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Natural Ventilation Without Draught

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NATURAL VENTILATION WITHOUT DRAUGHT

- Development of storm safety valve

Draught from fresh-air vents during windy weather or periods with frost can be avoided by means of a newly developed flow valve. The valve has been developed by the Institute of Building Technology in collaboration with Fresh Danmark A/S in a project under the Research Program of the Ministry of Energy.

Valves with almost similar function were already available in Europe, when we began the development. But those valves lacked some of the features we found important. We wanted a storm safety valve that did not deflect the air flow under normal weather conditions and a valve that would function in arctic climate, enabling natural ventilation without draught in Greenland, too.

The storm safety valve is designed to be installed in fresh-air vents. It reduces the air flow through the fresh-air vents, when the wind is exceptionally strong, but it does not affect the air flow under normal weather conditions. It functions without electricity.

In practice, the storm safety valve limits considerably the inconvenience of draught from fresh-air vents. When there is no risk of draught from the fresh-air vent, the inhabitants are less inclined to shut off the fresh-air vent thereby reducing the risk of damages caused by humidity.

A dwelling equipped with fresh-air vents with storm safety valves will have the same air infiltration rate in calm weather as with fresh-air vents without storm safety valves. The storm safety valve does not impede the normal air flow, the difference is felt only in periods with strong winds, because the storm safety valve reduces the air flow, for instance to 30 m³/h per fresh-air vent.

In principle, the storm safety valve can be installed in all fresh air vents of a certain dimension. The storm safety valve has been tested in fresh-air vents with dimensions from ø75 mm to 150 mm x 150 mm. The storm safety valve is manufactured in Denmark.

The paper will describe the development of the storm safety valve, experience from use and suggestions for use in other connections.

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