

Press Release



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Schöck & Morrison Hershfield release Results of a Collaborative Study on Thermal & Energy Performance of Thermal Break Technology in Concrete Balconies

New York, NY and Toronto, ON (June 20th, 2013) – North American engineering firm Morrison Hershfield and Schöck, the international developer of innovative building products today issued a comprehensive report on the impact of concrete balconies on thermal and whole building energy performance. The report, which analyzes the potential impact that structural thermal breaks have in reducing the overall heating energy consumption and raising interior surface temperatures, shows structural thermal breaks can reduce overall heating energy consumption from 7 to 14% and raise interior surface temperatures by roughly 13°F, versus conventional concrete slabs. The complete Morrison Hershfield (MH) report, Thermal and Whole Building Energy Performance of Thermal Break Technology for Concrete Balconies in High-Rise Multi-unit Residential Buildings, is available at www.schock-us.com/MHReport .

“This study is timely and relevant to high-rise residential buildings in cold climates and jurisdictions where industry is adjusting to more stringent energy standards but is looking to minimize costs, minimize changes to construction methods and limit constraints on architecture. The report provides guidance regarding questions that builders and designers are asking about the impact of thermal breaks for cantilevered balconies.” said Patrick Roppel, Building Science Specialist from Morrison Hershfield.

MH utilized a whole building energy model, Energy Plus, to analyze a common multi-unit residential high-rise building – a 32-floor, 422-unit structure, with 356,608 sq.ft. of floor area, 163,321 sq.ft. wall area with roughly 40% “vision glass” (windows, glass doors), and 3.5% of exposed cantilevered concrete slab area (balconies).

The study analyzed the impact of thermal bridging (energy loss, condensation risk and thermal comfort) regularly caused by penetrating a building envelope with a balcony slab, for three concrete balcony scenarios:

- Conventional solution--Cantilevered concrete balcony with continuous concrete slab penetrating through the building envelope

- Site solution--Cantilevered concrete balcony slab with intermittent insulation placed between continuous concrete beam connections
- Schöck solution--Cantilevered concrete balcony with an Isokorb CM20 thermal break

Findings show Schöck Isokorb surpasses others

The goals of the study were to 1) thermally analyze the balcony detail, determine the U-value, a measure of heat transmission through a building part, and assess the difference in interior surface temperature and 2) determine the impact on whole heating energy consumption for the three balcony slab scenarios.

The study found that Schöck Isokorb delivers an effective thermally broken slab. The U-value, and therefore the heat transmission, is reduced by implementing Schöck Isokorb thermal break. Schöck's solution cuts heat flow through or around the slab by 75% compared to a conventional continuous balcony. In contrast, the slab with intermittent concrete connections provides only a 21% improvement over the conventional balcony slab.

The study reports that “a principal benefit of the Schöck solution is that the floor is much warmer in the winter than with the other construction methods. The floor slab at the perimeter is warmer, thus providing benefits for condensation resistance and thermal comfort, and the heat loss through the balcony area is greatly reduced.”

From a whole building perspective, the Schöck solution reduced overall heating energy consumption from 7% to as high as 14% when using Isokorb in conjunction with higher performance assemblies compared to a building with conventional balcony slabs. The study noted that the Schöck solution also can help meet Building Code requirements, without requiring investment in other costly improvements related to the building envelope.

“Modern buildings require high quality and durable solutions,” noted Dieter Hardock, product manager, Schöck. “Tenants and owners of new apartments expect high standards, good thermal comfort and energy efficient buildings. The MH study shows that Schöck Isokorb not only helps to fulfill these immediate expectations, but is also an investment in performance and quality that will stand the test of time.”

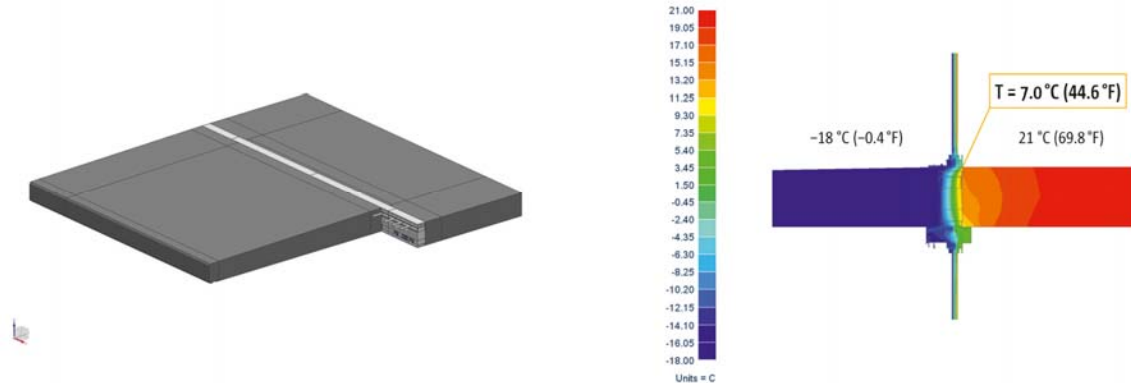
For more information please contact Schock USA Inc. at 855 572 4625 or visit www.schock-us.com.

