Thermal Bridging report
Enviroform Solutions Ltd - Wind posts

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Introduction & Method

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**Introduction:**

Enviroform Solutions Ltd have supplied constructional drawings of a wind post wrapped in Spaceloft aerogel, to be used in a corner construction adjacent to two window/door jambs. The purpose of this project is to establish the linear heat loss of the insulated wind post via thermal bridging analysis.

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**Methodology:**

The thermal bridging analysis of insulated wind posts has been undertaken in accordance with EN 10211 : 2007 and BR497, using Physibel’s 3D heat flow program, TRISCO v13, to obtain the linear thermal transmittance, ψ-value. This value may then be used as a SAP entry for dwellings.
Model inputs and assumptions:

**Original drawings**: ‘img-170927141307.pdf’ dated 27 September 2017

**Wind post description**: The wind post considered is a galvanised steel post, 80mm x 80mm with a 6mm gauge. The panel is wrapped in 10mm foil-faced Spaceloft Aerogel. The post is then finished externally with 3mm aluminium cladding and internally with 12.5mm plasterboard.

**Construction**: The post is assumed to form a corner within a dwelling and be flanked by windows/door jambs on either side, as shown in Figure 1 below.

![Indicative insulated wind post construction](image)

Figure 1: Indicative insulated wind post construction

The wind post was built within TRISCO v13 with the details given in table 1 below.

<table>
<thead>
<tr>
<th>Material</th>
<th>Thermal conductivity, (\lambda) ((Wm^{-1}K^{-1}))</th>
<th>Information source</th>
<th>Colour code</th>
</tr>
</thead>
<tbody>
<tr>
<td>10mm Spaceloft aerogel</td>
<td>0.015</td>
<td>Aspen Aerogels CE marking DoP No SL2013-01</td>
<td>Red</td>
</tr>
<tr>
<td>12.5mm plasterboard</td>
<td>0.21</td>
<td>Value supplied by client</td>
<td>Blue</td>
</tr>
<tr>
<td>Unventilated airspace within post</td>
<td>0.235</td>
<td>Calculated in accordance with EN ISO 6946 : 2007</td>
<td>Yellow</td>
</tr>
<tr>
<td>80x80mm, 6mm Steel wind post</td>
<td>50.0</td>
<td>EN ISO 10456 : 2007</td>
<td>Pink</td>
</tr>
<tr>
<td>3mm Aluminium cladding</td>
<td>160</td>
<td>EN ISO 10456 : 2007</td>
<td>Brown</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Boundaries</th>
<th>Resistance, (R) ((m^2K/W)) / Temp, (T) (^{oC})</th>
<th>Information source</th>
<th>Colour code</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal (horizontal)</td>
<td>0.13 / 20</td>
<td>EN ISO 6946 : 2007</td>
<td>Magenta</td>
</tr>
<tr>
<td>External</td>
<td>0.04 / 0</td>
<td>EN ISO 6946 : 2007</td>
<td>Blue</td>
</tr>
</tbody>
</table>
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Results:

The linear thermal transmittance of the insulated wind post, when constructed as a corner and with jambs either side, is given in table 2 below.

Table 2: Linear thermal transmittance, $\psi$-value

<table>
<thead>
<tr>
<th>Wind post option</th>
<th>Insulation option</th>
<th>$\psi$-value (Wm$^{-1}$K$^{-1}$)</th>
<th>Temperature factor, $f_{\text{Rsi}}$ (-)</th>
</tr>
</thead>
<tbody>
<tr>
<td>80 x 80mm, 6mm gauge</td>
<td>10mm Spaceloft aerogel</td>
<td>0.078$^{[1]}$</td>
<td>0.89</td>
</tr>
</tbody>
</table>

[1] – Value to be entered as an corner junction in SAP (SAP ref E16). Heat loss also includes interfacing jambs (see note [2])

[2] – $\psi$-value for jambs (SAP ref E4) interfacing the wind post should be set to 0.00Wm$^{-1}$K$^{-1}$ (see note [1])

Disclaimer: The results and conclusions drawn in this report are based upon the information provided. BEPC accepts no responsibility for the accuracy or validity of information provided.

Limitations of use: The results identified in this report may not be used in support of Agreement certification via the BBA.
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Further Information:

Figure A.1: 80x80mm 6mm gauge wind post, insulated with 10mm Spaceloft aerogel