DEXTALL

ALEKSANDRA ZATORSKA

Head of Product (Dextall Studio)

Master's degree in Architecture (NYIT)

Google UX Design Specialization

Excellence in interdisciplinary research and design

JAMES McGORTY

Senior Business Development Executive

B.S.-Architectural Technology (NYIT)

Certified Passive House Tradesperson

Certified Sustainable Building Advisor

DEXTALL

ACHIEVING PASSIVE HOUSE PRINCIPLES

and Reducing Embodied Carbon

Prefabricated
Wall Systems

New York Passive House Webinar
May 11, 2023

LEARNING *OBJECTIVES*

1. How to achieve the Passive House Principles with unitized prefabricated wall systems.

2. Discover sustainable materials in prefabricated wall systems that reduce embodied carbon.

3. See how Dextall’s prefabricated walls reduce embodied carbon compared to on-site built walls.

4. Learn to reduce embodied carbon through technology powered by Dextall Studio.

1. HOW TO ACHIEVE *THE PASSIVE HOUSE PRINCIPLES*

with unitized prefabricated wall systems

1

SUPER-INSULATED ENVELOPE

2

AIRTIGHTNESS

3

HIGH-PERFORMANCE WINDOWS

4

THERMAL-BRIDGE-FREE DETAILING

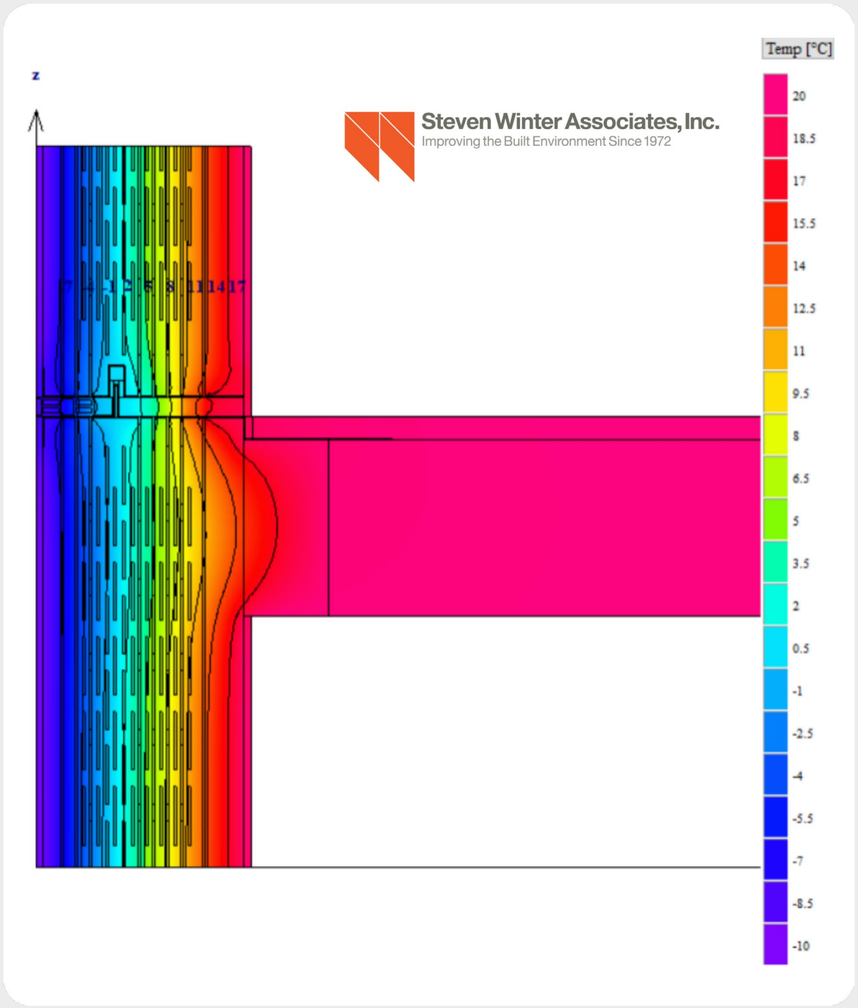
5

HEAT RECOVERY VENTILATION

SUPER-INSULATED *ENVELOPE*

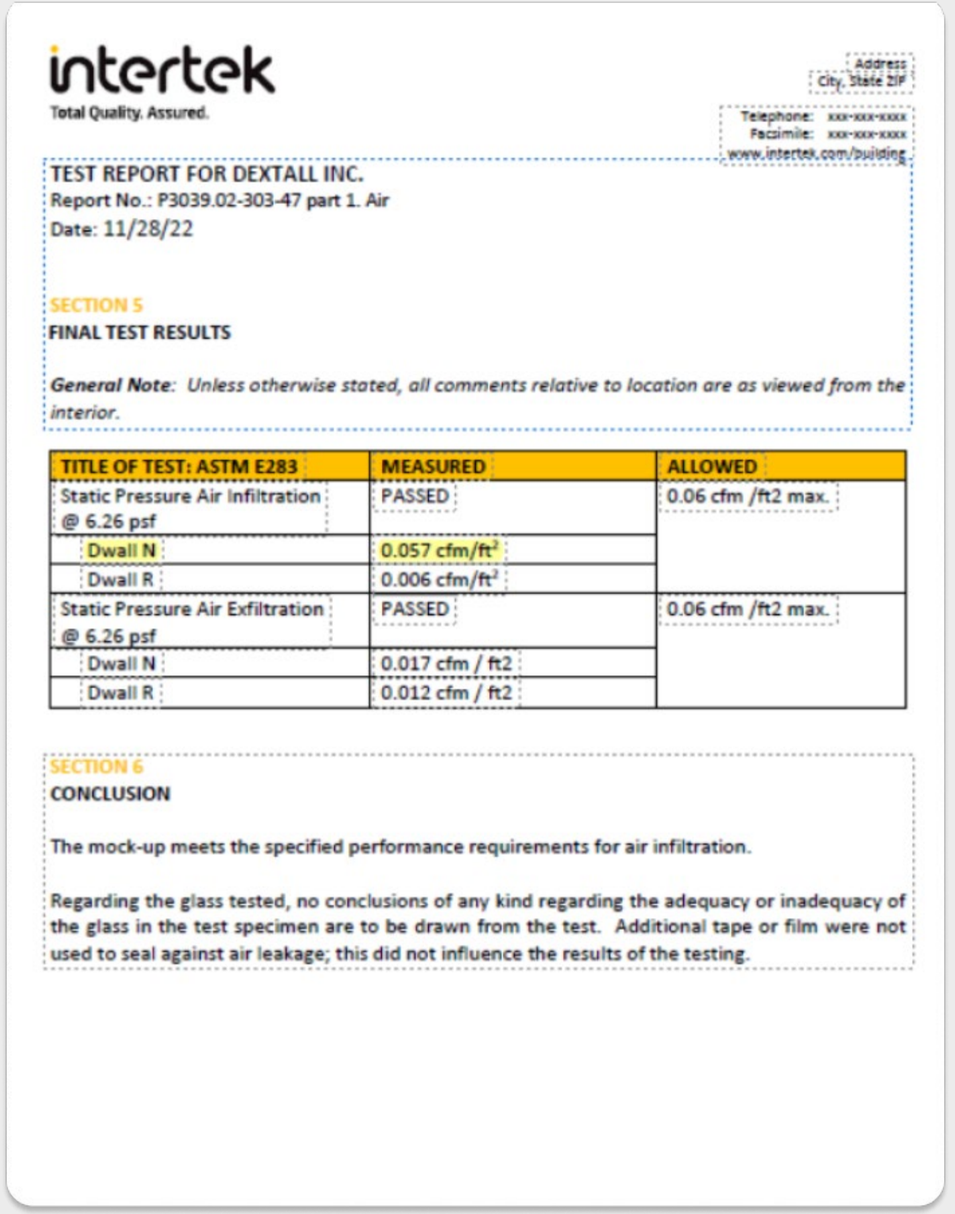
- Mineral wool insulation
- Up to 10” of Insulation (R value = 29)
- Add 2” interior insulation (R value = 33+)
- Heat3 Modeled (effective R / U values)