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Photographs

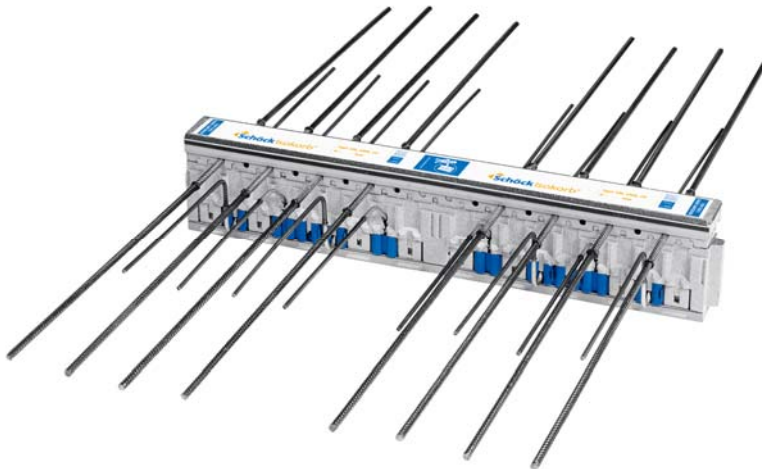
[Schöck Isokorb Solution.jpg]



Schöck solution--Cantilevered concrete balcony with an Isokorb CM20 thermal break. A principle benefit of the Schöck solution is that the floor slab is much warmer in the winter than the other constructions. This is a benefit for condensation resistance and thermal comfort.

Photo courtesy of: Morrison Hershfield

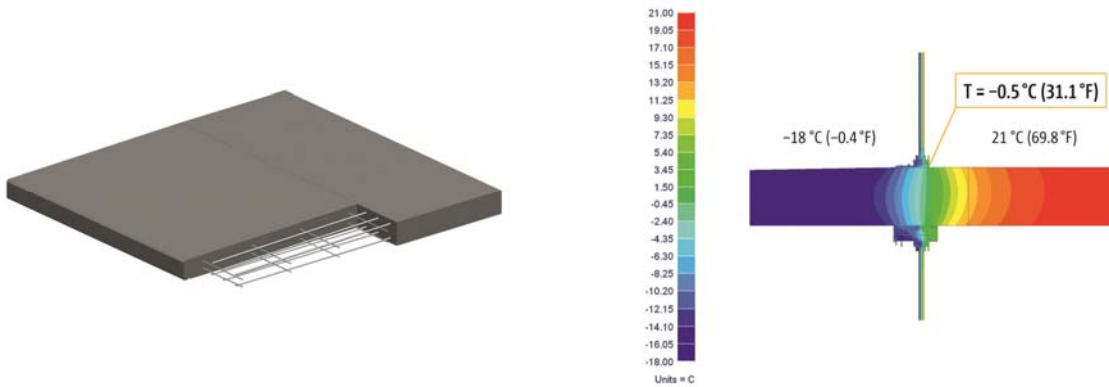
[Schöck Isokorb Solution.jpg]



Isokorb reduces heat transfer through the building envelope, and therefore provides a higher interior temperature. This innovative approach to thermal break technology saves energy consumption, prevents the formation of condensation and mold, and increases comfort, e.g. near the balcony.

Photo courtesy of: Schöck USA Inc.

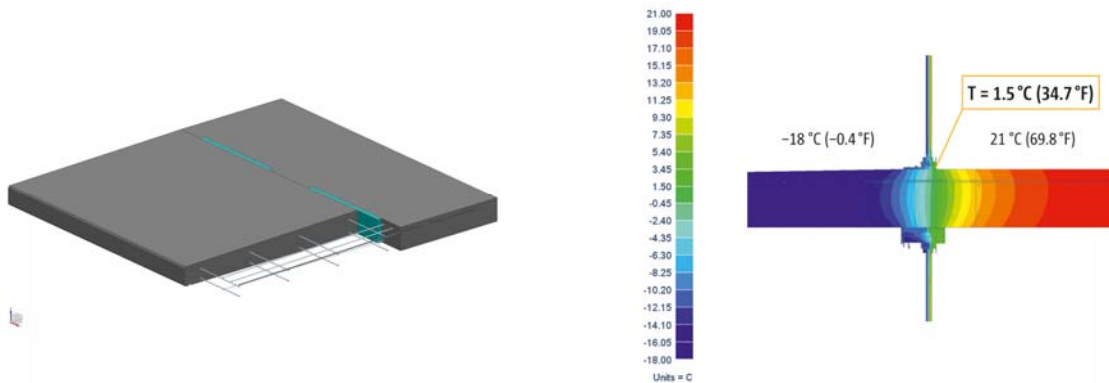
[Conventional Solution.jpg]



