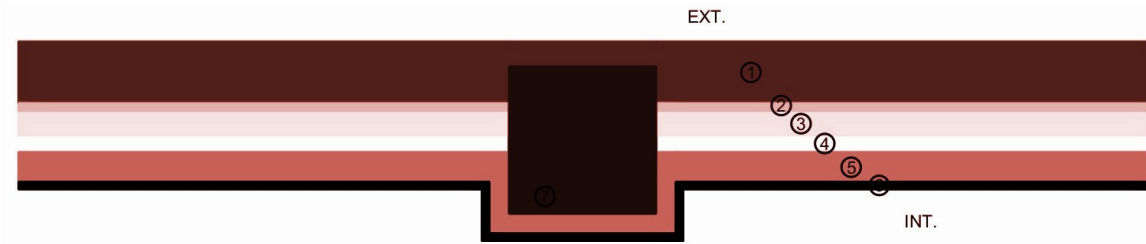


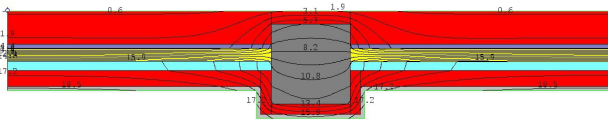
## PILAR EMBEBIDO EN FACHADA DE DOBLE HOJA

## COLUMN IN A CAVITY WALL



### DESCRIPCIÓN DE CAPAS / LAYER DESCRIPTION:

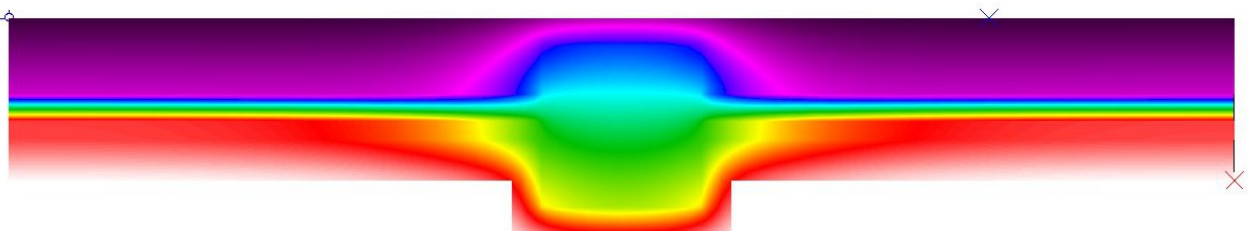
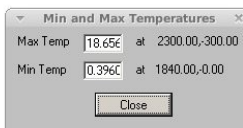
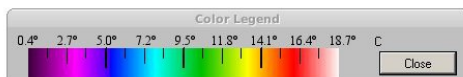
- ① Ladrillo cerámico perforado / *Clay perforated brick* (d=125mm;  $\lambda=0.6944\text{W/m}\cdot\text{K}$ )
- ② Mortero de cemento / *Cement mortar* (d=20mm;  $\lambda=0.80\text{W/m}\cdot\text{K}$ )
- ③ EPS (d=50mm;  $\lambda=0.0375\text{W/m}\cdot\text{K}$ )
- ④ Cámara de aire / *Air cavity* (d=35mm;  $R_{ca}=0.17\text{m}^2\cdot\text{K/W}$ )
- ⑤ Ladrillo cerámico hueco / *Clay hollow brick* (d=40/60mm;  $\lambda=0.375\text{W/m}\cdot\text{K}$ )
- ⑥ Enlucido de yeso / *Gypsum plaster* (d=15mm;  $\lambda=0.57\text{W/m}\cdot\text{K}$ )
- ⑦ Hormigón armado / *Reinforced concrete* (d=300mm;  $\lambda=2.3\text{W/m}\cdot\text{K}$ )



### RIESGO DE CONDENSACIÓN SUPERFICIAL / CONDENSATION RISK ON THE INNER SURFACE (C.T.E / UNE-EN ISO 13788):

$$F_{rsi} = (\theta_{si} - \theta_{ext}) / (\theta_{int} - \theta_{ext}) = (15.6^\circ\text{C} - 0^\circ\text{C}) / (20^\circ\text{C} - 0^\circ\text{C}) = 0.78 > 0.61$$

No existe riesgo de condensación / No risk of condensation [Madrid]



### FLUJO DE CALOR / TRANSMISSION HEAT LOSSES

$$Q_T = \Sigma(U \times A + \Psi \times l + \chi) \times \Delta T$$

- U = Flujo de calor a través de componentes homogéneos / *Regular component flux* [W/m<sup>2</sup>K]
- A = Área del componente homogéneo / *Area of the regular component* [m<sup>2</sup>]
- Ψ = Coeficiente del puente térmico lineal / *Linear thermal bridge coefficient* [W/mK]
- l = Longitud del puente térmico lineal / *Length of the Linear thermal bridge* [m]
- χ = Puente térmico puntual / *Point thermal bridge* [W/K]
- ΔT = Diferencia de temperatura del aire entre interior y exterior / *Temperature difference of the air between inside & outside* [°C]

$$Q_{1D} = A_1 \times U_1 \times \Delta T_1 \quad [W]$$

$$Q_{2D} = Q_{1D} + \Psi \times l \times \Delta T_1 \quad [W]$$

$$\Psi = \frac{Q_{2D} - Q_{1D}}{l \times \Delta T_1} = 1.492 \text{ W}/(\text{m}\cdot\text{K})$$

Q<sub>1D</sub> = Flujo/s de calor unidimensional del elemento homogéneo (fachada sin el puente térmico) / *Unidimensional heat flux of the regular component (façade without the thermal bridge)* [W]

Q<sub>2D</sub> = Flujo de calor bidimensional (fachada con el puente térmico) / *Bidimensional heat Flux (façade with the thermal bridge)* [W]