			Model Results		NYC Code		DC and Philadelphia Code	
Case Name	Ext. Insulation Thickness (in)	Cavity Insulation Thickness (in)	U Value (Btu/hr·ft2·F)	R Value (hr·ft2·F/Btu)	U Value (Btu/hr·ft 2·F)	R Value (hr·ft2·F/Btu)	U Value (Btu/hr·ft2·F)	R Value (hr·ft2·F/Btu)
Case 1.0	6	2	0.0431	23.2	0.0610	16.4	0.0640	15.6
Case 2.0	8	2	0.0373	26.8	0.0610	16.4	0.0640	15.6
Case 3.0	10	2	0.0304	32.8	0.0610	16.4	0.0640	15.6
Case 1.1	6	0	0.0552	18.1	0.0610	16.4	0.0640	15.6
Case 2.1	8	0	0.0452	22.1	0.0610	16.4	0.0640	15.6
Case 3.1	10	0	0.0348	28.7	0.0610	16.4	0.0640	15.6



AIRTIGHTNESS

- Interlocking EPDM gasketing
- Air / Vapor tapes seal joints & windows
- ASTM E283 Walls 0.06 cfm/ft2
- ASTM E283 Windows 0.01 cfm/ft2



intertek
Total Quality. Assured.

Address
City, State ZIP
Telephone: xxx-xxx-xxxx
Facsimile: xxx-xxx-xxxx
www.intertek.com/building

TEST REPORT FOR DEXTALL INC.
Report No.: P3039.02-303-47 part 1. Air
Date: 11/28/22

SECTION 5
FINAL TEST RESULTS

***General Note**: Unless otherwise stated, all comments relative to location are as viewed from the interior.*

TITLE OF TEST: ASTM E283	MEASURED	ALLOWED
Static Pressure Air Infiltration @ 6.26 psf	PASSED	0.06 cfm /ft2 max.
Dwall N	0.057 cfm/ft^2	
Dwall R	0.006 cfm/ft^2	
Static Pressure Air Exfiltration @ 6.26 psf	PASSED	0.06 cfm /ft2 max.
Dwall N	0.017 cfm / ft2	
Dwall R	0.012 cfm / ft2	

