

**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: **CBR 245x255 N**
2. Report number: 15 624-13-EN
3. Client: BeClever Sp. zo.o.  
u.l. Malinowa 1  
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  
DIN EN ISO 10077-2:2012-06  
DIN EN ISO 10211:2008-04  
List of specified criteria for buildings A Part 1  
2015/2
8. Spec. material values (roller shutter box): According to declaration of the client  
PVC:  $\lambda = 0,170 \text{ W/(mK)}$   
Heat insulation:  $\lambda = 0,032 \text{ W/(mK)}$   
Aluminium:  $\lambda = 160,0 \text{ W/(mK)}$

**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:**

$$f_{RSI} = 0,75 \geq 0,70$$

**Psi-value:**

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

**III. Signature**

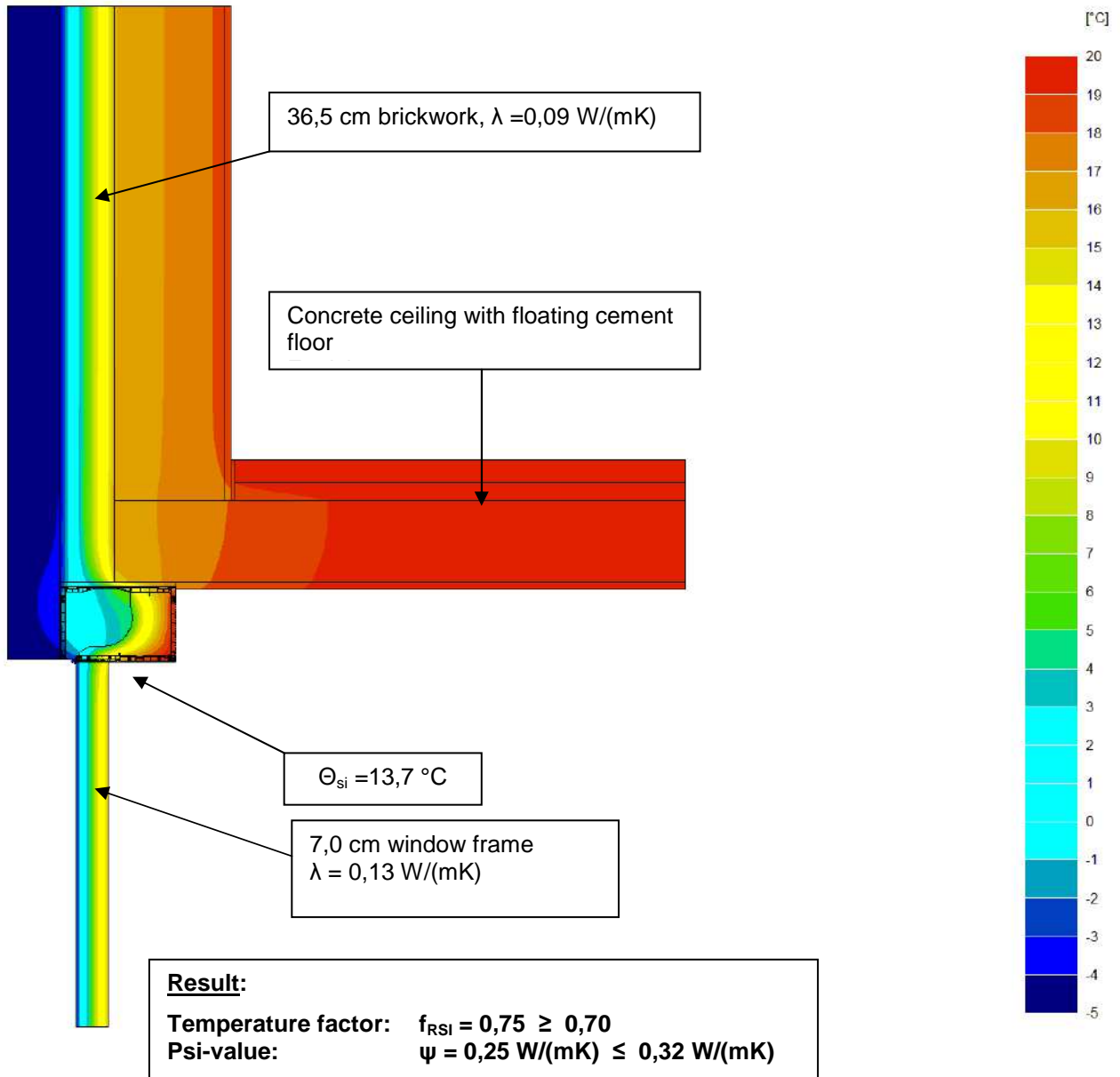
Unna, 22.09.16



(Stamp and signature of the officially recognized appraiser)

Image 1: Temperature gradation; monolithic brickwork

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



**Notes:**

The number of nodes in this calculation amounts to 173683.

- 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  $0,855 (W/mK)$ .
- b) The emission grade for the surface has been considered 0,9.