

The Role of Ventilation
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**The Performance of Dynamic Insulation in
Two Residential Buildings**

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THE PERFORMANCE OF DYNAMIC INSULATION IN TWO RESIDENTIAL BUILDINGS

In order to reduce the heat loss from buildings it is common to increase the thickness of insulation in the building envelope. The consequence of this action is more expensive buildings. Building regulations in countries with cold climate require U-values for the envelope which results in thicker and therefore often stronger constructions than needed for structural capacity.

Another strategy to save energy has been to reduce the ventilation rates in buildings. The consequence of this has been a lot of complaints from the users, and this action has certainly contributed to the diagnosis "sick building syndrome".

Dynamic insulation is an alternative to these actions. Dynamic insulation means a construction where the air is being forced through the insulation, usually from the colder outside air into the heated building. The theoretical U-value can be reduced to zero. In addition the incoming air is preheated.

The Norwegian Building Research Institute has been engaged to evaluate 12 row houses with dynamic insulation used in the roof, which has been built in the Oslo area. Two of the houses are monitored with temperature sensors, pressure transducers and wind direction and velocity meter. In addition tracer gas measurements inside the houses and on the attic are carried out. Energy consumption is registered every week. The paper presents the main results from these measurements and describes how pressure differences, wind and temperature differences affect the performance of the dynamic insulation. The measured temperature profile through the dynamic insulation is compared with calculations.