

WP 4 Energy Supply

Energy efficient renovation of building stock of Jugla

Sample renovation design for a multi-apartment building of series no.464

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Rīgas dome
Riga City Council



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Sample renovation design for a multi-apartment building of series no.464

Sample documentation for the first steps of energy efficient renovation of multi-apartment buildings was prepared for a building of type No.464. It included the technical inspection report, energy audit and renovation technical design where the recommendations of the “Concept for energy efficient renovation of the building stock of Jugla” were taken into account.

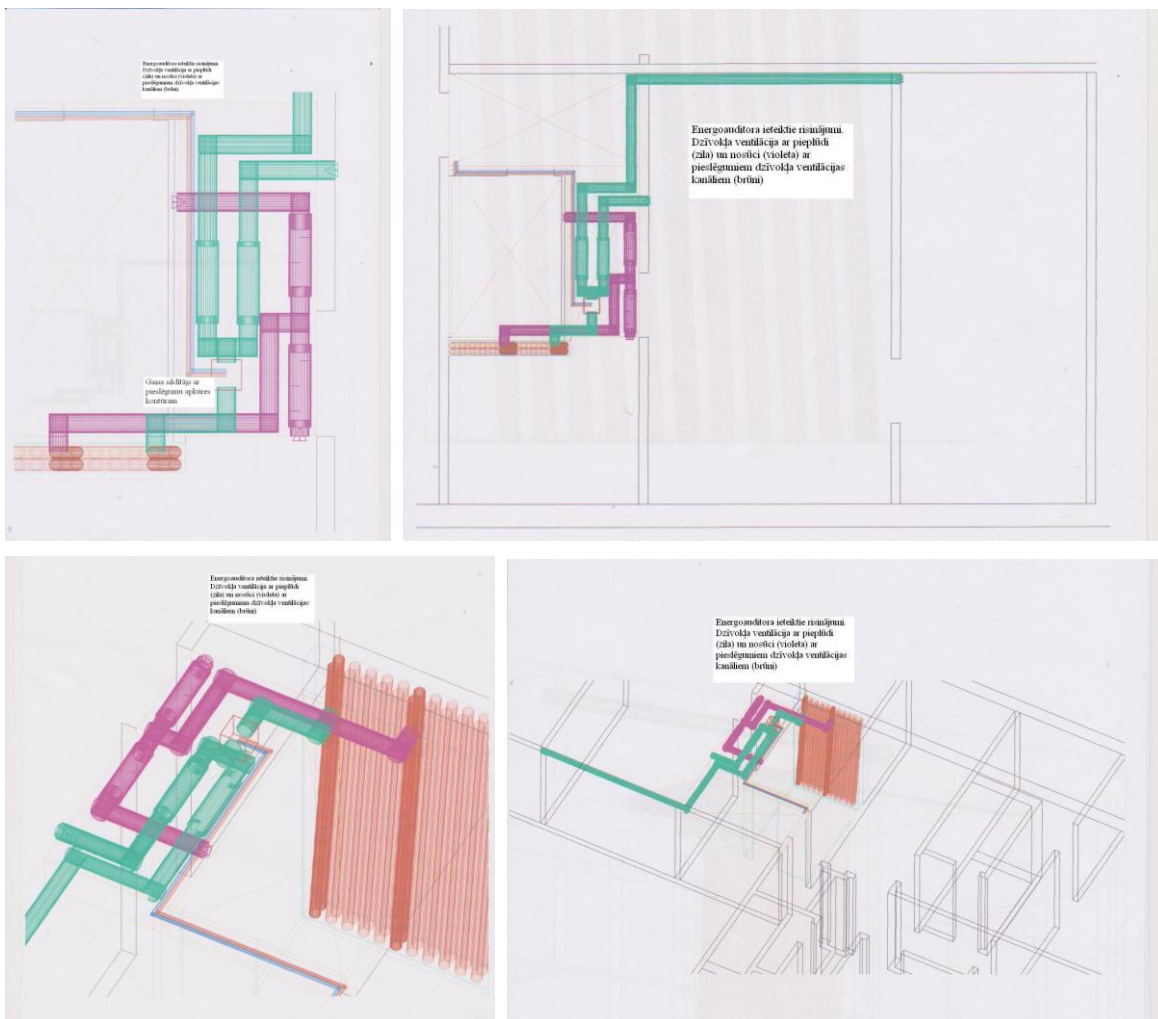
Results

The following are the renovation measures described in energy audit and technical design parts of the document “Sample renovation design for a multi-apartment building of series no.464”:

