Mold Simulator - Tutorial 2

Wall/window thermal bridge analysis

Linear thermal transmittance of a wall/window thermal bridge will be computed in the next paragraphs. “example7.mos” example file will be used in order to understand fundamental aspects of this analysis.

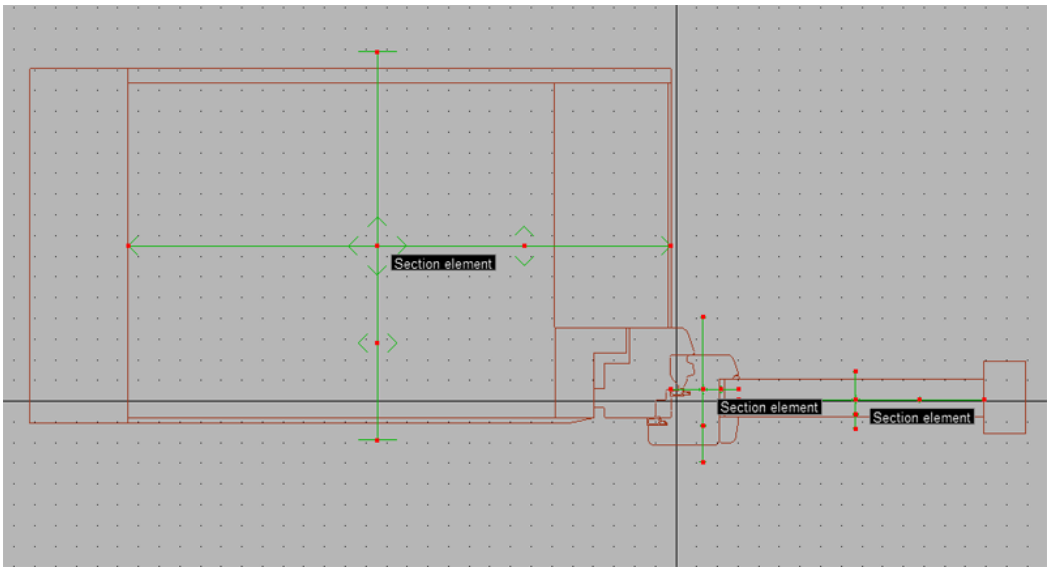
1- Introduction

We suppose to already have thermal transmittance (Uf) of window and also linear thermal transmittance (ψ) of frame/glazing's thermal bridge.
These values have previuosly been computed using the methods stated in EN ISO 10077-2.

Uf = 1.087 W/m²K

2- Section elements

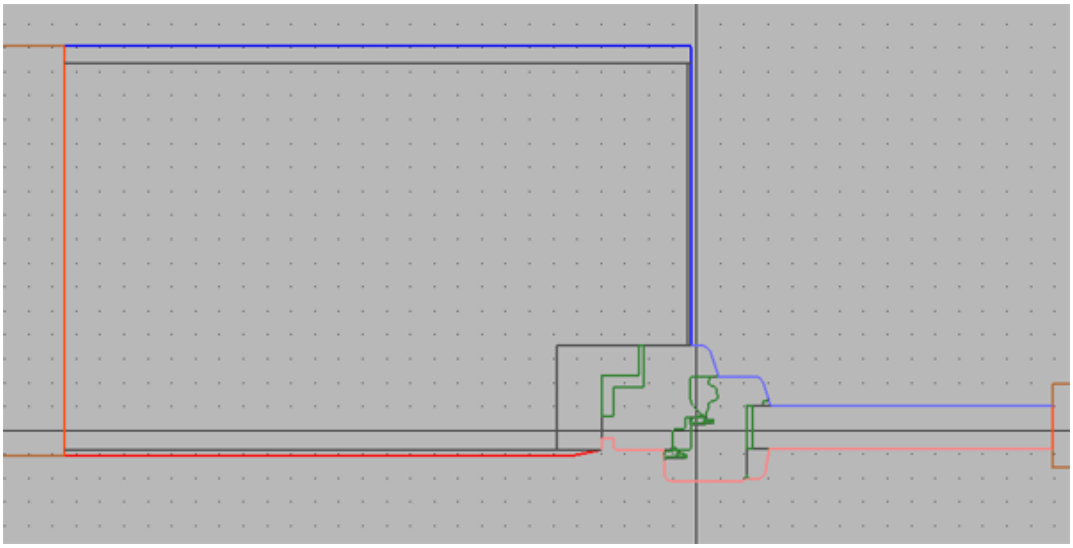
Please open file “example7.mos”, located in documentation's “samples” folder.



Note three section elements; from left to right:

- wall section element: click on one of the section element's squares, after having selected  tool, you can verify that U's computation is set to automatic. We're supposing that wall is composed by homogeneous layers and Mold Simulator will automatically compute U according to layers intersected by section element's vertical line;
- window section element: in this case Mold Simulator can't automatically compute window's Uf, since it's not a set of homogeneous layers; for this reason the value obtained by a previous analysis has been manually inserted, as specified in 1; manual insertion of value can be performet through  tool;
- glazing section element: as can be noticed, a panel made of homogeneous material with 0.035 W/mK conducibility has been used in place of glazing. We're infact using the same configuration used to perform window's frame computation, as stated in EN ISO 10077-2. We can let U computation to Mold Simulator.

3- Boundary conditions



Since norm ISO 13788 specifies different surface resistances, depending on whether we're analyzing walls or windows, it's necessary to use four different boundary conditions: internal/external window and internal/external wall.
In this situation “internal window” and “internal wall” are part of the same environment, the same for “external window” and “external wall”. To make sure that Mold Simulator identifies just two environments, boundary grouping must be by temperature and “internal window” and “internal wall” must have identical temperatures, the same for “external window” and “external wall”.
We're now ready to perform simulation and obtain thermal bridge's ψ value.