

Formawall®

Dimension Series® Graphix Series®



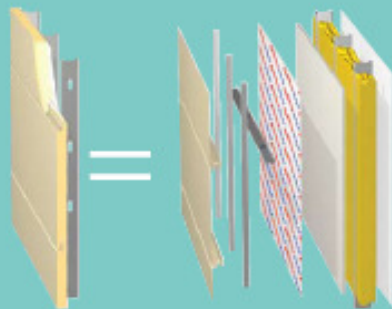
CENTRIA



Aesthetics Is Just the Beginning

Formawall

An Advanced Composite Wall System



FORMAWALL	VS	TRADITIONAL
1 component required		7 components required
1 installer required		Up to 3 installers required
Works for all climates		Climate-specific design required
Superior thermal efficiency		Thermally inefficient
Total air and moisture control		Questionable air and moisture control
Contains no mold food sources		May contain mold food sources
Integrated windows, louvers and sunshades		No integrated components
Proven optimized long-term performance		Unknown - dependent on installation quality

FEATURE
1 Foamed-in-place core
2 Exterior metal skin
3 Interior metal liner
4 Concealed clip and fastener
5 Variable reveals
6 Patented pressure-equalized rainscreen joinery

BENEFIT
Provides a complete thermal break by filling all internal voids
Creates a beautiful aesthetic while providing panel strength and an exterior weather barrier
Ensures a continuous vapor and air barrier when combined with the shop-applied butyl seal
Conceals fastening locations and prevents crushing of the foam core
Allows architectural flexibility
Assures long-term water performance even with an imperfect air barrier

Formawall: Innovation

- 1 Formawall IMV
- 2 3" FWDS-T
- 3 FV-600
- 4 3" FWSS-T



The Smart-R™ Wall Solution

Smarter design. Smarter performance. Smarter wall.

Smart-R Design

- A systems approach to developing high-performance architectural cladding
- Seamless integration of panels, windows, louvers and sunshades provides sleek sightlines at component joinery intersections
- All-metal joinery provides unrivaled architectural foam panel aesthetics
- Design flexibility with 3" thick Formawall Dimension Series DS-59 and DS-60 profiles and Formawall Graphix Series panels

Smart-R Performance

- Improved 3" FWDS-T panel and new FV-600 window thermal performance
- Design specifically addresses air infiltration, a critical issue in overall wall performance
- Formawall IMV metal vertical joint features improved thermal performance and superior defense against water intrusion
- Shop-assembled windows reduce risk during field installation and increase the speed of construction

Smart-R Wall

- Integrated wall system reduces the amount of material used (no receptors or exposed sealants)
- Engineered composite foam panel, integrated accessories and factory-assembled windows reduce job site waste
- High-performance wall system improves the overall air, water and thermal performance of the building
- An insulated metal wall system with an unmatched combination of aesthetics, performance and sustainability

3" Formawall-T insulated metal panel

- Available with all popular Formawall profiles
- Seamlessly integrates with louvers, sunshades and FV-600 windows
- Enhanced thermal performance
- R 22*



*estimated - in testing

FV-600 Formawall window

- Shop-assembled, integrated punched or strip window system
- Available on studs or thru-tube supports
- Seamlessly integrates with 3" Formawall-T
- Enhanced thermal performance
- R 3.5*

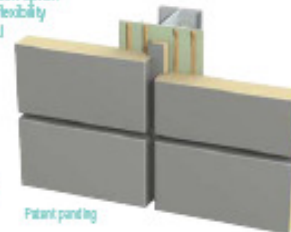
*estimated - in testing



Formawall IMV insulated metal vertical joint

- The only foam panel product offering a 4-sided metal joint option
- Added aesthetic flexibility
- Enhanced thermal performance
- R 4*

*estimated - in testing



Patent pending

Formawall PE (pressure-equalized) vertical seal plate

- The only foam panel product with a pressure-equalized vertical and horizontal joint
- Integral vented drainage channel
- Available on studs or thru-tube supports
- Only available with 2" and 3" Formawall and FV-200 and FV-300 windows



