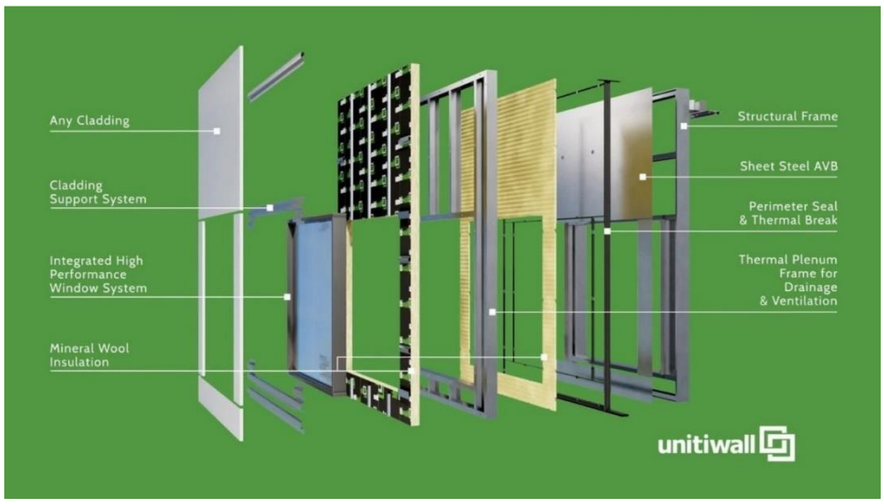
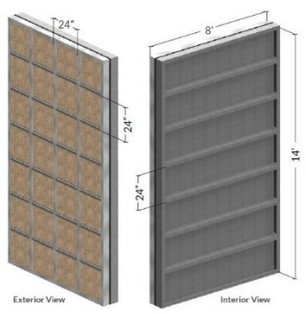
Product Fact Sheet

UnitiWall – Wall Panel System



Overall Assembly Panel

Overall Assembly Panel



Thermal Plenum Configuration Summary

#	Component	Material	Size
1	Perimeter Seal	Silicone Adhesive	1 1/8"
2	Thermal Tape	Butyl Rubber	7/8"
3	Plenum Frame Members	Galvanized or Stainless Steel	18 or 22 Gauge
4	Primary Insulation	Mineral Wool	4", 6", or 8"
5	Sandwich Layer Insulation	Mineral Wool	1"
6	Sheet Steel	Galvanized or Stainless Steel	18 Gauge
7	Structural Frame Members	Galvanized Steel	18 Gauge
8	Interior Finish	Gypsum	1/2"
9	Hat Tracks	Galvanized Steel	18 Gauge
10	Isolator	Silicone	7/8"

Geometry Cutouts and Components

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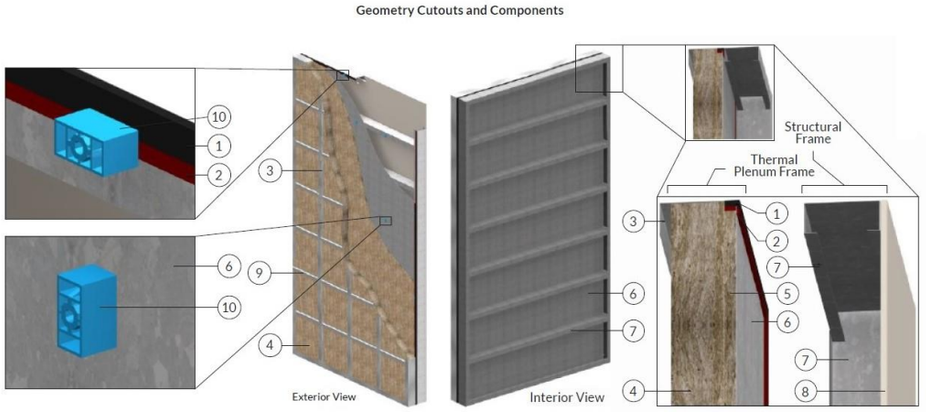


Thermal Plenum Configuration, Steel Type and Thickness

Thermal Plenum Configuration Summary

Label	Plenum Size	Insulation Thickness		Nominal Insulation R-value
		Primary Layer	Sandwich Layer	
PLENUM 4.875	4.875 inch	4 inch	1 inch	R-21.0 (RSI-3.70)
PLENUM 6.875	6.875 inch	6 inch	1 inch	R-29.4 (RSI-5.18)
PLENUM 8.875	8.875 inch	8 inch	1 inch	R-37.8 (RSI-6.66)

