

**Abstract of doctoral thesis written by
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„Estimation of transmission heat losses in residential buildings for their thermal diagnostics”

The aim of the thesis was to create a method to determine the transmission heat losses of existing residential buildings, by exploiting the short in-situ measurements, performed under the thermal diagnostics of buildings procedures.

In the thesis the balance method was used. It was modified to make it possible to take into account the transient heat transfer which occurs in real conditions. The energy balance was updated by applying the modified external temperature which takes into account the operation of solar radiation and wind on the building, and the effect of resistance and heat capacity of the elements of the building envelope on transient heat transfer, thus allowing shortening the time of measurements.

For the purpose of the research a computer program was created in Matlab. It calculates the transient heat transfer through building envelope components. In order to verify the results they were compared with the one from Ansys CFX and then the sensitivity analysis of the model were carried out on a number of input factors.

Finally, the proposed method was tested in real conditions. The testing procedures were performed in two selected buildings – uninhabited building (controlled conditions) and inhabited buildings. In the final part of the study the results of the analysis were compared and the conclusions were drawn.