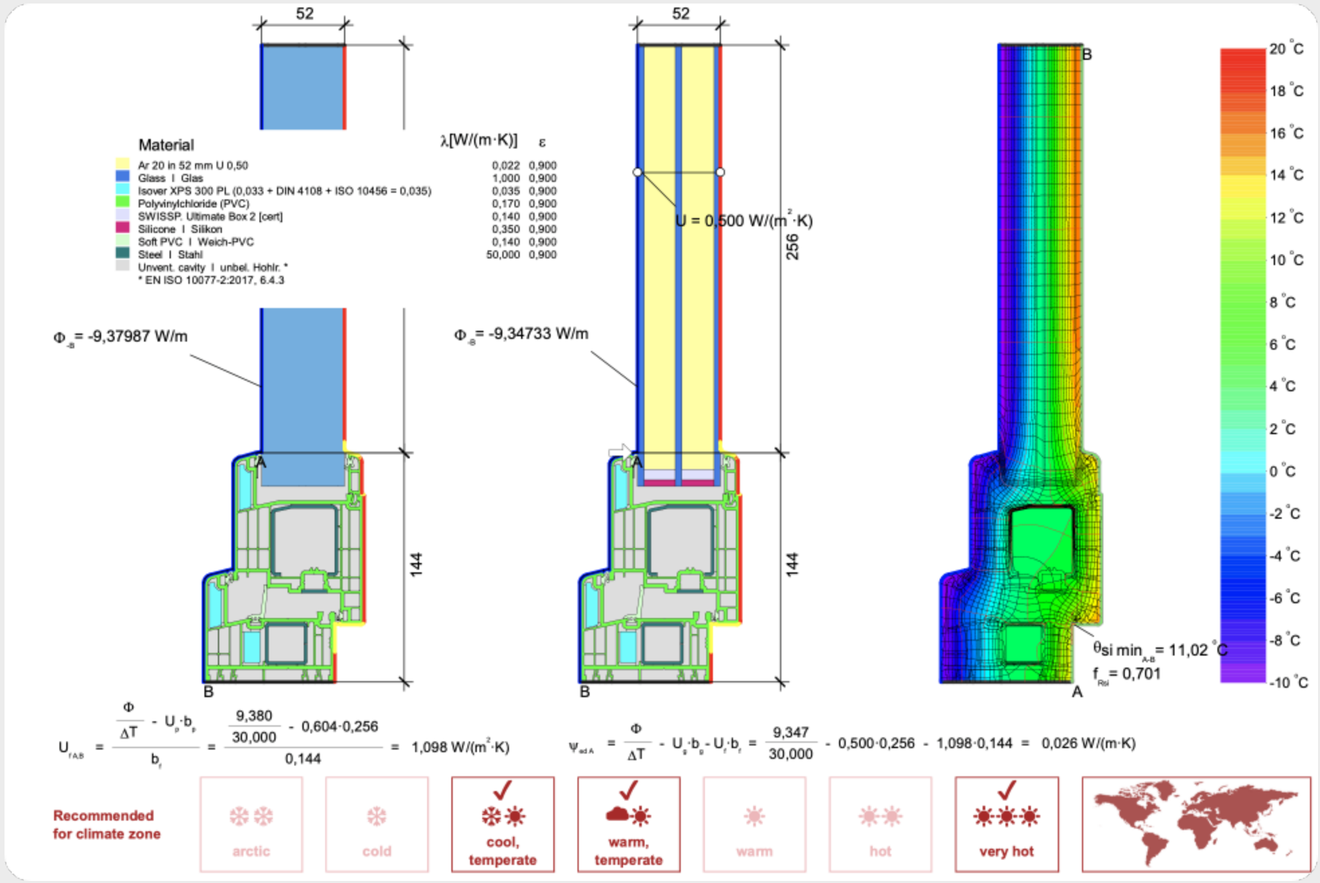
SECTION 6
CONCLUSION

The mock-up meets the specified performance requirements for air infiltration.

