

Energy savings using membrane energy recovery for ventilation in Nordic climate

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In well-insulated and air-tight buildings the energy consumed by ventilation accounts for a large fraction of the total energy consumption in cold climates. To further conserve the energy in these buildings, Membrane Energy Exchanger (MEE) may be applied to simultaneously recover both the sensible and latent heat in the ventilation system. The moisture recovery from the exhaust air to

supply air lowers the frost risk, which may cause increased pressure to drop and blockage of the channel of the heat exchanger. Therefore, the energy saving potential exists in the MEE compared to the sensible-only heat exchanger. Different frost avoidance approaches used for the MEE and the sensible-only heat exchanger in Nordic climate are investigated. The paper compared annual energy consumption by frost protection and by conditioning the air in an air handling unit equipped with different heat or energy exchangers. The MEE has superior energy saving potential relative to the sensitive-only heat exchanger in Nordic climate.

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