

Evaluation of interstitial condensation risk: Influence of building façades composition

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ABSTRACT

The energy consumption from the burning of fossil fuels is the responsible of the reduction of natural resources together with a significant environmental impact. In Spain and Portugal, the construction sector represents about 30% of the total energy consumption. Because of that, building enclosures with low air tightness and high thermal performance are being implemented, in order to reduce the energy demand. Lower air ventilation rates of the spaces and inadequate building solutions may increase the risk of interstitial condensations. This phenomenon alters façade properties, not only in terms of efficiency but also damaging the whole structure. As a result of it, durability of the enclosure but also residents health are seriously affected by this.

WUFI Pro software [1] will be used in order to simulate the hygrothermal behavior of different façades. This tool analyzes the hygrothermal behavior of construction components, allowing the study of properties of hygroscopic material. It also performs unsteady simulations according to specific weather data available, depending on location.

In this work, the complete evaluation of multilayered façades is presented. Energy efficiency and risk of condensation are fully analyzed for different locations, materials and façade composition. Results are discussed considering the energy and risk condensation requirements proposed in the Spanish Building Technical Code [2] is followed.

REFERENCES

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