Steel Type Summary

Label	Plenum Frame			Structural Frame
	Plenum Frame Members	Sheet AVB	Hat Tracks	Structural Frame Members
Silver+	Galvanized Steel	Galvanized Steel	Galvanized Steel	Galvanized Steel
Gold+	Stainless Steel	Galvanized Steel	Galvanized Steel	Galvanized Steel
Platinum+	Stainless Steel	Stainless Steel	Galvanized Steel	Galvanized Steel

Steel Thickness Summary

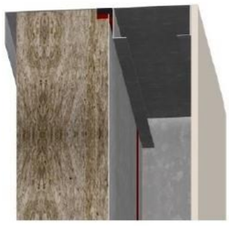
Label	Plenum Frame			Structural Frame
	Plenum Frame Members	Sheet AVB	Hat Tracks	Structural Frame Members
-1	22 Gauge	18 Gauge	18 Gauge	18 Gauge
-3	18 Gauge	18 Gauge	18 Gauge	18 Gauge

Thermal Transmittance

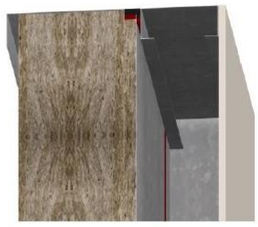
Thermal Transmittance

The assembly U-values and effective R-values for the panel are listed below at various scenarios for the assemblies shown in the figure below.

Plenum 4.875



Plenum 6.875



Plenum 8.875

Scenario	Plenum Type	Effective U-value Btu/h ft²°F (W/m²°K)	Effective R-value ft²hr °F/Btu (m²°K/W)
SILVER+	PLENUM 4.875 -3	U-0.080 (USI-0.455)	R-12.5 (RSI-2.20)
GOLD+		U-0.066 (USI-0.377)	R-15.1 (RSI-2.65)
PLATINUM+		U-0.066 (USI-0.375)	R-15.1 (RSI-2.67)
SILVER+	PLENUM 4.875 -1	U-0.076 (USI-0.431)	R-13.2 (RSI-2.32)
GOLD+		U-0.061 (USI-0.348)	R-16.3 (RSI-2.87)
PLATINUM+		U-0.061 (USI-0.347)	R-16.4 (RSI-2.88)
SILVER+	PLENUM 6.875 -3	U-0.070 (USI-0.395)	R-14.4 (RSI-2.53)
GOLD+		U-0.053 (USI-0.303)	R-18.7 (RSI-3.30)
PLATINUM+		U-0.053 (USI-0.302)	R-18.8 (RSI-3.31)
SILVER+	PLENUM 6.875 -1	U-0.064 (USI-0.364)	R-15.6 (RSI-2.75)
GOLD+		U-0.048 (USI-0.273)	R-20.8 (RSI-3.66)
PLATINUM+		U-0.048 (USI-0.272)	R-20.9 (RSI-3.67)
SILVER+	PLENUM 8.875 -3	U-0.062 (USI-0.355)	R-16.0 (RSI-2.82)
GOLD+		U-0.045 (USI-0.256)	R-22.2 (RSI-3.91)
PLATINUM+		U-0.045 (USI-0.255)	R-22.3 (RSI-3.93)
SILVER+	PLENUM 8.875 -1	U-0.056 (USI-0.320)	R-17.7 (RSI-3.12)
GOLD+		U-0.040 (USI-0.226)	R-25.1 (RSI-4.42)
PLATINUM+		U-0.040 (USI-0.226)	R-25.2 (RSI-4.43)

Condensation Risk

Condensation Risk

The condensation risk was evaluated for Vancouver, BC, Toronto, ON, and Edmonton, AB based on the 2.5% January Design Temperature from NECB 2017. The following table illustrates the indoor air dewpoint temperature for a range of indoor relative humidity.

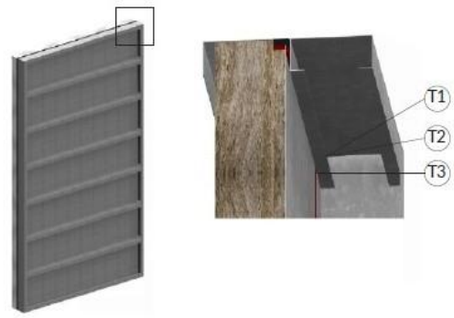
Dew Point Temperatures at Various Interior Relative Humidity

Indoor Relative Humidity	Interior Temperature °C	Indoor Air Dewpoint Temperature °C
30%	21.0	2.8
40%	21.0	6.9
50%	21.0	10.2
60%	21.0	13.0

Based on these conditions, the following condensation risk indices were found:

1. **Critical Locations and Surface Temperatures:** The coldest surface temperatures were found at various locations within the assembly that could be exposed to interior air. Three locations were identified for the evaluated assemblies and are shown in below in the diagram.

