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Baustatik  
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## Calculation of the temperature factor $f_{RSI}$ , as far as of the linear thermal transmittance $\psi$ of a roller shutter box in a built-in situation; here: Monolithic brickwork

### I. Details concerning the roller shutter box

- |  |   |
|--|---|
| 1. Specification:                              | <b>CBR 165x175 I</b>  |
| 2. Report number:                              | 15 624-22-EN  |
| 3. Client:                                     | BeClever Sp. zo.o.<br>u.l. Malinowa 1<br>62-300 Września  |
| 4. Assignment:                                 | Examination of the thermal process technology characteristics of the above mentioned roller shutter box in a built-in situation (here: monolithic brickwork)  |
| 5. Basis of calculation:                       | All calculations concerning the roller shutter box are based on the original drafts of the client   |
| 6. Method of analysis:                         | Software: BISCO computer program to calculate two-dimensional steady state heat transfer in free-form objects; Version 11.0w  |
| 7. Rules / Standards:                          | DIN 4108 Bbl 2: 2006-03<br>DIN EN ISO 10077-2:2012-06<br>DIN EN ISO 10211:2008-04<br><br>List of specified criteria for buildings A Part 1<br>2015/2  |
| 8. Spec. material values (roller shutter box): | According to declaration of the client<br>PVC: $\lambda = 0,170 \text{ W/(mK)}$<br>Heat insulation: $\lambda = 0,032 \text{ W/(mK)}$<br>Aluminium (insect protection): $\lambda = 160,0 \text{ W/(mK)}$ |

### II. Calculation results

The roller shutter box complies with the proof of equivalency corresponding to image 60 DIN 4108 Bbl 2: 2006-03 in accordance with the conditions and construction materials mentioned on page 2

**Temperature factor:**

$$f_{RSI} = 0,77 \geq 0,70$$

**Psi-value:**

$$\psi = 0,25 \text{ W/(mK)} \leq 0,32 \text{ W/(mK)}$$

### III. Signature

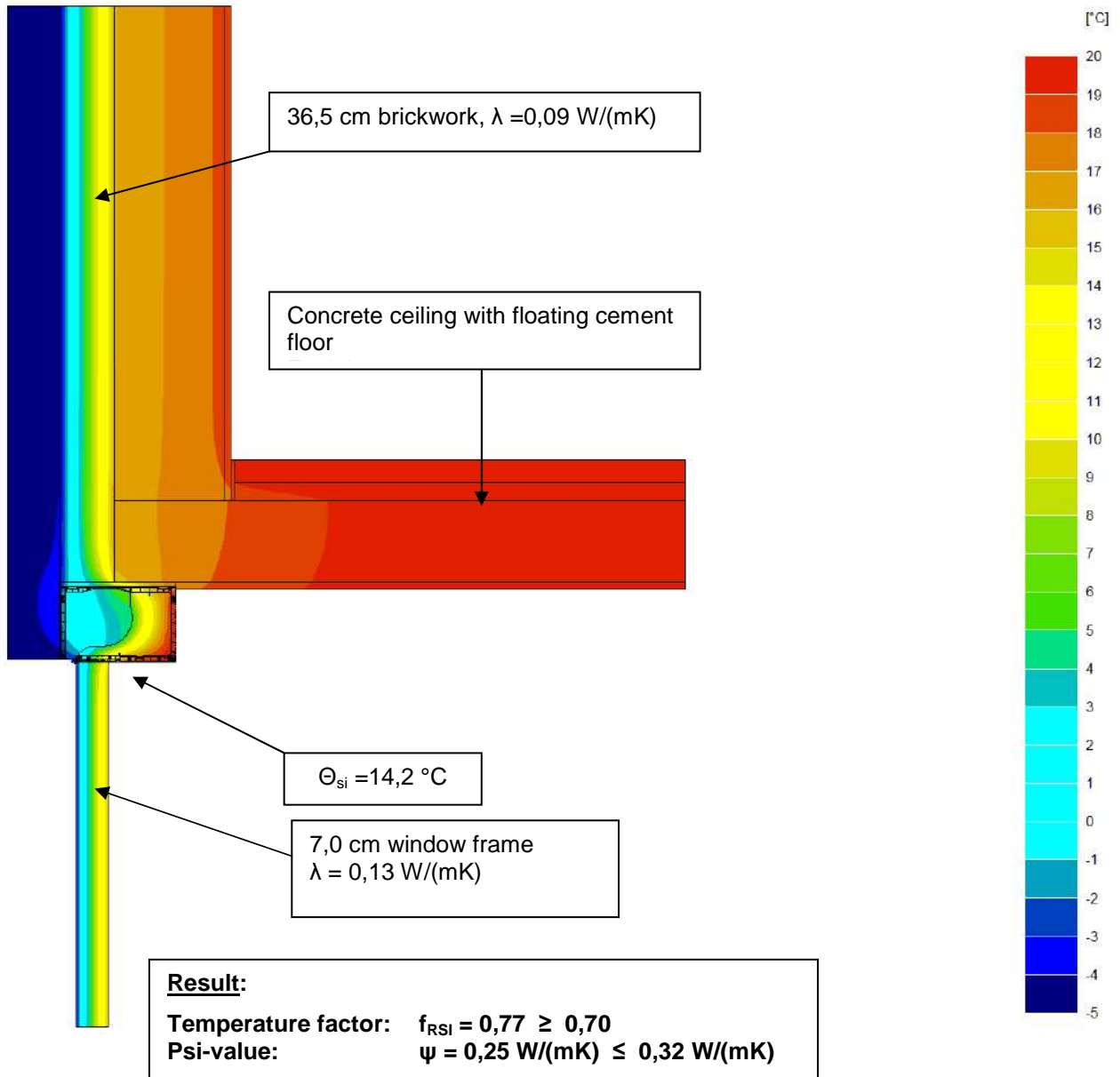
Unna, 22.09.16



(Stamp and signature of the officially recognized appraiser)

Image 1: Temperature gradation; monolithic brickwork

Conditions:  $f_{RSI}$ :  $R_{se} = 0,04 \text{ (m}^2\text{K)/W}$ ,  $\theta_e = -5^\circ\text{C}$ ;  $R_{si} = 0,13 \text{ (m}^2\text{K)/W}$  resp.  $0,25 \text{ (m}^2\text{K)/W}$ ;  
 $\theta_i = 20^\circ\text{C}$   $\psi$ -value:  $R_{se} = 0,04 \text{ (m}^2\text{K)/W}$ ;  $f_e = 0$ ;  $R_{si} = 0,13 \text{ (m}^2\text{K)/W}$ ;  $f_i = 1$



**Notes:**

The number of nodes in this calculation amounts to 164516.

- a) The roller shutter cavity is assumed non-ventilated. The air cells inside the box sections are non-ventilated cavities and acc. to DIN ISO 10077-2 are calculated separately. The  $\lambda$ -value of the roller shutter cavity is  $0,512 \text{ (W/mK)}$ .
- b) The emission grade for the surface has been considered 0,9.