5.0 typical



Gas-fired Appliance COP = 0.8 to 0.95 typical



An aerial photograph of a city skyline at sunset. The sky is filled with large, dark clouds illuminated from below by the setting sun, creating a dramatic orange and red glow. The city below is densely packed with buildings of various heights and colors. A prominent feature is a tall, thin tower with a circular observation deck, likely the CN Tower in Toronto. In the foreground, a multi-lane highway is visible with many cars, and there are some green trees and lower-rise buildings. The overall scene is a mix of urban architecture and natural light.

Debunking Myths About Heat Pumps

Heat Pump Myths

Myth: It's hard to find qualified contractors to service Heat Pumps

Fact: Licensed refrigeration service contractors are located in communities across Canada.

Myth: The refrigerant used in Heat Pumps is not climate friendly

Fact: The latest refrigerants have lower GWP (Global Warming Potential)

Myth: The electrical grid cannot handle the load from Heat Pumps

Fact: The implementation of Heat Pumps occurs gradually thereby allowing power utilities to increase capacity and efficiency

Myth: A Heat Pump is more expensive than traditional HVAC heating systems

Fact: Lower operating cost and reduced CO₂ make Heat Pumps an attractive investment

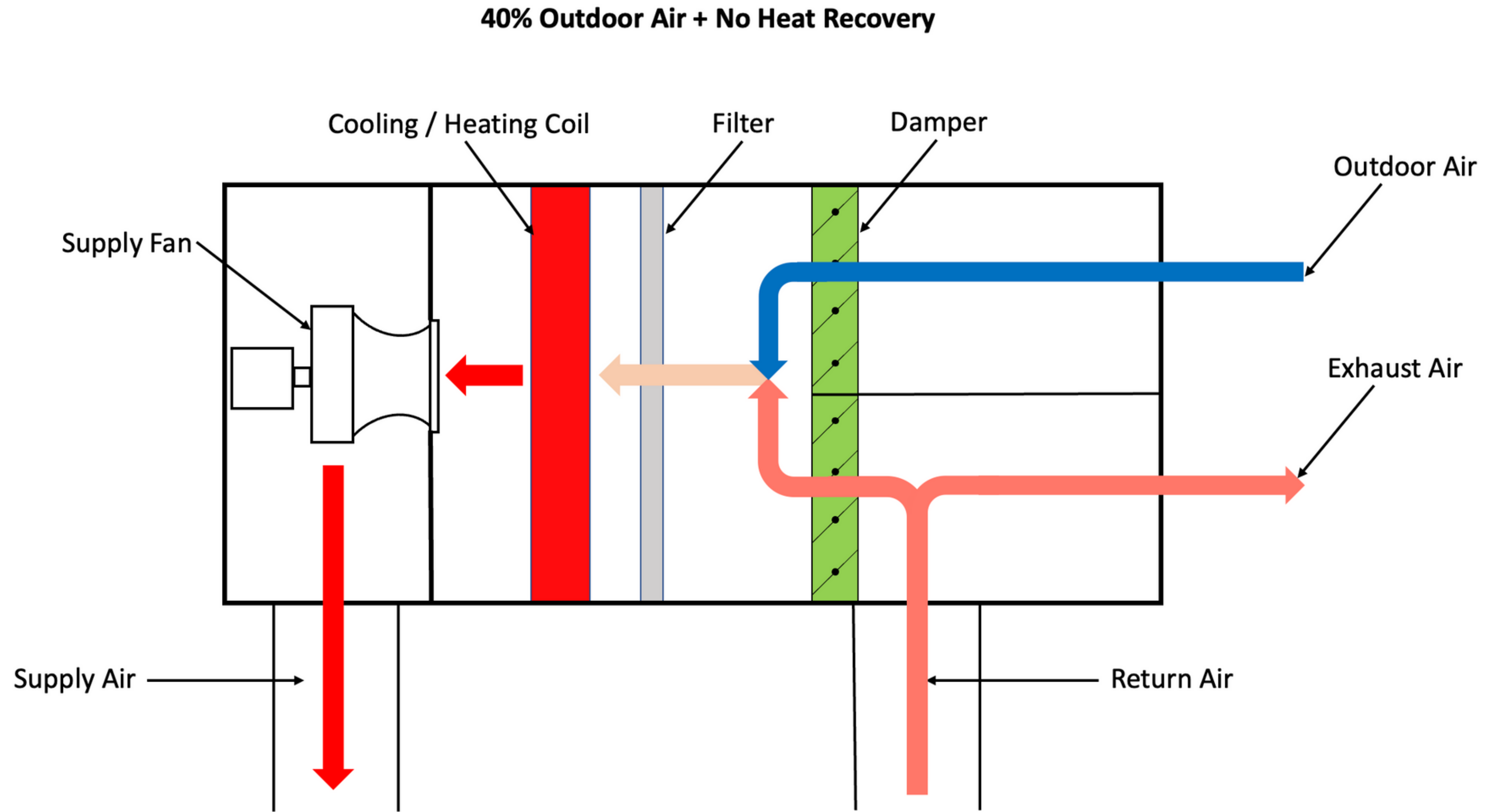
Myth: A Heat Pump isn't suitable for cold climates

Fact: Modern Heat Pumps have operating limits to -20C and below

A city skyline featuring the CN Tower and various skyscrapers under a cloudy sky. The CN Tower is prominent on the left side of the frame. The sky is filled with large, white, fluffy clouds. The buildings are mostly modern, glass-fronted skyscrapers. Some buildings have logos, such as 'Sun Life Financial' and 'BMO'. A construction site with a red sign that says 'TRIDEL BUILT FOR LIFE' is visible on the right side. The overall scene is a dense urban landscape.