2. **Maximum Allowable Interior Humidity:** Based on this temperature and the interior air temperature, the maximum allowable interior relative humidity (RH) before condensation could occur was determined for the critical surfaces*. The maximum allowable interior RH is the highest level of interior humidity that can be present in the space before it raises the interior dew-point temperature above the critical surface temperature and condensation can form. This can provide further estimation of condensation risk if there could be some variability of the interior humidity conditions.

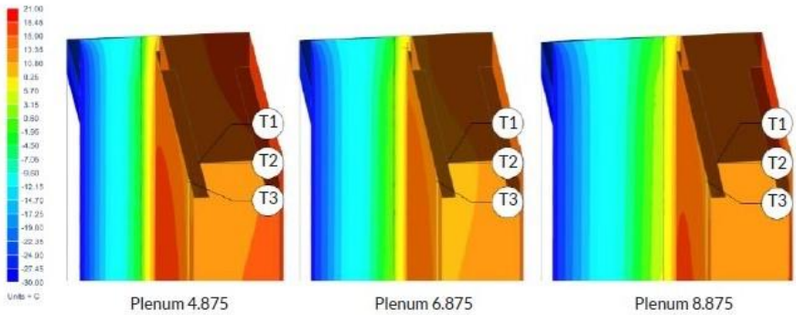


Label	Description
T1	Track edge at stud intersection
T2	Stud edge at track intersection
T3	Exposed sheet panel at corner

Gypsum not shown

*The risk of condensation occurs when surface temperatures drop below the interior dew point, which is dependent on the temperatures and relative humidity of the interior air.

Critical locations and sample temperature plots are shown in the figure below. The table below provides the surface temperatures at the three critical locations for the panel.



Plenum 4.875 Plenum 6.875 Plenum 8.875

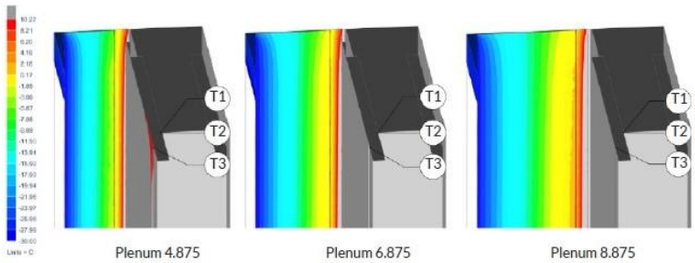
Surface Temperatures for Plenum Panel

Surface Temperatures for Plenum Panel for an Interior Temperature of 21°C and an Interior Relative Humidity of 50%* (10.2°C Dew Point Temperature)**

Scenario	Plenum Type	Vancouver (Exterior: -7°C)			Toronto (Exterior: -18°C)			Edmonton (Exterior: -30°C)		
		T_1 °C	T_2 °C	T_3 °C	T_1 °C	T_2 °C	T_3 °C	T_1 °C	T_2 °C	T_3 °C
SILVER+	PLENUM 4.875 -3	13.7	13.6	13.2	10.9	10.7	10.1	7.7	7.6	6.7
GOLD+		15.4	15.5	15.1	13.2	13.3	12.8	10.9	10.9	10.3
PLATINUM+		15.3	15.2	15.0	13.0	12.9	12.6	10.5	10.4	10.0
SILVER+	PLENUM 4.875 -1	14.3	14.2	13.8	11.6	11.5	10.9	8.7	8.6	7.8
GOLD+		16.2	16.2	15.8	14.3	14.3	13.8	12.2	12.2	11.6
PLATINUM+		16.0	15.9	15.7	14.0	13.9	13.7	11.9	11.8	11.4
SILVER+	PLENUM 6.875 -3	14.3	14.3	13.8	11.7	11.6	11.0	8.9	8.7	7.9
GOLD+		16.4	16.4	16.1	14.6	14.5	14.1	12.6	12.5	12.0
PLATINUM+		16.2	16.1	15.9	14.3	14.2	13.9	12.2	12.1	11.8
SILVER+	PLENUM 6.875 -1	15.0	15.0	14.6	12.7	12.6	12.0	10.1	10.0	9.3
GOLD+		17.1	17.1	16.8	15.5	15.5	15.2	13.9	13.8	13.4
PLATINUM+		16.9	16.9	16.7	15.3	15.3	15.0	13.6	13.5	13.2
SILVER+	PLENUM 8.875 -3	14.8	14.8	14.4	12.4	12.3	11.8	9.8	9.7	9.0
GOLD+		17.0	17.0	16.7	15.4	15.4	15.1	13.7	13.7	13.2
PLATINUM+		16.8	16.8	16.6	15.2	15.1	14.9	13.4	13.3	13.0
SILVER+	PLENUM 8.875 -1	15.6	15.5	15.2	13.5	13.4	12.9	11.2	11.1	10.4
GOLD+		17.7	17.7	17.4	16.4	16.4	16.0	14.9	14.9	14.5
PLATINUM+		17.5	17.5	17.4	16.1	16.1	15.9	14.6	14.6	14.4