Patent pending

Formawall

Dimension® and Graphix Series®

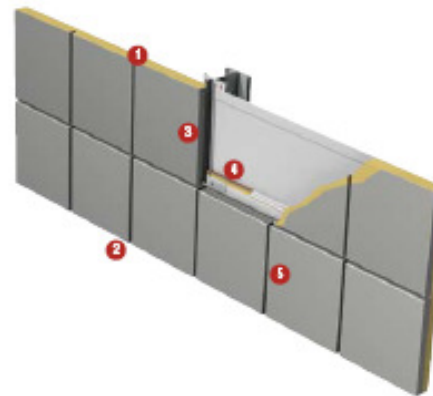


Formawall Dimension Series is the foremost complete insulated metal composite wall panel that provides virtually unlimited architectural options, as well as significantly advanced engineering and environmental responsibility.

Graphix Series

The appearance of 12 panels from just four Graphix panels.

- 1 Segmented Graphix joints
- 2 Placement of joints specified by designer
- 3 Actual vertical joint
- 4 Concealed dip
- 5 Segmented joints are treated to match actual joint



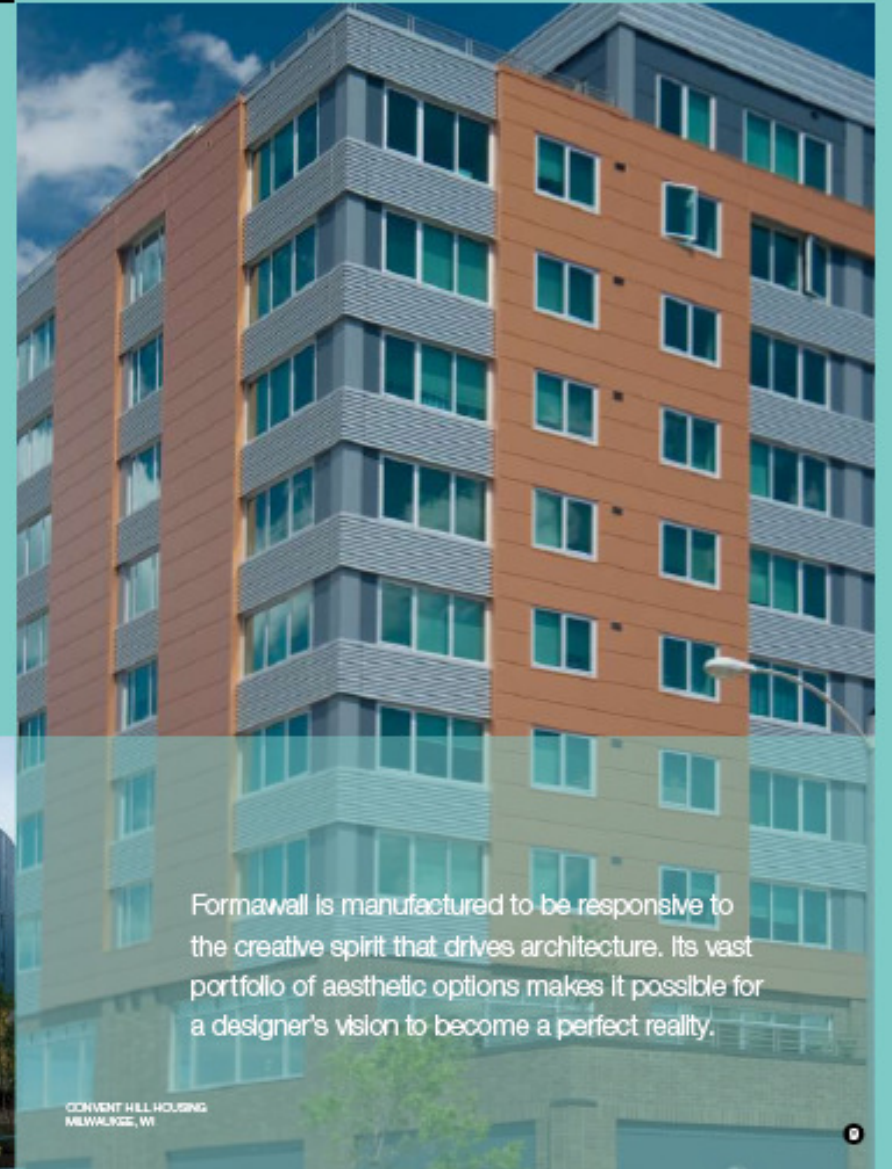
Formawall Graphix Series includes all the superiority of the Dimension Series plus a unique segmented construction that offers design freedom, simplified installation and reduced overall costs. Formawall Graphix panels give the illusion of many smaller panels within a single panel, resulting in virtually unlimited design flexibility.