Performance Of Modern Heat Pumps

ASHP Performance – 40% Fresh Air



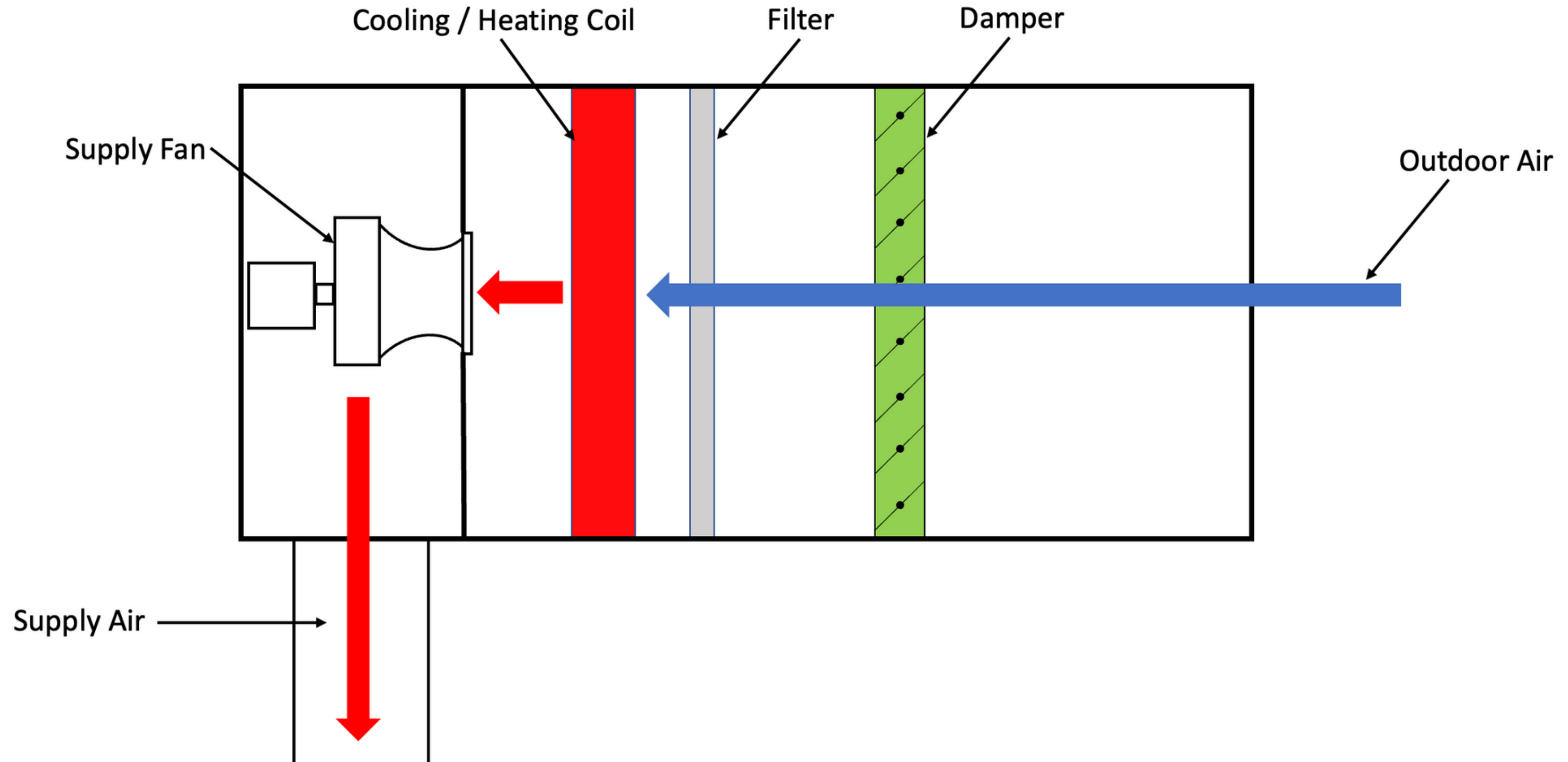
ASHP Performance – 40% Fresh Air

Performance Data Table

Outside Air		Mixed Air		Leaving Air		Heat Pump Capacity	Heat Pump Integrated Capacity	Heating COP
DB °F	WB °F	DB °F	WB °F	DB °F	WB °F	MBH	MBH	
62.0	56.2	69.8	59.8	110.3	72.7	209.9	209.9	3.77
57.0	51.6	67.8	58.1	105.2	70.5	194.6	194.6	3.68
52.0	47.1	65.8	56.6	100.6	68.6	181.7	181.7	3.60
47.0	42.6	63.8	55.1	96.5	66.7	171.4	171.4	3.55
42.0	38.0	61.8	53.7	92.1	64.8	159.5	159.5	3.45
37.0	33.5	59.8	52.3	84.0	61.7	148.6	127.7	2.90
32.0	28.8	57.8	50.9	80.5	60.0	137.5	120.1	2.85
27.0	24.3	55.8	49.7	77.2	58.4	128.2	113.7	2.81
22.0	19.7	53.8	48.4	73.9	56.9	119.3	107.2	2.76
17.0	15.0	51.8	47.2	70.6	55.3	110.8	100.8	2.70
12.0	10.4	49.8	46.1	67.3	53.8	102.9	94.4	2.62
7.0	5.7	47.8	44.9	64.0	52.3	95.2	87.6	2.53
2.0	0.1	45.8	43.6	60.5	50.4	86.7	79.8	2.41

