

Choosing the Right Membranes: Analysis of Multi-layer Enclosure Wall Performance

ABSTRACT

The choice of the wall membrane depends on a variety of performance attributes. Different walls require different membranes. The choice is dependent on various factors that are both wall make-up and environmentally imposed. Currently, a wide class of membranes are available with very distinct properties. The main properties that need to be carefully examined are the water vapor permeance, the water storage and retention isotherms, the liquid diffusivity, the thermal capacity and conductivity and the water surface tension. While the structural properties are very critical these are not examined in this presentation. The main focus of this presentation is on the overall hygrothermal response of the wall as a function of climatic condition.

In the presentation, membranes systems that allowed drainage (hygrophobic) reduced the amount of water available for transport into the insulation cavity. Walls with a ventilation strategy performed better than one that did not incorporate one. Most of the cases showed that this override the hygrothermal property selection. Results were processed to show the risk for mold growth. In some cases felt papers performed better and in other cases SBPO did. These results will be presented and discussed in the workshop.

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