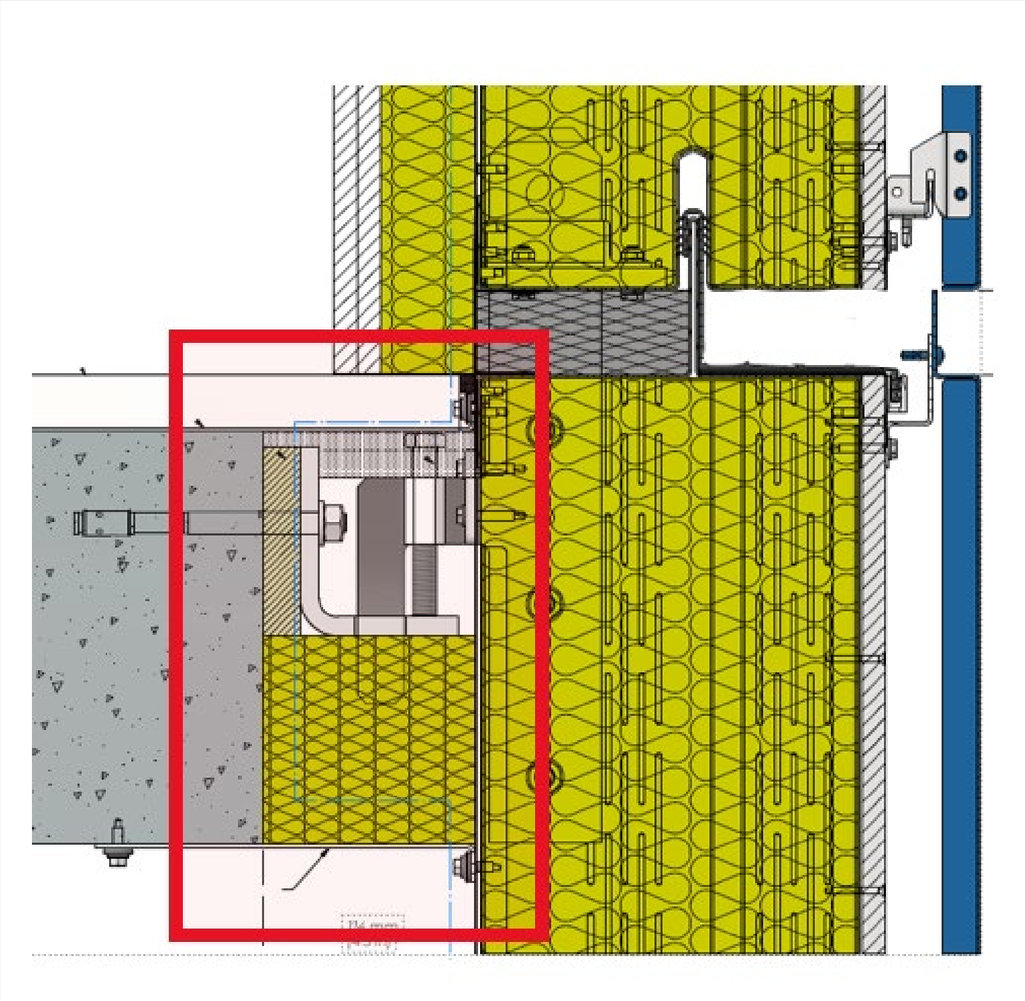
Regarding the glass tested, no conclusions of any kind regarding the adequacy or inadequacy of the glass in the test specimen are to be drawn from the test. Additional tape or film were not used to seal against air leakage; this did not influence the results of the testing.

HIGH-PERFORMANCE WINDOWS

- Non-conductive uPVC frames
- PHI and/or PHIUS Certified
- Triple pane, argon filled
- Low E coatings (SHGC)



THERMAL-BRIDGE-FREE



DETAILING

- Laser-perforated framing
- Thermally-broken structural brackets
- Exterior over-insulation of windows
- Insulation at slabs

HEAT RECOVERY VENTILATION

- Insulated thru-wall ducts
- Louvers and/or perforated cladding
- ERV / HRV / Heat Pump Integration

