

# INTERACTIONS OF AIRTIGHTNESS WITH VENTILATION SYSTEMS AND IMPLICATIONS ON ENERGY USE

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## **Abstract**

Due to imperfect building envelopes air infiltration takes place. Air that infiltrates into a building has to be heated up to the comfort level. The consequence for the use of energy is clear. Many calculation procedures in regulations and standard assume a linear relation between the air tightness level of a building and the energy use due to air infiltration. Nevertheless some demand controlled ventilation systems don't recognize the difference between outside air coming through cracks into the building and air that enters through purpose provided openings. Balanced systems however in case the purpose provided flows are really balanced, have a higher penalty for infiltration air than systems with natural air supplies.

For balanced ventilation systems all infiltrated air is also exfiltrated air, hence the energy use is bigger than for some other systems. The flows through a building in relation to the type of ventilation system and its control in relation to energy use will be discussed in this paper.