Formawall

Aesthetics
In the Architect's Hand

Aesthetics

Aesthetics
Performance
Sustainability
The Perfect Combination



Formawall is manufactured to be responsive to the creative spirit that drives architecture. Its vast portfolio of aesthetic options makes it possible for a designer's vision to become a perfect reality.



SOUTHERN OHIO MEDICAL CENTER
PORTSMOUTH, OH



GEISINGER CENTER FOR HEALTH RESEARCH
DANVILLE, PA

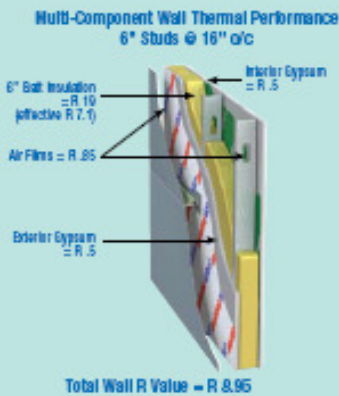
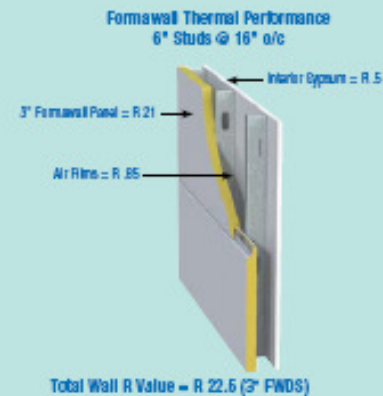
CONVENT HILL HOUSING
MILWAUKEE, WI

Performance:

ATMP[®] Advanced Thermal and Moisture Protection

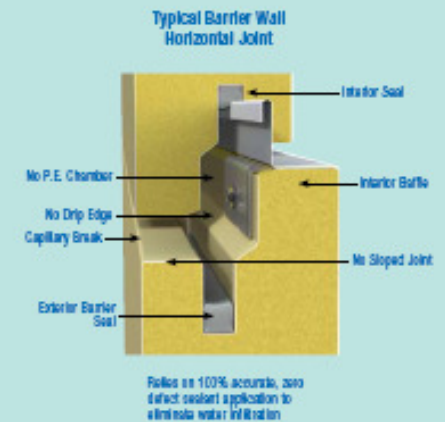
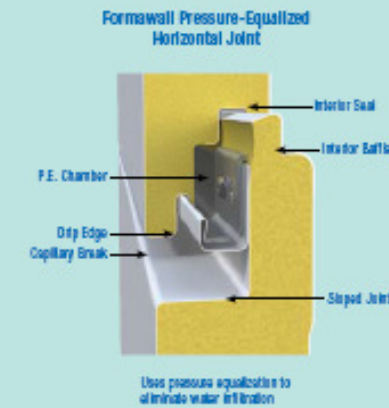
Unsurpassed Thermal Performance

Behind every Formwall panel are sound scientific principles and rigorous testing. Formwall's composite design allows for maximum thermal efficiency. Per ASTM G236, no correction factor is made to the R-value of Formwall because the insulation is placed outside of the stud cavity. A multi-component wall using R-21 fiberglass insulation inside the stud cavity yields a corrected R-value of only 8.95 and would meet the ASHRAE 90.1 2007 code only in Zone C.

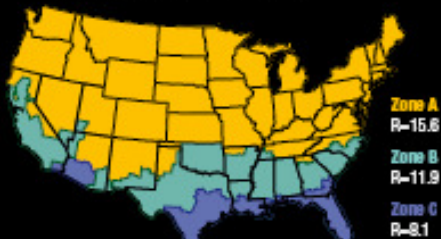


Outstanding Moisture Protection

The design of Formwall's horizontal joinery addresses the five forces that move water through a wall joint. Formwall's patented pressure-equalized horizontal joinery provides a superior barrier against water infiltration. Independent tests such as AAMA-508-07 confirm this performance even in the presence of an imperfect air seal. Other barrier wall designs must rely on 100% accurate, zero defect sealant application of their air seals, something that is nearly impossible to achieve.