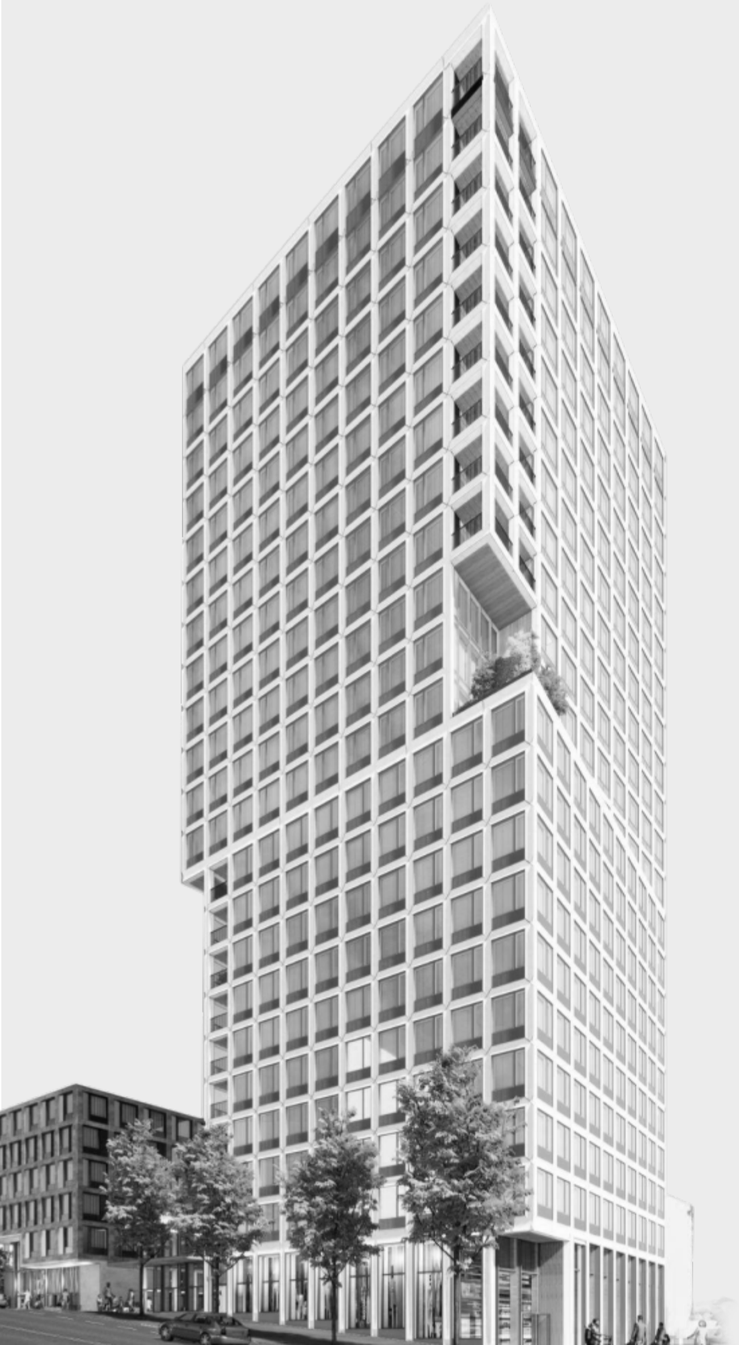
2.DISCOVER

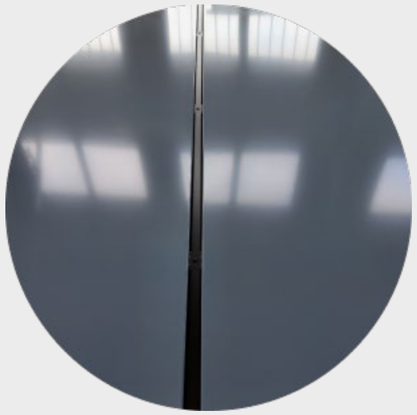
SUSTAINABLE MATERIALS
IN PREFABRICATED WALL SYSTEMS
THAT REDUCE EMBODIED CARBON



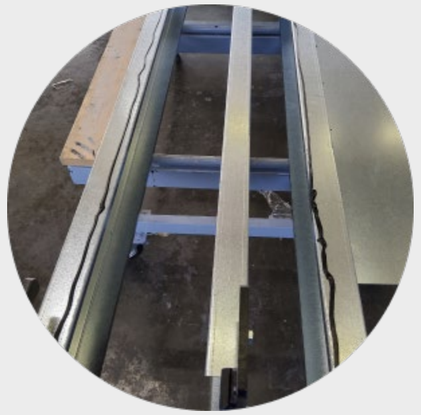


**Environmental Product Declaration (EPD) – in progress*





CLADDING



ALUMINUM THERMOPROFILE FRAMING

STONE WOOL INSULATION

GYPSUM WEATHERBOARD

INTERIOR VAPOR BARRIER — SHEET METAL

3.SEE HOW

DEXTALL'S PREFABRICATED WALLS REDUCE EMBODIED CARBON COMPARED TO ON-SITE BUILT WALLS

The Metropolitan

LCA REPORT - METROPOLITAN AVE PROJECT

CONDUCTED IN COMPLIANCE WITH THE STRICTEST INDUSTRY STANDARDS BY 3rd PARTY

average **construction waste down 90%** compared to conventional construction

---

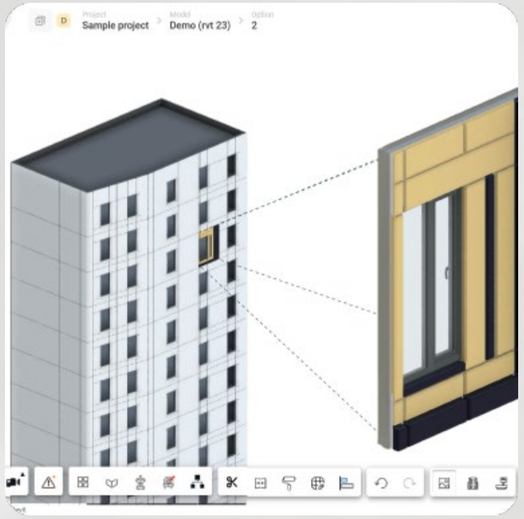
a **43% reduction** in **embodied** carbon footprint