ASHP Performance – 100% Fresh Air

100% Outdoor Air + No Heat Recovery

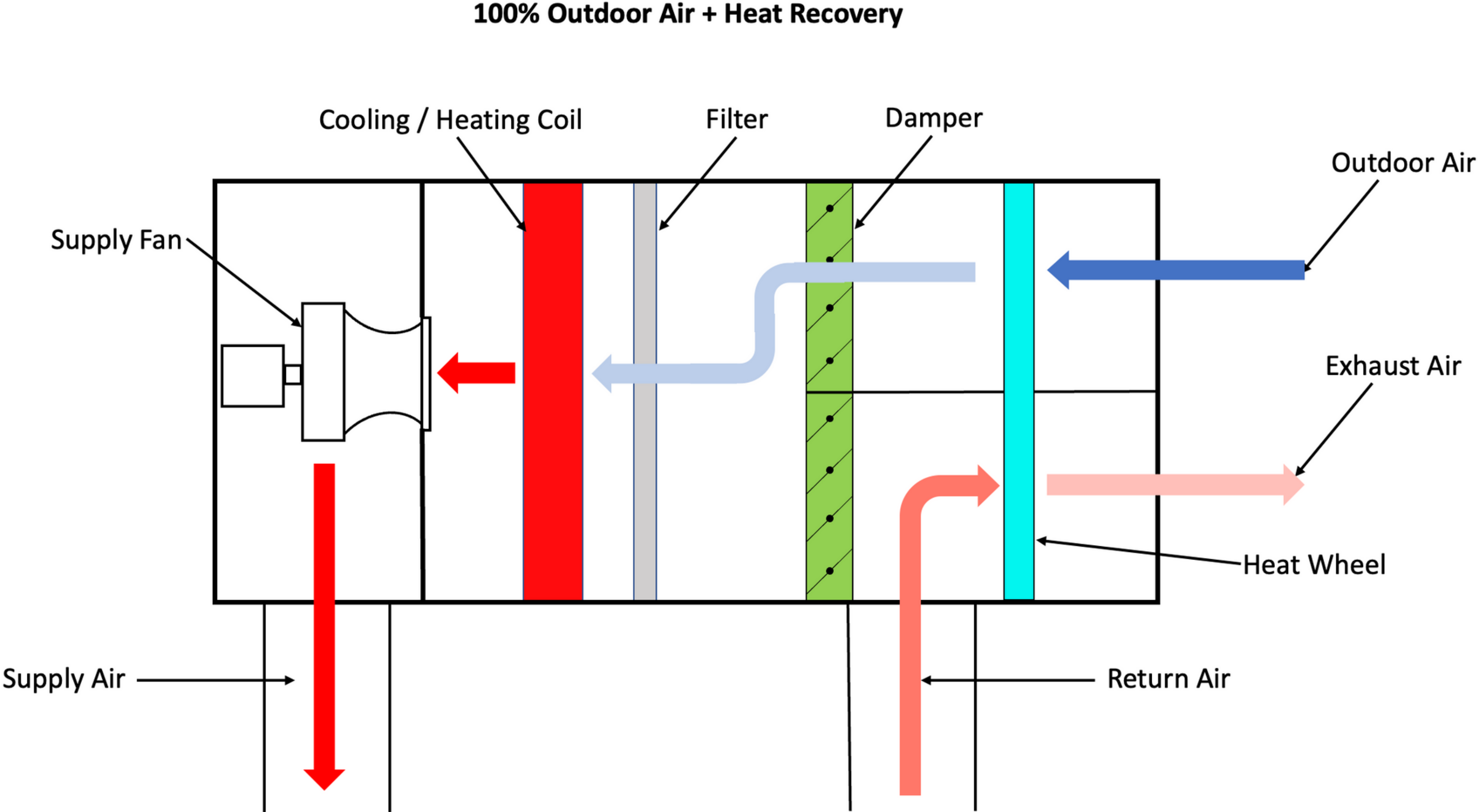


ASHP Performance – 100% Fresh Air

Performance Data Table

Outside Air		Mixed Air		Leaving Air		Heat Pump Capacity	Heat Pump Integrated Capacity	Heating COP
DB °F	WB °F	DB °F	WB °F	DB °F	WB °F	MBH	MBH	
62.0	56.2	62.0	56.2	102.4	70.0	212.5	212.5	4.12
57.0	51.6	57.0	51.6	94.2	65.5	197.4	197.4	4.15
52.0	47.1	52.0	47.1	86.4	61.1	184.7	184.7	4.17
47.0	42.6	47.0	42.6	78.8	56.7	172.2	172.2	4.17
42.0	38.0	42.0	38.0	71.6	52.2	161.6	161.6	4.18
37.0	33.5	37.0	33.5	60.4	45.8	150.3	129.1	3.59
32.0	28.8	32.0	28.8	53.8	41.0	139.2	121.7	3.60
27.0	24.3	27.0	24.3	47.3	36.3	128.8	114.2	3.60
22.0	19.7	22.0	19.7	*	*	*	*	*
17.0	15.0	17.0	15.0	*	*	*	*	*
12.0	10.4	12.0	10.4	*	*	*	*	*
7.0	5.7	7.0	5.7	*	*	*	*	*
2.0	0.1	2.0	0.1	*	*	*	*	*

