



## Ryesgade 30 A-C

Author: Jørgen Rose (SBI)

Decentralized ventilation system

### HVAC

#### *What is the solution?*

Decentralized ventilation systems placed in cupboards in the kitchen and hallway.

#### *Why does the solution work?*

The ventilation systems from the Danish case study “RYESGADE 30” (entrance C), are decentralized systems at apartment level. This means that each apartment has its own unit (product Drexel & Weiss). The units are wall-hung and placed in cupboards in the kitchen and hallway. Each plant has fresh air intake via the facade. On one side of the stairwell, returns are managed over roof for each plant via fire insulated ducts in a duct shaft. On the other side, returns are managed through the gable wall. The ventilation systems run without any kind of management. However, the system can be forced to maximum capacity by activating a cooker hood. The system is not equipped with intelligent dampers for priority of suction from cooker hood during forced operation. The plant has a capacity limited to approx. 180 m<sup>3</sup>/h, and therefore the efficiency of the cooker hood in several of the apartments is relatively limited due to inadequate suction (this can be improved using intelligent dampers).

#### *Pros and cons of the solution:*

Pros: Low electricity consumption (2.5 kWh / m<sup>2</sup> / year) Efficiently maintains a good indoor air quality Good operational safety "Average" price compared to central ventilation plants With regard to the operational safety, the decentralized plants in Ryesgade have clearly outperformed some test with central ventilation in the same building. The plants have also proved

significantly easier to troubleshoot, since a given fault is only related to a single apartment and unit. In the case of service work, only one lease is affected at a time. Cons: More noise nuisance than central plant systems Cooker hood is not always working as planned Comprehensive ducting for systems with heat recovery and distribution to several rooms

*Type of data available (level of information, simulation):*

Energy (heat and electricity) consumption is simulated before and after renovation. The system has also been monitored. Measured weather data was used for the simulations in the period provided by DMI. The simulation is basically done by a heat recovery at ventilation of 85% and an infiltration of 0.05 h<sup>-1</sup>.

*Additional information about the solution:*

A condition for using mechanical ventilation with heat recovery is that a high degree of air-tightness of the dwellings can be established in connection with the renovation. Here, among other things, the experience of the passive house construction shows that when ventilation systems with heat recovery are combined with a good air tightness, considerable energy savings can be achieved in practice. In addition, it is important to choose heat exchanger types with high heat recovery rate ~ 90% and fans with low electricity consumption, SFP value below 1.0 kJ/m<sup>3</sup> air. In order to achieve a high degree of user satisfaction, the systems must also have a very low noise level, preferably lower than 27 dB and there must be a plan for maintenance of the ventilation systems, e.g. filter changes etc.

*Are there any related publications or pictures of the solution?*

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<https://www.innobyg.dk/media/43493/erfaringer%20fra%20pr%C3%B8veejlighed%20ryesgade%2030c%201tv%20-%20juni%202011.pdf>

(Experiences from a test apartment in Ryesgade 30 - in Danish)

<https://www.hiberatlas.com/smartedit/projects/143/Slutrapport+EUDP-projekt+Ryesgade+30.pdf>

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