---

a whopping **52% effective cost reduction**

4. LEARN

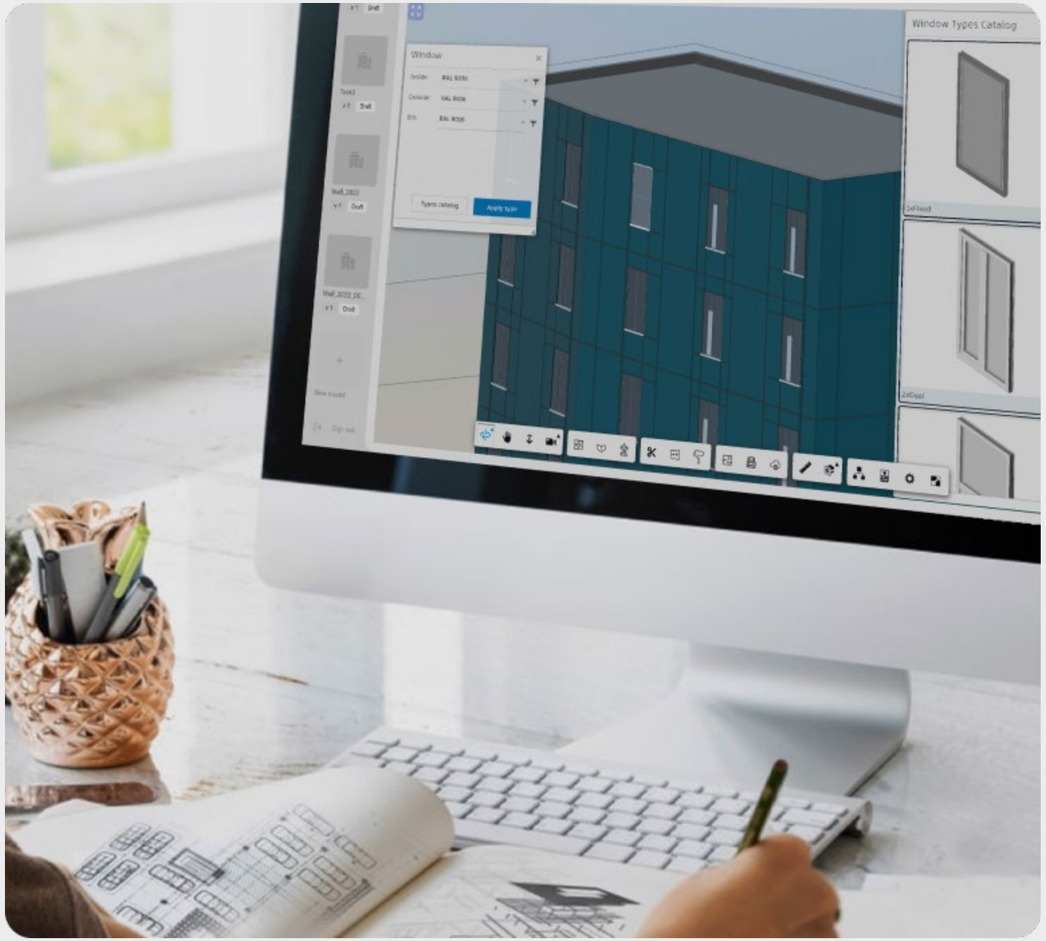
TO REDUCE EMBODIED CARBON THROUGH TECHNOLOGY POWERED BY DEXTALL STUDIO



DESIGN → *FABRICATION* → *LOGISTICS* → *INSTALLATION*

DEXTALL STUDIO

CUTTING-EDGE TECHNOLOGY THAT SEAMLESSLY CONNECTS DESIGN AND INSTALLATION EXECUTION



Integration with construction projects ecosystem

Data-driven Design Assist compatible with Revit

AR integration, installation and maintenance

Industry compliant **output drawings**

Centralized project information system

EMBODIED CARBON REDUCTION

with

DEXTALL STUDIO