*Temperatures less than the interior dew point temperatures indicates a risk of condensation for that room type. Numbers in red are at risk of condensation.
**These results are for a single panel assembly and do not account for panel joints and other interface details which could increase condensation risk.

Critical locations and temperature plots below the dew point temperature are shown in the next figure. The table below provides the maximum interior RH for panel.



Plenum 4.875 Plenum 6.875 Plenum 8.875

Maximum Allowable Relative Humidity for Plenum Panel* for an Interior Temperature of 21°C**

Scenario	Plenum Type	Vancouver (Exterior: -7°C)			Toronto (Exterior: -18°C)			Edmonton (Exterior: -30°C)		
		RH_{T1} %	RH_{T2} %	RH_{T3} %	RH_{T1} %	RH_{T2} %	RH_{T3} %	RH_{T1} %	RH_{T2} %	RH_{T3} %
SILVER+	PLENUM 4.875 -3	63.1	62.8	60.8	52.3	51.9	49.6	42.4	41.9	39.5
GOLD+		70.5	70.6	69.1	61.2	61.3	59.5	52.2	52.4	50.3
PLATINUM+		69.7	69.5	68.5	60.2	59.9	58.7	51.2	50.8	49.5
SILVER+	PLENUM 4.875 -1	65.3	65.1	63.3	54.9	54.6	52.6	45.3	44.9	42.7
GOLD+		74.0	73.8	72.4	65.5	65.3	63.5	57.2	57.0	55.0
PLATINUM+		73.0	72.8	71.9	64.3	64.0	62.9	55.9	55.5	54.2
SILVER+	PLENUM 6.875 -3	65.7	65.3	63.6	55.3	54.9	52.8	45.7	45.3	43.0
GOLD+		74.9	74.8	73.4	66.7	66.5	64.8	58.6	58.4	56.5
PLATINUM+		73.8	73.7	72.8	65.3	65.2	64.0	57.0	56.9	55.5
SILVER+	PLENUM 6.875 -1	68.6	68.3	66.6	58.9	58.6	56.5	49.6	49.3	47.0
GOLD+		78.3	78.2	77.1	71.0	70.8	69.4	63.7	63.5	61.8
PLATINUM+		77.5	77.3	76.5	69.9	69.7	68.7	62.4	62.2	61.0
SILVER+	PLENUM 8.875 -3	67.9	67.6	65.9	58.0	57.7	55.6	48.6	48.3	46.0
GOLD+		77.9	77.7	76.6	70.4	70.3	68.9	63.1	62.8	61.2
PLATINUM+		76.9	76.8	76.0	69.2	69.0	68.0	61.6	61.4	60.2
SILVER+	PLENUM 8.875 -1	71.2	71.0	69.5	62.1	61.8	59.9	53.3	53.0	50.8
GOLD+		81.3	81.3	80.1	74.8	74.8	73.3	68.3	68.3	66.5
PLATINUM+		80.4	80.4	79.7	73.7	73.7	72.8	66.9	66.9	65.8

*Temperatures less than the interior dew point temperatures indicates a risk of condensation for that room type. Numbers in red are at risk of condensation.
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About UnitiWall

UnitiWall Corporation has developed the most complete prefabricated, high-performance, fully unitized wall panel system for use in new construction and deep energy retrofits. UnitiWall panels incorporate all exterior cladding options and window types, are customized for each project, and delivered fully clad, ready to install. Based in Mississauga, Ontario, UnitiWall provides a simple, energy efficient and future-ready solution that is revolutionizing building envelope construction and making projects safer and more cost-effective. Learn more about UnitiWall at www.unitiwall.com

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Media Contact:
Johanna Hoffmann ● Oomph Group Inc.

416.977.5402 ● jhoffmann@oomphgroup.com