ASHP Performance – 100% Fresh Air - With Heat Recovery Wheel



ASHP Performance – 100% Fresh Air - With Heat Recovery Wheel

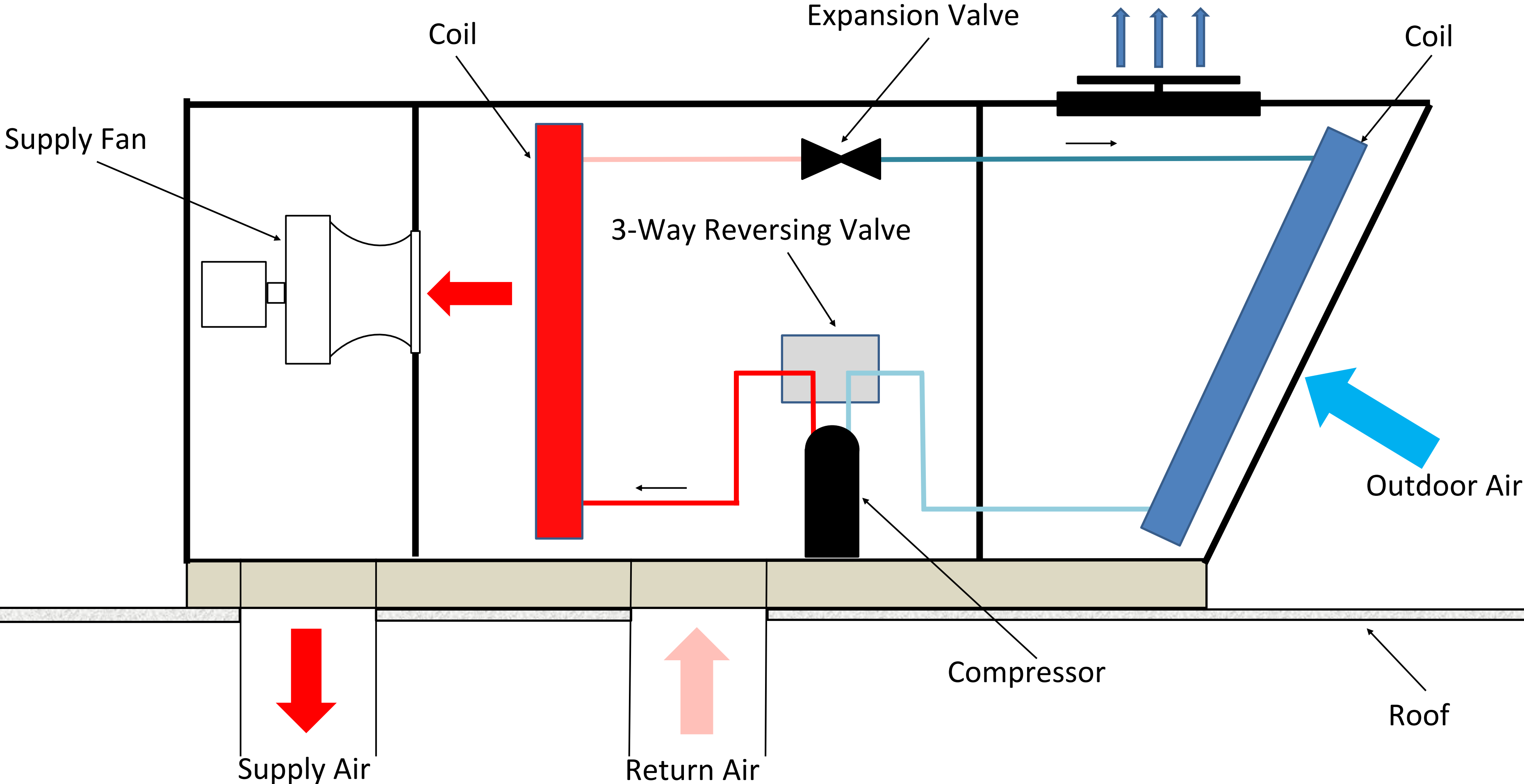
Performance Data Table

Outside Air		Mixed Air		Leaving Air		Heat Pump Capacity	Heat Pump Integrated Capacity	Heat Wheel Heating Capacity	Heating COP
DB °F	WB °F	DB °F	WB °F	DB °F	WB °F	MBH	MBH	MBH	
62.0	56.2	71.5	60.3	112.0	73.1	209.4	209.4	45.7	3.99
57.0	51.6	70.1	58.9	107.5	71.2	193.9	193.9	63.4	4.19
52.0	47.1	68.7	57.6	103.6	69.4	181.1	181.1	81.1	4.42
47.0	42.6	67.3	56.4	100.1	67.8	170.7	170.7	98.8	4.68
42.0	38.0	65.9	55.2	96.4	66.1	158.9	158.9	116.6	4.94
37.0	33.5	64.5	54.2	88.8	63.2	148.1	127.2	134.4	4.85
32.0	28.8	63.1	53.0	86.0	61.8	137.8	120.4	152.3	5.20
27.0	24.3	61.6	52.0	83.2	60.5	128.0	113.5	170.2	5.56
22.0	19.7	60.2	51.0	80.5	59.2	119.3	107.2	188.1	5.94
17.0	15.0	58.7	50.1	77.8	57.9	110.9	100.9	206.1	6.34
12.0	10.4	57.2	49.2	75.0	56.6	103.1	94.6	224.1	6.75
7.0	5.7	55.7	48.3	72.2	55.4	95.5	87.9	242.2	7.18
2.0	0.1	54.2	47.2	69.2	53.8	87.2	80.2	260.3	7.62