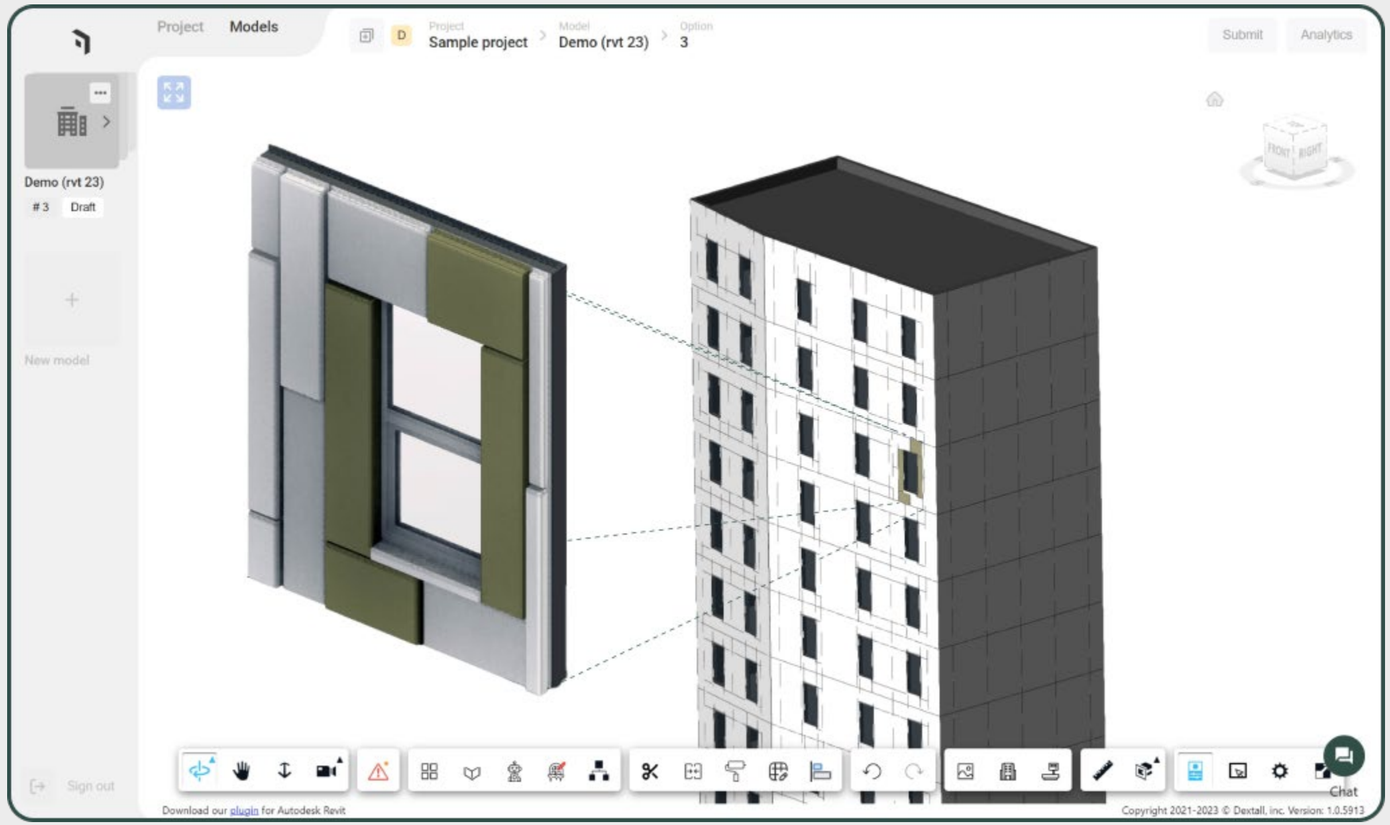
PART 1 – PANEL OPTIMIZATION

Algorithms that **optimize performance and reduce costs**

Reduce material waste by up to **30% ↓**

Instant solutions for panels-to-panel connections

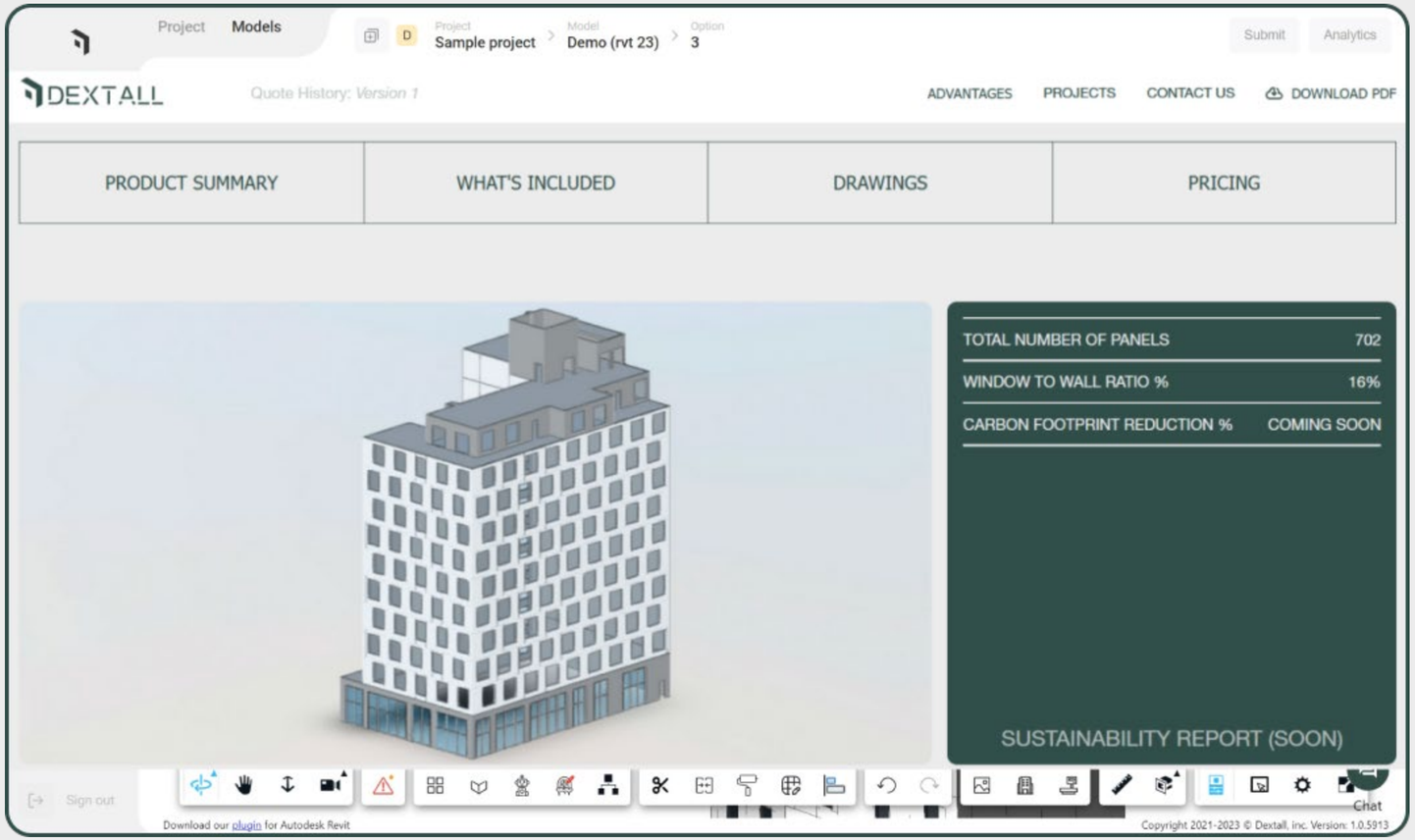
Cladding design tool



EMBODIED CARBON REDUCTION

with

STUDIO



PART 2 – STREAMLINED COLLABORATION

- **Transparency**
- **Collaboration and communication** amongst all stakeholders
- **Real-time Data Sharing**
- **Scalable solutions**

CONCLUSIONS

Unitized prefabricated wall systems achieve the Passive House Principles.