Conventional solution--Cantilevered concrete balcony with continuous concrete slab penetrating through the building envelope.

Photo courtesy of: Morrison Hershfield

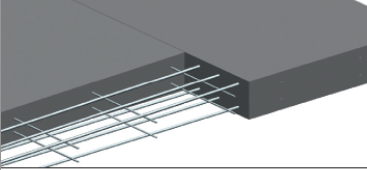
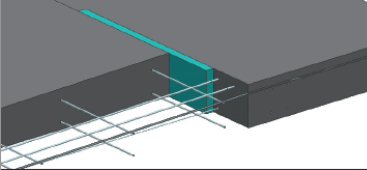
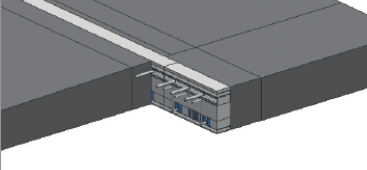
[Site Solution.jpg]



Site solution--Cantilevered concrete balcony slab with intermittent insulation placed between continuous concrete beam connections.

Photo courtesy of: Morrison Hershfield

[Key Findings.pdf]

Key Findings						
Slab Scenario	U-value of Balcony Slab Area W/m ² K (Btu/ hr ft ² °F)	Reduction of Heat Loss	Coldest Concrete Temperature ¹⁾ [°C]	Meets Design Criteria With Regard to Condensation Resistance ²⁾	Meets Code ³⁾ [SB-10]	Heat Energy Savings
 <p>Continuous Slab (Conventional solution)</p>	4.88 (0.859)	N/A	-0.5°C (31.1°F)	No ✗	No ✗	N/A
 <p>Slab with intermittent concrete (Site solution)</p>	3.86 (0.680)	21%	1.5°C (34.7°F)	No ✗	No ✗	2.0%
 <p>Slab with Isokorb (Schöck solution)</p>	1.21 (0.213)	75%	7.0°C (44.6°F)	Yes ✓	Yes ✓	7.3%
<p>¹⁾ at design temperatures of -18 °C (-0.4°F) Exterior and 21 °C (69.8°F) Interior (close to 2009 ASHRAE Handbook-Fundamentals)</p> <p>²⁾ temperature greater than the dewpoint of interior air 5 °C (41°F) at RH 35% and 21 °C (69.8°F)</p> <p>³⁾ Energy Efficiency Supplement (SB-10) of the Ontario Building Code requires to exceed by not less than 5% the energy efficiency levels attained by conforming to the ASHRAE 90.1-2010</p>						

Results and analysis summary with key findings of the collaborative study on “thermal and energy performance of thermal break technology in concrete balconies” conducted by Schöck and Morrison Hershfield.

Photo courtesy of: Morrison Hershfield

Notes to the editor

Schöck: The Leading Thermal Break Supplier.

Headquartered in southern Germany, Schöck develops and produces innovative components, solving thermal bridges and impact noise in buildings. For almost thirty years, the Schöck Isokorb product range has led the market in providing exceptionally high performance thermal break and reinforcement solutions for houses, industrial and commercial buildings with balcony, canopy, and beam connections. Schöck Isokorb® type CM and S provide solutions to prevent thermal bridging and allow design freedom for concrete-to-concrete and steel-to-steel cantilever connections.

Since the Isokorb® line was introduced, Schöck group of companies has installed more than 36 million linear feet of the product. Schöck provides high-quality, easy-to-install products with the highest level of technical back-up and comprehensive customer service to the construction industry – for simply better building.

Morrison Hershfield:

Morrison Hershfield (www.morrisonhershfield.com) delivers innovative, cost-effective and technically sound solutions for a wide variety of infrastructure. The multi-disciplinary engineering and management firm supports the buildings, energy, industrial, land development, technology / telecom, transportation and water / wastewater markets. Employee owned for over 67 years, Morrison Hershfield's vision is to be the first call for engineering solutions that make a difference.

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