



## Apartment building Magnusstrasse - Zürich

Author: Cristina Polo (SUPSI)

Classical central ventilation with suspended ceiling

### HVAC

#### *What is the solution?*

A centralized ventilation with heat recovery, typical of the Minergie buildings, was added to the building. Minergie® Certification for low energy consumption buildings is the Swiss brand that certifies the sustainability of new or redeveloped buildings. To achieve the Minergie® certificate specific attention were paid to control of the air change throughout the year and to good good performances and verification of summer thermal comfort. A central air treatment unit in the basement serves all apartments. Individual air volume regulation in the apartments is not possible. A basic point of the Minergiehat concept is that mechanical ventilation not only guarantees good air quality, that also saves energy with the heat recovery unit, but without manual ventilation allowing the adjustment device to be easily accessible in the apartment without individual devices. The outside air is drawn in from the passage facade to the courtyard at a height of approx. 2.5 m from the floor.

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

The apartments are accessed via two separate climbing zones. The fine distribution takes place in the toilet / bathroom and corridor ceilings. In the new roof section, individual supply and exhaust air pipes with plastic pipes were inserted into the wooden elements. The air enters the room via an outlet grille over the doors. In the wet rooms, it is drawn off again via poppet valves. Inside the apartment, the air circulates through the newly made door slots. The exhaust air is returned to the air treatment unit through insulated pipes and ducts made of galvanized sheet steel and blown out through a light shaft in the

courtyard facade.

*Description of the context:*

The two street-side facades are subject to preservation requirements and therefore could not be changed. Otherwise the attic and the court side. Here the roof with eaves could be broken off and put back in the form of prefabricated wooden elements. In this context, the roof could be raised on the courtyard side.

*Pros and cons of the solution:*

The solution is very simple: starting from the basement, in the central area are placed the main vertically ducts and the distribution at the floor is horizontally through lowered ceilings in the corridors. No external intervention on the façade avoiding visual impacts of ducts or technical installations. Controlled ventilation systems are mandatory for residential buildings that are certified in accordance with the rules of the Minergie building standard to achieve high energy efficiency. Since a tight building envelope prevents the gradual loss of warm air, ventilation systems compensate for this with a continuous, controlled exchange of air. The positive effect of controlled ventilation systems is that no moist air accumulates in the rooms; the risk of mold is eliminated. And because fresh air can flow in automatically from outside, the quality of the room air is permanently guaranteed. Furthermore, the heat contained in the exhaust air from a controlled living space ventilation system is systematically recycled improving energy efficiency. In contrast, there is no longer any need for manual and natural ventilation. Practice even shows that without a ventilation system, manual natural ventilation is usually too long, so that unwanted heat loss increases.

*Additional information about the solution:*

[https://www.hiberatlas.com/smartedit/projects/88/BaubeschriebMagnusstrasse\\_7.pdf](https://www.hiberatlas.com/smartedit/projects/88/BaubeschriebMagnusstrasse_7.pdf) The Magnusstraße residential building in Zurich, Switzerland, is a cooperative housing at fair prices. The apartment building in Zurich needed a complete modernization. After renovation the building meets the Minergie standard was awarded with the Swiss Solar Prize 2007 and Watt d'Or 2008. Swiss solar award 2007 documentation:

<https://www.solaragentur.ch/dokumente//M-07-09-21Magnusstrasse.pdf> Several information is available in the architect's web page and projects documentation: Viridén + Partner AG, <https://www.viriden-partner.ch/mehrfamilienhaeuser>

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



Execution of pipes during the works ©V+P

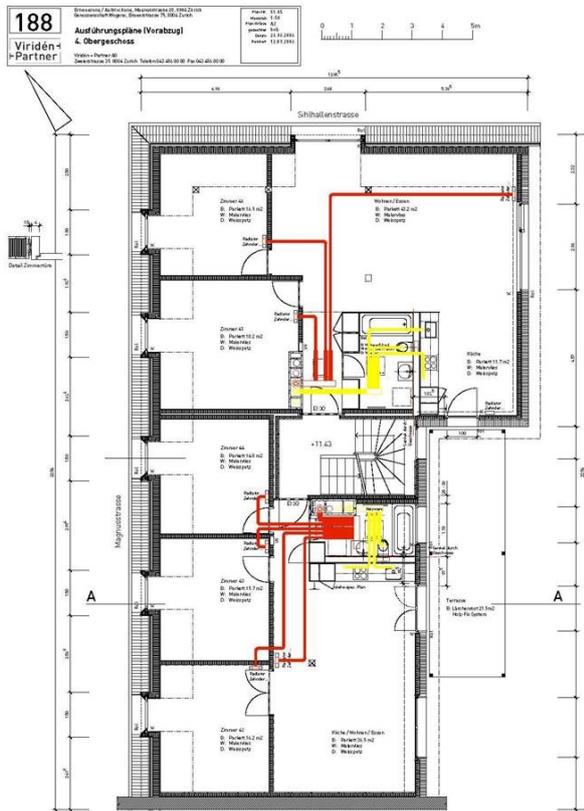


Ventilation unit during the works ©V+P



Ventilation grill during the works ©V+P

# Ventilation plan of the 4th floor ©V+P



[https://www.hiberatlas.com/smarterdit/projects/88/Baubeschrieb Magnusstrasse\\_7.pdf](https://www.hiberatlas.com/smarterdit/projects/88/Baubeschrieb_Magnusstrasse_7.pdf)  
Factsheet construction