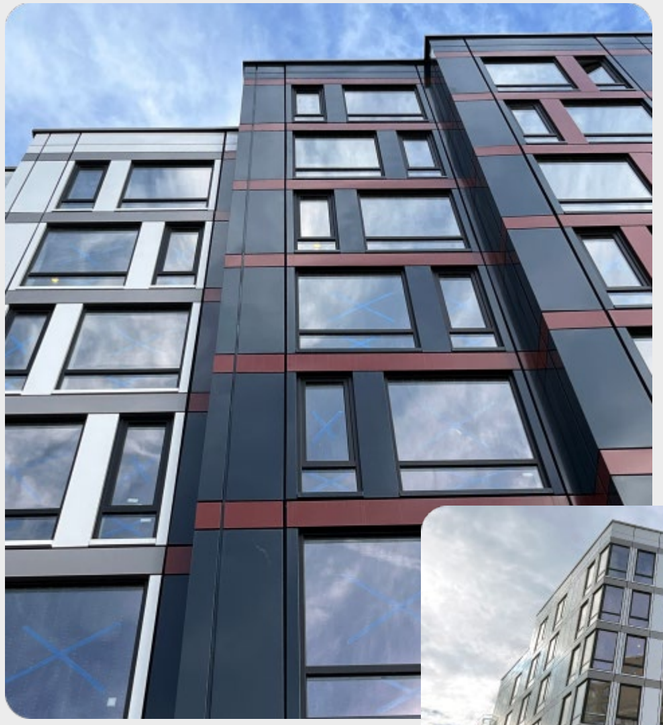
By usage of sustainable raw materials, unitized prefabricated wall systems can reduce embodied carbon.

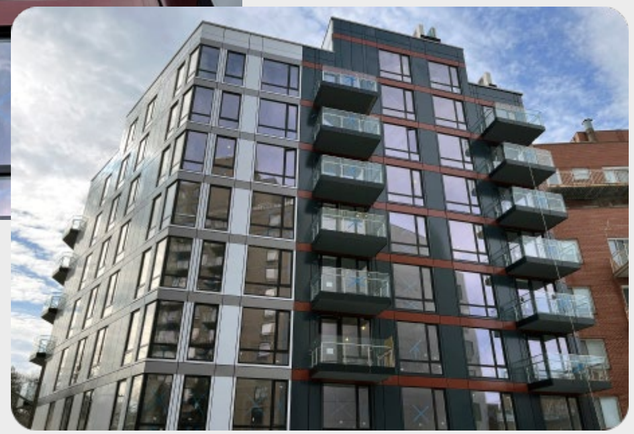
Unitized prefabricated wall systems significantly reduce embodied carbon compared to on-site built wall construction.

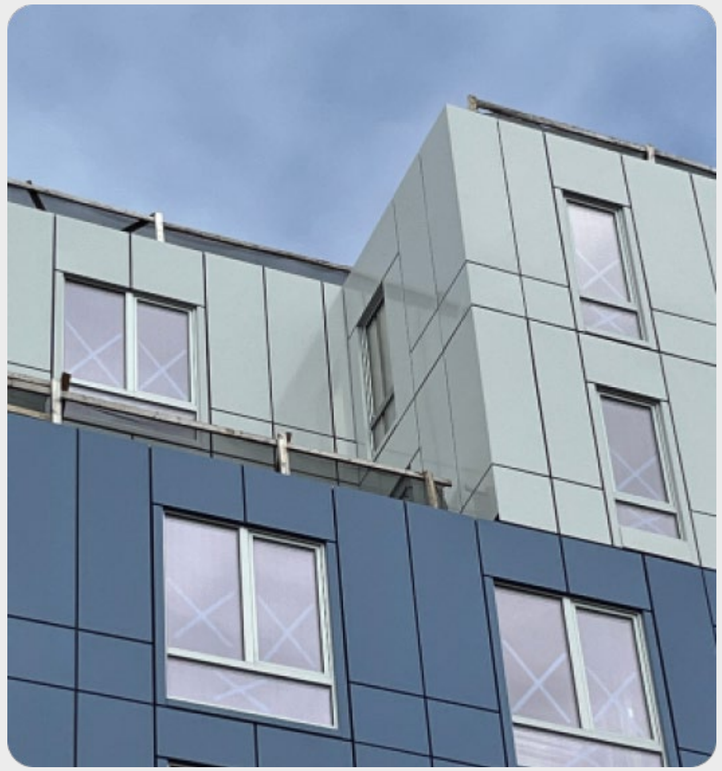
Technology powered by Dextall Studio can help reduce embodied carbon.

CLOSING COMMENTS

Q & A







CASE STUDIES

1660 MADISON

Carbon-Neutral

Empire Building Challenge Award Winner

Retrofit – Tenants in place

CASE STUDIES

CARMEN VILLEGAS

- passive house inspired
- 8" Dwall Effective R-Value 28
- triple pane windows
- renewable energy through BIPV

FACADE DESIGN CAPABILITIES

THANK YOU!

DEXTALL

ALEKSANDRA ZATORSKA

Head of Product (Dextall Studio)

Aleksandra.zatorska@dextall.com

JAMES McGORTY

Senior Business Development Executive

James@dextall.com

(m) 917-242-1045