

## Two Dimensional FEM Analysis - a Useful Tool in Building-Physic Diagnostic

### Análise Bidimensional FEM – uma Ferramenta Útil de Diagnóstico da Física dos Edifícios



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**Abstract:** The two dimensional Finite Element Method offers a really effective tool for experts and architects to study the thermal distribution of complex building constructions, mainly in thermal bridges. To create a model and the computing process itself takes only a reasonable long time.

The results give the partial temperatures in each finite element and in the surfaces too, which are the basic data for the vapour control. The thermal performance and distribution are visible on the screen visualised by colour codes. If we take care the limitations of the 2D analysis - the results will coincidence with the reality well.

**Keywords:** thermal bridge, thermal distribution, Finite Element Method

## 1. INTRODUCTION

In Hungary, most of the damage characterising residential building structures does not stem from structural engineering or quality shortfalls but from building-physics reasons. How could this be, when newly built residential buildings feature lots of intensive heat insulations, high quality masonry units, heat insulated doors and windows? The most frequently occurring moulding and vapour condensation problems indicate that in the designing and dimensioning of 'state-of-the-art' building structures, special care must be exercised.

The question arises why the structural shortfalls leading to these defects are not revealed in the planning stage?

This can basically be the result of the following factors: