Building Efficiency at the Balcony

Balconies enhance our views and extend buildings with a panoramic outdoor space. And while balconies provide aesthetic advantages, they often require extensive repairs and upkeep.

Balconies as a feature versus issue
The solution to balcony construction issues is quite simple with innovative construction methods for balconies, which add a creative facet to durable design.

Sustainable-luxury for the future
Providing energy efficient construction with Isokorb® structural thermal breaks demonstrates dedication to quality and comfort in your properties. It is time to future-proof your buildings for upcoming code changes by preparing to stay one step ahead with Schöck Isokorb®.

Sources
- /uni2460 Oxford Brookes University, Oxford Institute for Sustainable Development (OISD Technology), Report 060814SCH, Thermal Performance of Steel Beam Junctions using Different Connection Methods
- /uni2461 Morrison Hershfield Thermal Performance of Building Envelope Details for Mid- and High-Rise Buildings (1365-RP)
- /uni2462 RDH Research and Energy Group, ICBEST 2014 Enclosure Capital Load and System Cost Distributions
- /uni2463 Schock Research Reports

How we identify thermal bridges?
Using thermal imaging cameras, thermal bridges will appear as areas of higher temperature when viewed from the exterior of a building. This is shown in Figure 1 where higher temperatures (i.e. thermal bridges) around the door, window and balcony slab can be seen due to higher heat transfer through the building.

Major maintenance and renewal costs for buildings

<table>
<thead>
<tr>
<th>Maintenance Item</th>
<th>Current Value</th>
<th>Future Value</th>
</tr>
</thead>
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<tr>
<td>Electrical</td>
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<tr>
<td>Mechanical</td>
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<td>$892.000</td>
</tr>
<tr>
<td>Elevators</td>
<td>$0</td>
<td>$1.062.000</td>
</tr>
<tr>
<td>Finishes</td>
<td>$0</td>
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<tr>
<td>Amenities</td>
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<tr>
<td>Site work</td>
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<tr>
<td>Fire protection</td>
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</table>

**What is a thermal bridge?**
Thermal bridges are localized areas with higher thermal conductivity than their neighboring areas. Heat flow takes the easiest path.

The thermal bridging issue has a long history of damages relating to leaky balconies and building envelope failures. The most common problem with balconies is thermal bridging which causes cold floors, energy loss, and condensation damage with potential mold growth.

**Structural thermal breaks**
Structural thermal breaks can increase surface temperatures by up to 21.1° C with Isokorb® compared to non-insulated connections. Structural thermal break elements reduce energy loss in the balcony up to 2.2% compared to a conventional continuous balcony. Structural thermal breaks cut heat flow through and around the slab by 2.2%.

**Surface Temperatures**
- Operating Costs: 14°F
- Heat Flow: 75°F

**Sustainable luxury for the floor**
Structural thermal breaks can increase surface temperatures by up to 21.1° C with Isokorb® compared to non-insulated connections. Structural thermal break elements reduce energy loss in the balcony up to 2.2% compared to a conventional continuous balcony. Structural thermal breaks cut heat flow through and around the slab by 2.2%.

**Placement of concrete structural thermal breaks at the balcony window.**