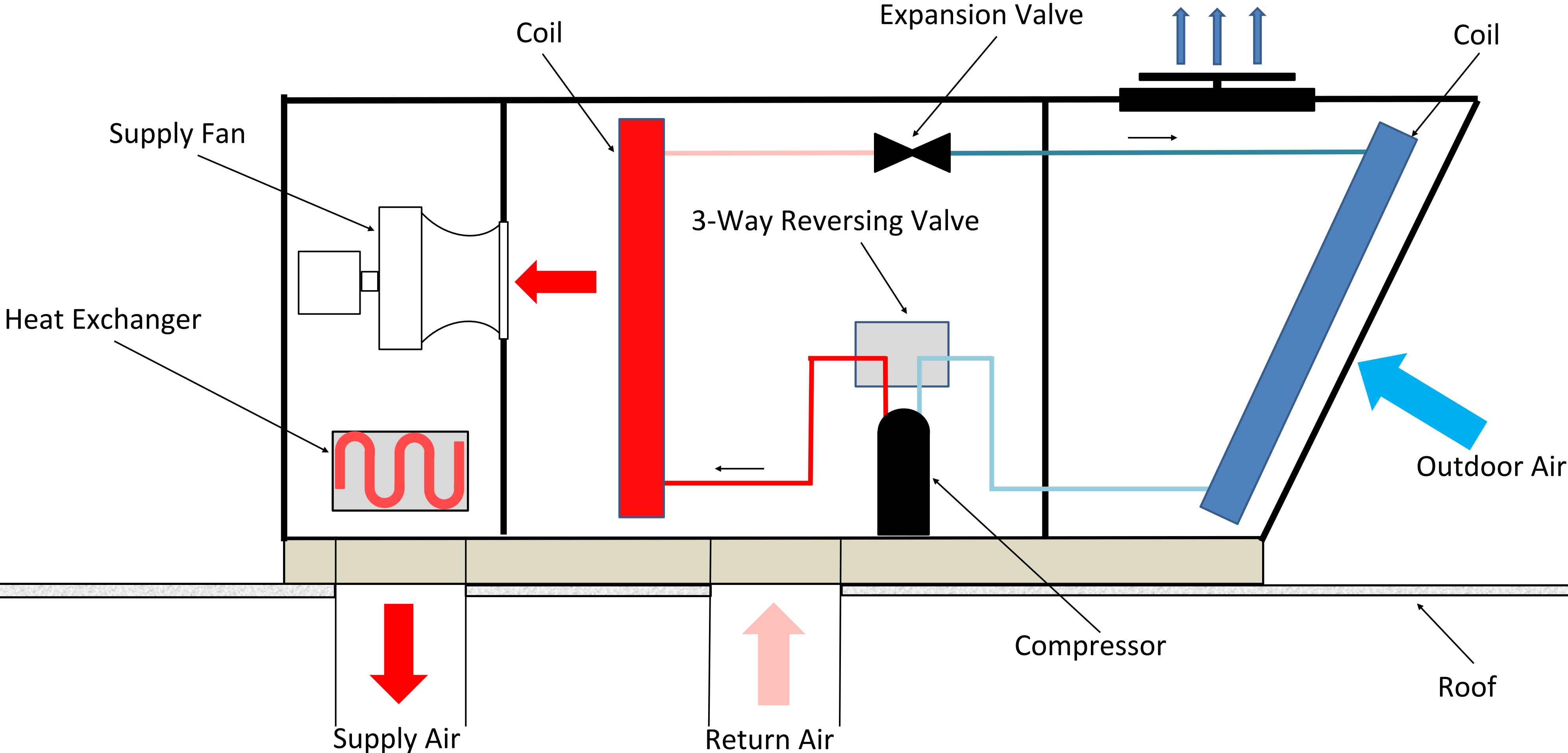


Different Types Of Heat Pumps & Their Uses

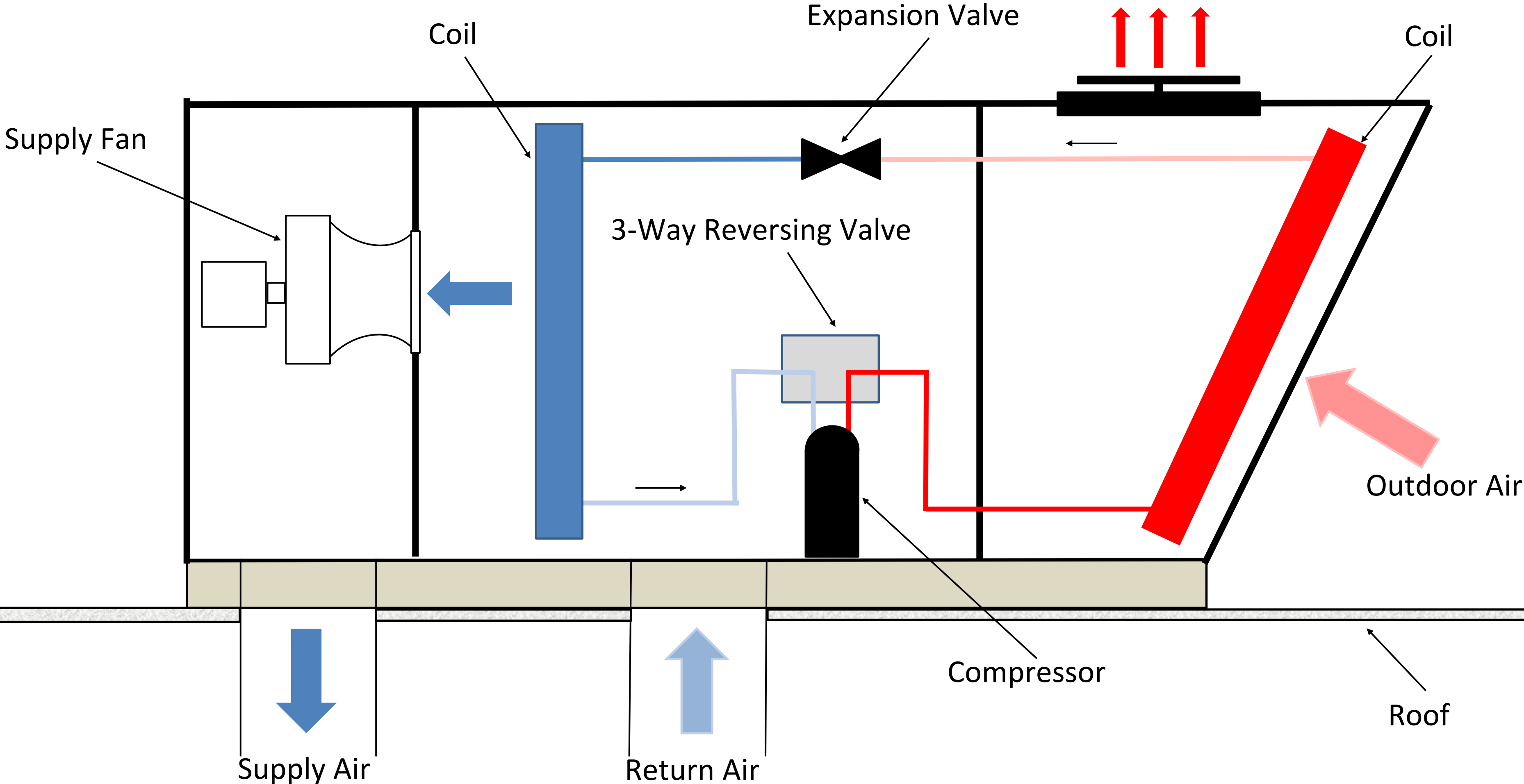
