

Summary

DIN 1946 – 6

Development of a ventilation concept, instructions and calculation methodology for architects and planners with consideration of the building airtightness

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The interrelation between requirement and implementation and/or realization of the ventilation technique is represented in fig. 9 exemplarily for a building, similar to the example from DIN 4108 - 6 with and ventilated effective area by 205,6 m². Thereby the total minimum outside air flow rate in the basic ventilation amounts to $q_{V, ges.} = 214$ m³/h and in the ventilation for dampness protection it amounts to $q_{V, FL.} = 64$ m³/h.

Example 1: For a building with an effective n_{50} value of 1,0 h⁻¹ (corresponds to a requirement value < to 1.5 h⁻¹) the infiltration flow rate amounts to $q_{V, inf.} = 35$ m³/h. Thus it becomes clear, that the minimum outside air flow rate, which is necessary for the air flow rate for the ventilation of dampness protection, is not maintained. The securing can thus be made only by a further directing ventilation measure e.g. in form of a fan-supported ventilation. In the case of a balanced fan-supported fresh and exhaust air ventilation system, the fresh and exhaust air flow rate in the basic ventilation amounts to 183 m³/h. Thus 86% of the total flow rate of a possible WRG are available.

Example 2: In the second example (picture on the right side), n_{50} value 4.5 h⁻¹ (average value of the existing building stock) it is shown, that the infiltration flow rate rises substantially and is definitely above the minimum requirement value for the ventilation of dampness protection (also for existing building stock). The portion of the air flow rate of the ventilation measure, like in example 1, now amounts to only about 1/3 entirely of the outside air flow rate and that of the infiltration air flow rate about 2/3. This makes clear, that ventilation measures only make sense, if a high limit value is kept to the building airtightness.

Thus it is summarized, that in rooms, dwellings, residential buildings, as well as buildings similar to residential buildings, which are ventilated controlled by a ventilation measure in combination with high requirements to the building airtightness and on the basis of a holistic ventilation concept, building damage is avoided, room air quality is increased and in combination with an intelligent control system and or waste heat utilization (WRG and or WP) final energy and primary energy is saved and our environment relieved.