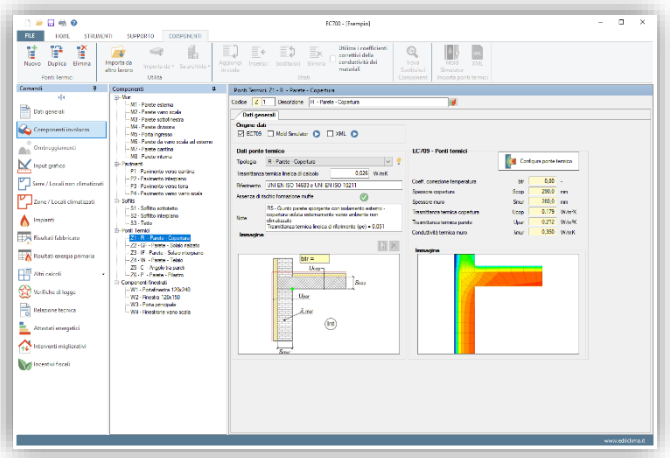
EC709

Thermal Bridges

EC709 is an abacus that allows the lineal thermal transmittance of thermal bridges to be determined as the design parameters of interest vary, based on finite element simulations determined using the detailed procedure laid down in standards UNI EN ISO 14683 and UNI EN ISO 10211.

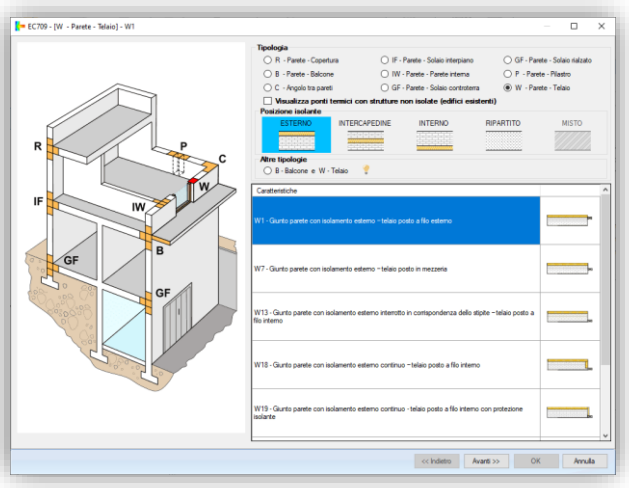


EC709 can be used stand-alone or integrated into **EC700 Building Energy Performance Calculation.**
In the first case, the EC709 module will determine the **lineal thermal transmittance** referring to both **internal dimensions (φ_i)** and **external dimensions (φ_e).**
In the second, the **lineal thermal transmittance** referring to the **external dimensions (φ_e)** will be determined, consistent with the method adopted by EC700 for surveying dispersing surfaces.

In both cases, EC709 allows the **verification of the critical temperature**, aimed at checking the risk of mold formation and surface condensation in place of the thermal bridge.

Features

For each thermal bridge, EC709 provides the geometric model, the qualitative trend of the **flow lines** and isotherms, the **linear thermal transmittance** values, calculated according to the design parameters identified by the user, and the **f_{rsi} temperature factor** required to perform the critical temperature verification.
The graphic representation of the types and positions of the insulation layers in the structures involved allows the designer an easy and quick identification of the thermal bridge under study.



EC709 allows the following types of thermal bridges to be calculated:

- joints between external envelope elements (between wall and roof, between wall and balcony, corner between walls);
- joints between external walls with interfloor slab and internal walls.
- joints between external walls with raised floors or floors on the ground;
- pillars in external walls;
- thermal bridges next to doors and windows;
- thermal bridges wall-window and wall-balcony recurring in building subject to renovation.

Once the type of thermal bridges have been chosen, it is possible to proceed to its characterisation, which involves specifying **the main characteristics** of the structures that compose it (thermal transmittances, thicknesses, conductivity of bricks, etc.), thus determining precise linear thermal transmittance values.

To facilitate the input of these characteristics, it is possible to display the data of the building structures involved in the thermal bridge (functionality only present when using EC709 integrated in EC700).
The software also makes it possible to filter from its list only those thermal bridges belonging to uninsulated structures typical of existing buildings, thus making it easier to identify them.

Finally, it is possible to carry out a **critical temperature verification of the thermal bridge**, aimed at verifying the risk of mold formation and surface condensation in place of the thermal bridge. The verification can be conducted by varying the external and internal boundary conditions

In the software there is also a section dedicated to the types of thermal bridges that have the greatest impact in cases of energy requalification of the envelope. Specifically, these are the **wall-frame** and **wall-balcony** nodes, whose construction types considered in the geometry are those most commonly used in Northern Italy and represent typical solutions for the correction of thermal bridges in interventions aimed at the 110% Superbonus.

Prints

The printouts are all available in **.RTF format**, so the user can make integrations and/or customisations to the documents before proceeding to the final printout.