This is a translated excerpt from the report "RESULTATER OG ERFARINGER FRA ENERGIRENOVERING AF RYESGADE 30", JULY 2014 describing only the three new ventilation systems in Ryesgade 30.

Stairwell A:

A traditional central mechanical ventilation system is located in the basement.

Fig. 1. Traditional central ventilation system.

The unit has fresh air intake at basement level by staircase. Existing chimneys are used to conduct air from the exhaust ducts from bathrooms and kitchens to the basement. In addition, existing chimneys are used to return used air over roofs. Fresh air is diverted to apartments via new ducts (feeding of fresh air via existing chimneys was considered but would necessitate a relatively expensive and complicated ductwork without guaranteeing a sufficiently low pressure loss and it would be difficult to integrate silencer in each room of the dwelling).

The plant is fire-resistant in the form of a smoke-ventilated system with smoke fan located on the roof.

The air supplied to the remaining rooms has a constant air flow of 140 m^3/h. The exhaust air from the bathrooms is constant at 20 m^3/h when the relative humidity is below 55% and 54 m^3/h when it exceeds 55%. In the kitchen, the suction is generally 72 m^3/h, but increases to 144 m^3/h when the hood is activated. The plant in stairwell A has a significantly higher electricity consumption than the corresponding central plant in stairwell B. This is partly due to the large use of existing chimneys, which results in relatively large pressure losses.

Stairwell B:

The ventilation system in entrance B is a central ventilation system with an assembly located in the basement.

The unit has fresh air intake at basement level by staircase. There are new main channels for both fresh air and extraction from apartments. Existing chimneys used for return of used air over roof. The use of existing chimneys for the return of used air over roofs has proved problematic in rise B. Although the chimney is sealed very thoroughly in connection with the renovation (though not pressure tested), then a specific apartment has occurred smaller odor nuisance due to leakage of exhaust air in small crevices (there is a smaller overpressure in the chimney due to fan ventilation in the basement). This clearly shows that the use of existing chimneys for return, and where there is little overpressure, is risky. Of course, stocking can minimize the risk, but is as before mentioned a relatively expensive solution and there is no guarantee of a good low pressure loss.

The plant is built on fire protection as a smoke ventilated system with smoke fan located on roof.

The ventilation system is demand-based based on CO2, relative humidity and temperature. In addition, there is a user panel to regulate specific user needs. When the apartment is unmanned, the municipality has granted exemption to deviate from the requirements in the building regulations so that only an air change of 22 m^3/h is needed.

Stairwell C:

The ventilation systems in entrance C are decentralized systems at the apartment level. This means that each apartment has its own unit.

Fig. 2. Decentral ventilation system in a kitchen closet.

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 duct shaft. On the other side gable wall return without windows. The ventilation systems are running without any kind of need management. However, the system can be forced to maximum capacity by enabling scope. The system is not equipped with intelligent dampers for priority of suction from exhaust during forced operation. Then the plant has a capacity limited to approx. 180 m^3/h, then the efficiency of the range is I several of the apartments are relatively limited due to inadequate suction (this can be improved using intelligent dampers).