Air Source Heat Pump – Heating Mode



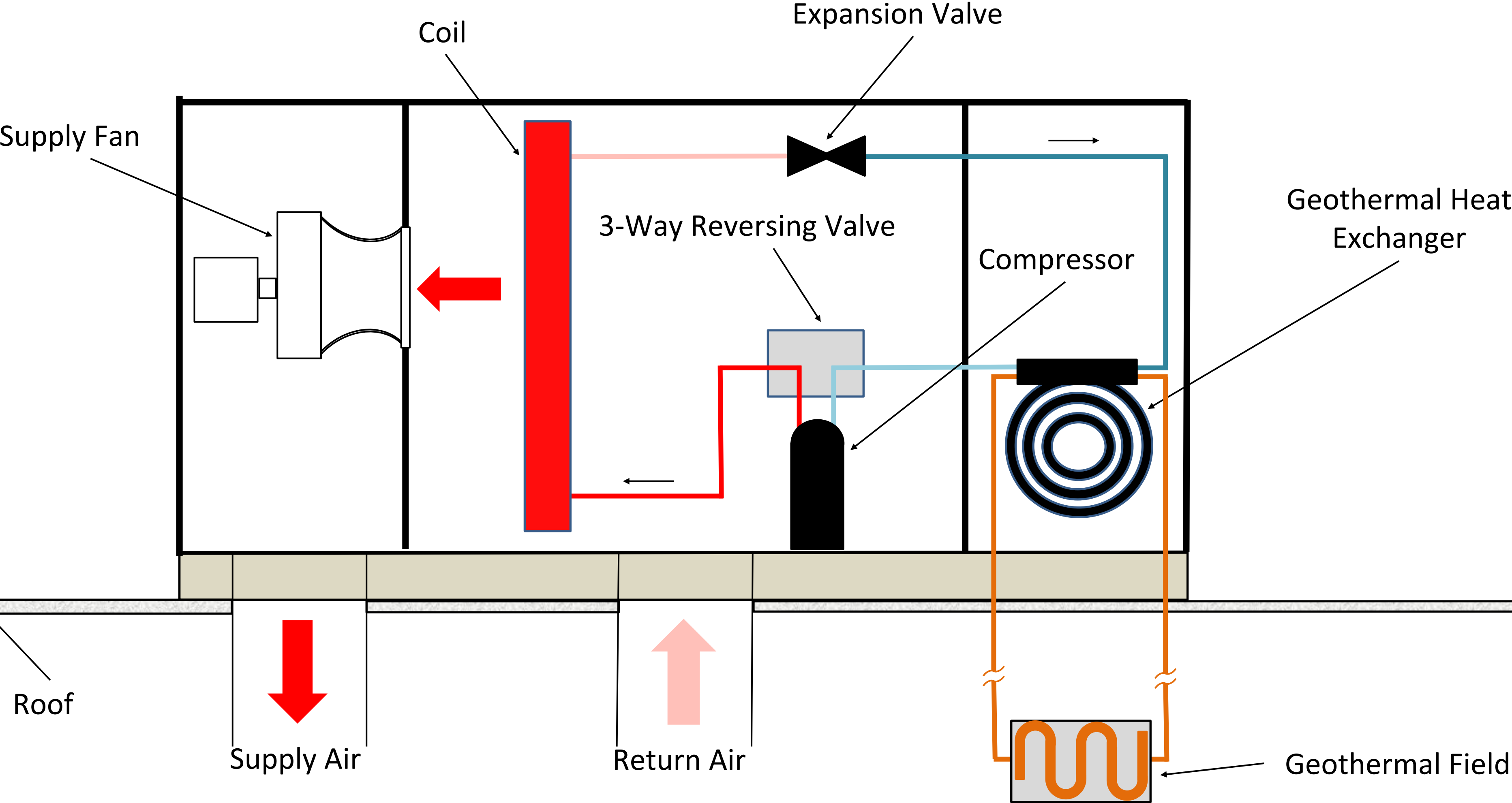
Air Source Heat Pump – Hybrid Heating Mode