ASHRAE / IESNA Standards 90.1-2007



Formwall panels meet ASHRAE standards in all Climate Zones. Multi-component systems meet ASHRAE only in Zone C. For Zones B and C, multi-component systems require deeper studs or more insulation.

System Tests Per ASTM G236 Comparing Formwall With Multi-Component Construction

6" Stud Framing @ 16" O.C.

Wall Type	Nominal Insulation R-Value	X	Correction Factor	=	R-Value
3" Formwall	R-21	X	NA	=	21
Multi-Component	R-19	X	0.37	=	7.1

R-Value Analysis per Component

R-Value	Exterior Exposure	Air Films	Interior Exposure	=	Effective R-Value
21	NA	0.85	0.5	=	22.35
7.1	0.5	0.85	0.5	=	8.95

Water Penetration Controls Provided by Formwall's Pressure-Equalized Horizontal Joinery

Five Forces	Physical Control (provided by Formwall joint)
Gravity	Sloped Joint
Kinetic Energy	Interior Baffle
Surface Tension	Drip Edge
Wind Action/Air Currents	Pressure-Equalization Chamber
Pressure Differential	Pressure-Equalization Chamber

CAPILLARY ACTION - OPEN JOINT	GRAVITY - SLOPED JOINT
DRINKING TENDRIL - DIP	WINDY ACTION - BARRIER ENERGY

Wind Speed, Pressure and Water Height Rise Comparison

The table below illustrates the potential water height rise within a typical barrier wall horizontal joint for a given difference in pressure across the panel. It notes the equivalent wind speed in pounds per square foot in inches of water. Without pressure equalization within the joint cavity, water will rise within the joint when there is a break in the air seal and likely become trapped within the panel joinery. This can lead to long-term panel degradation.

Wind Speed (MPH)	Pressure (PSF)	Water Height Rise (in)
25	1.6	31
50	6.4	1.23
88.5	12.0	2.31
75	14.4	2.77
76.54	15.0	2.88
88.4	20.0	3.95
100	25.6	4.92

Sustainability:

Beyond Green



Low-Emitting Materials
 Energy Optimization
 Reduced Job Site Waste
 High Recycled Content
 Independent Sustainability Verification



Cradle to Cradle® Certification

Formwell has earned Silver Certification from Cradle to Cradle®, a program administered by McDonough Braungart Design Chemistry (MBDC). This evaluation rates the sustainability of a product by looking at the total life cycle, including the complete human and environmental health impacts. Certification lasts only one year so practices and protocols are reviewed annually to assess enhancements and progress.

LEED Credit Opportunities

Category	Description	Points Available
EA Credit 1	Optimize Energy Performance	1 - 10 Points
MEP Credit 4.1	Recycled Content	10% 1 Point
MEP Credit 5.1	Low-Emitting Materials	10% 1 Point
EQ Credit 4.1	Low-Emitting Materials: Adhesives and Sealants	1 Point
EQ Credit 4.2	Low-Emitting Materials: Paints and Coatings	1 Point
ID Credit 1	Innovation in Design: Cradle to Cradle® Certification	1 Point
Potential for Other Credits	The use of Formwell Panels may contribute to other LEED Credits through the use of Integrated Formwork window systems (EQ Credits 8.1 and 8.2, Daylight and Views), Integrated Formwork (EQ Credit 2, Increased Ventilation), and Integrated sunshades (EA Credit 1, Optimize Energy Performance).	

ecoCENTRIA

CENTRIA continues to deliver answers and show measurable results through industry-wide sustainability initiatives. For more information go to: www.CENTRIA.com/ECOCENTRIA



Distinctively CENTRIA

Aesthetics



Performance



Sustainability



CENTRIA brings an important complement of attributes to the world of metal composite wall panel systems. As an innovator, we continually provide the design community with products that stretch the boundaries of aesthetics. As a manufacturer, we make certain that our systems have no rival when it comes to performance. And as an environmentalist, we dedicate our organization to leadership in sustainability practices. It is no wonder we are seen then as Distinctively CENTRIA.