1. Changing thickness of insulation on building’s walls to even out the conditions of apartments placed at different parts of the building. Apartments at the end walls have 24cm insulation, first and upper floor apartments in the middle sections - 16cm, middle apartments - 8cm. Plates of the ventilated façade even out the different thickness. *(Innovation for Latvia);*
2. In this design the existing balconies are not planned to be dismantled but glazed and with additional supports constructed; to save costs no new balconies are planned, the upper limit for costs is this renovation project was 70LVL/m² or 100EUR/m². *(Innovation for Latvia); (Picture 1)*
3. Insulation of cellar floor instead of cellar ceiling is planned. This gives three benefits: a) the thermal bridges are reduced more effectively, b) the cellar is warm, c) the insulation costs are less, the leftovers of building’s wall insulation could be used on the cellar floor; *(Innovation for Latvia, possibly for other Baltic countries);*
4. Insulation of roof instead of attic floor is planned. If the attic floor is insulated then for elimination of thermal bridges also insulation of insides of walls and ventilation shafts is needed which together costs approximately the same amount as insulation of roof. In many cases the roof needs to be repaired anyway, thus it is better to choose insulation of roof which also gives two additional benefits: a) the attic is warm, b) the warm attic helps to preserve good ventilation; if the attic floor is insulated and the attic is cold, the ventilation flow is reduced because of the cold ventilation shafts; *(Innovation for Latvia);*
5. Installation of new windows in the insulation area of walls. The benefits: a) reduced thermal bridges around the window frame *(Innovation for Latvia);*
6. Decentralized ventilation system with heat recovery, supplies ventilation to individual apartments according to the individual needs. The implementation planned in the following way: a) in apartments the airflow is organized so that the fresh air (inflow) is supplied to bedrooms and living rooms via air diffusion device placed in a hole above the doors, the used air (outflow) is collected through the ventilation holes in bathroom and kitchen, b) all pipes in the apartment are organized in the ceiling of the corridor, the suspended ceiling is required, and the height of the ceiling is reduced by approximately 30cm c) the heat exchangers for each apartment are mounted in attic or on the roof, d) the ventilators, heat exchangers, sensors via controller devices are connected to internet and can be controlled remotely by inhabitants or building’s manager. *(possibly international innovation); (Picture 2).*



Picture1

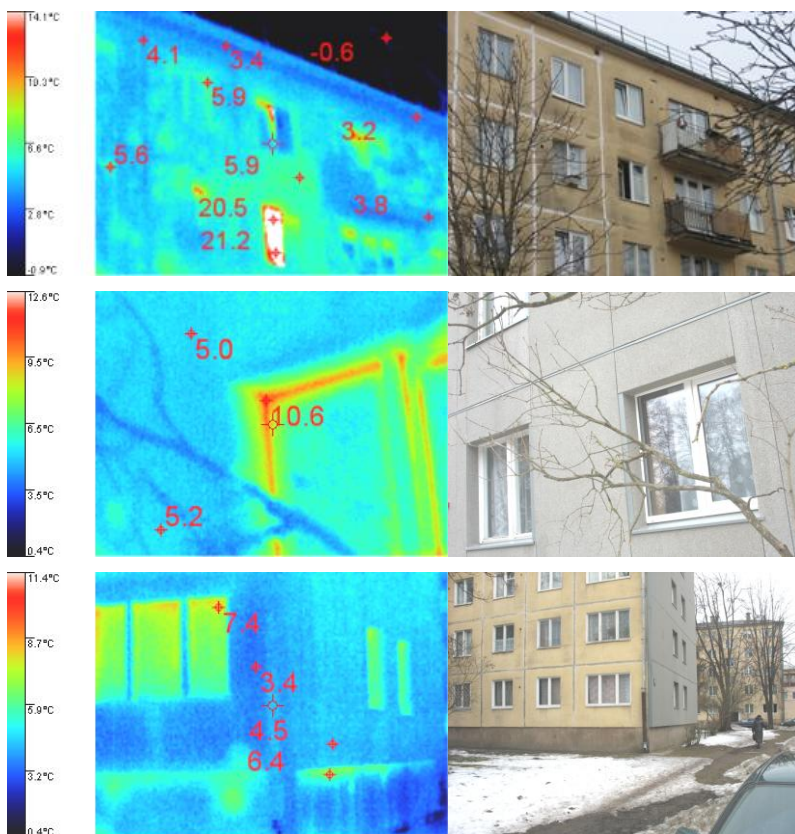


Picture 2, organization of the ventilation pipes in apartment. Green - inflow, red - outflow, brown - the existing ventilation shafts, dark brown - ventilation shafts used by the particular apartment (energy audit)

The planned look after renovation



The building before renovation





The existing ventilation shafts



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