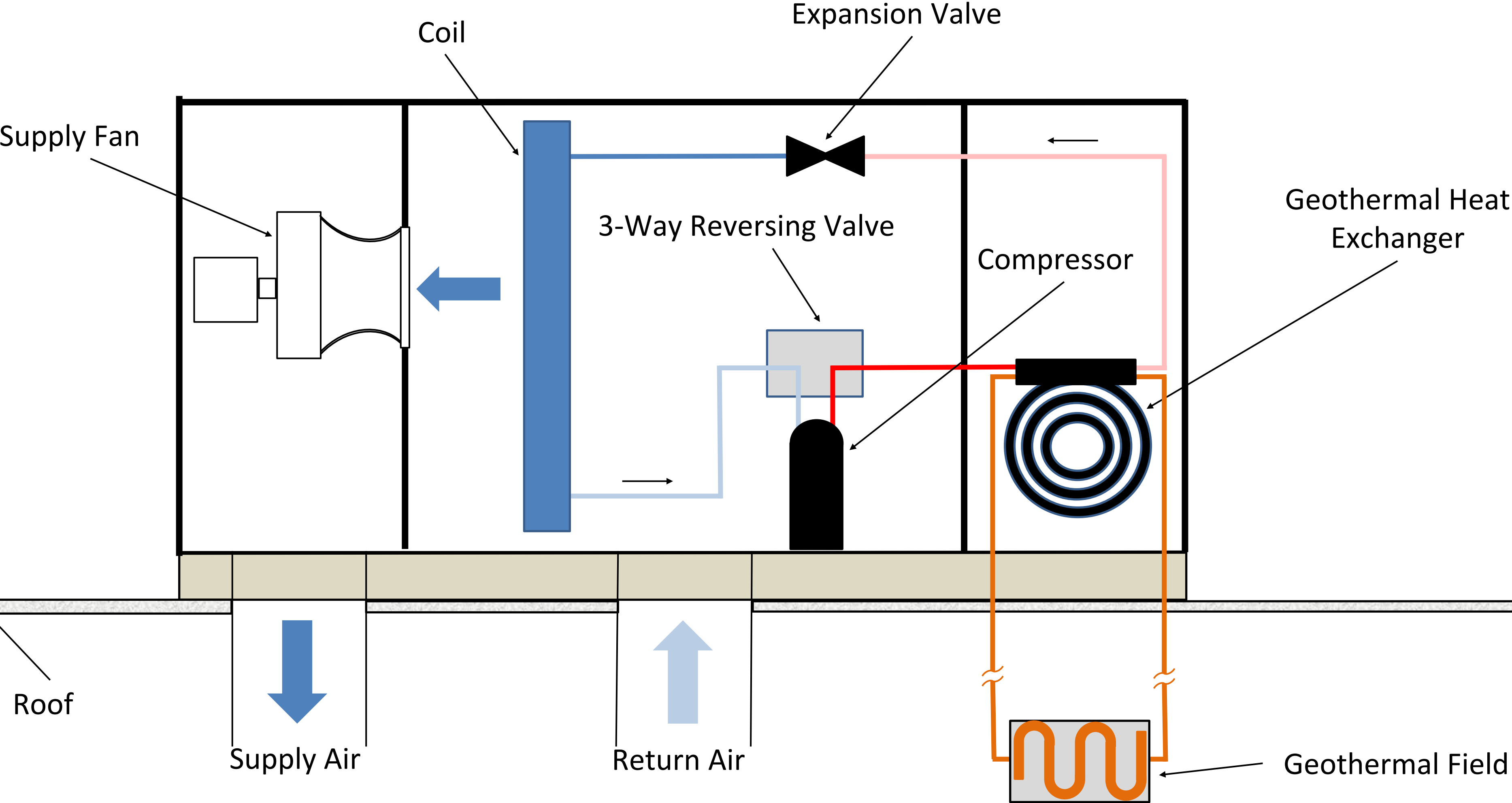
Air Source Heat Pump – Cooling Mode



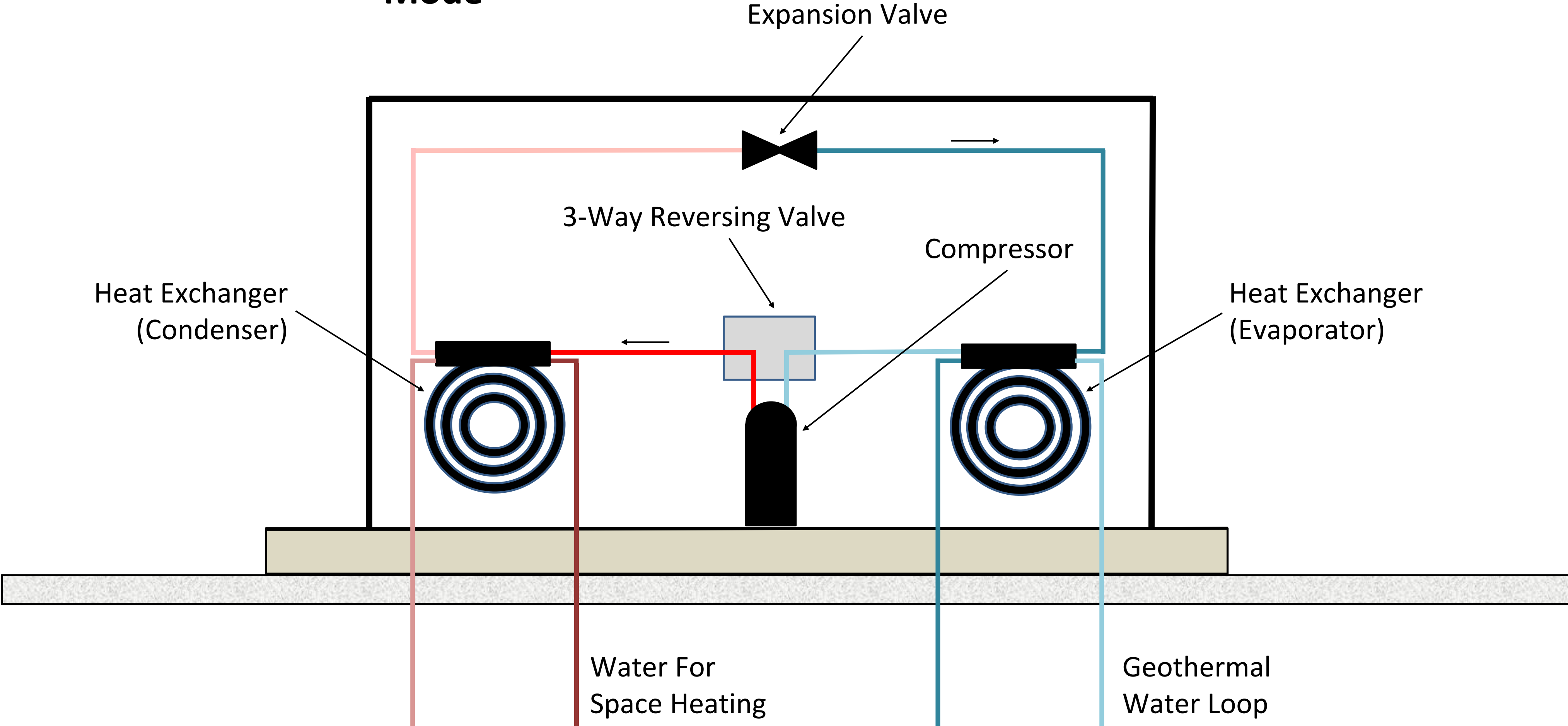
Geothermal Heat Pump – Heating Mode



Geothermal Heat Pump – Cooling Mode



Water-To-Water Heat Pump – Heating Mode



Integration With Renewable Energy

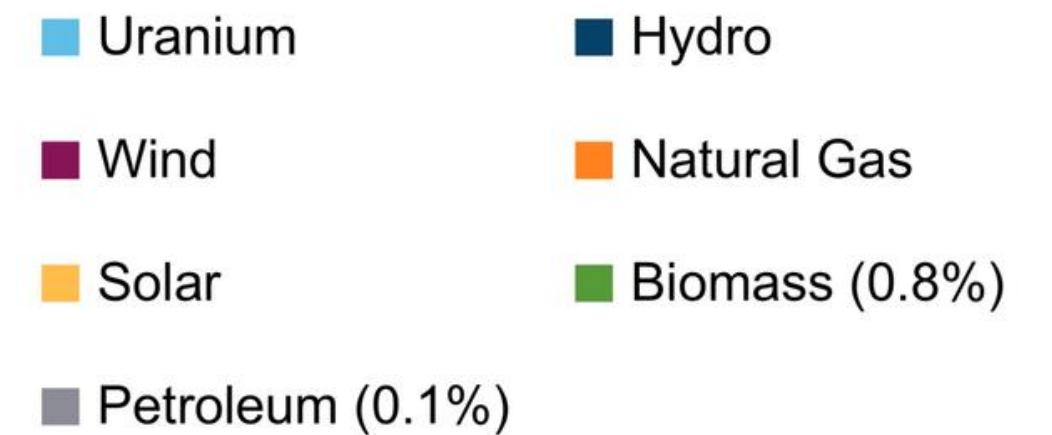
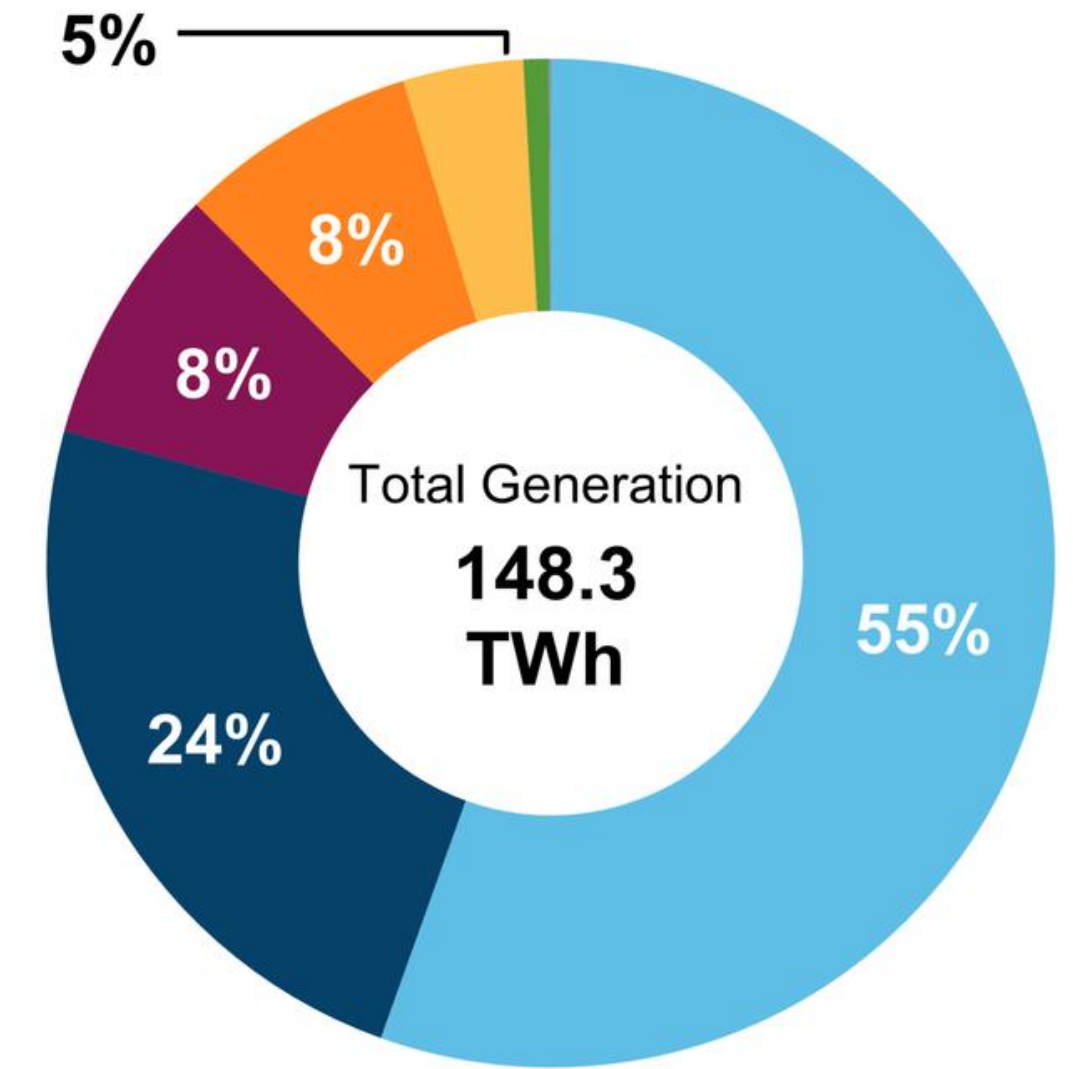
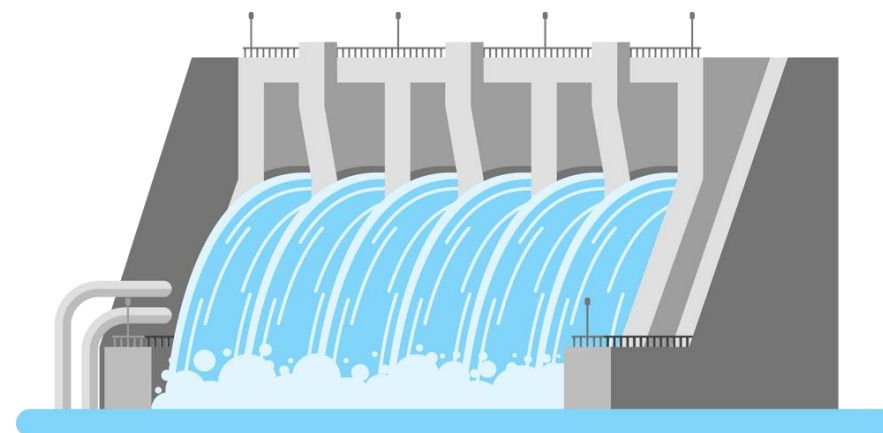
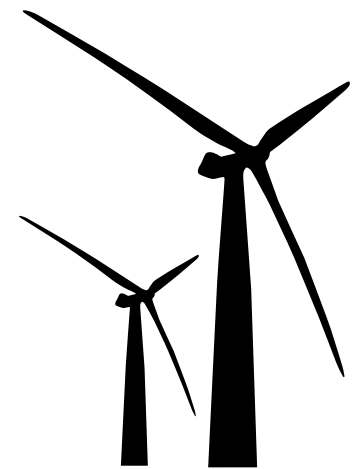


Integration With Renewable Energy

Ontario is the second largest producer of electricity in Canada, after Quebec, and has an estimated generating capacity of 39,569 megawatts (MW).

For more information, visit:

www.ieso.ca/Learn/Ontario-Electricity-Grid/Supply-Mix-and-Generation



Provided by:
[Canada Energy Regulator](http://www.cer.gc.ca)

Retrofit Heat Pump Applications



Retrofit Heat Pump Applications



Replace or Supplement
Boilers with Air-To-Water
Heat Pumps



Replace Standard Rooftop
HVAC Units with Air-
Source Heat Pumps

- Celebrating Over 35 Years in the HVAC Industry
- Factory-Trained Technicians on Staff
- Well Stocked Parts Department to Support Our Equipment
- Offices in Hamilton, Sudbury, London, Toronto



Air & Water Source Heat Pumps



High Efficiency Energy
Recovery



Energy Recovery Ventilation



Humidification



Water-Source Heat Pumps



Heat Pumps & Domestic Hot Water

Ed Carney, President

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THANK YOU FOR ATTENDING!