



Aalto-yliopisto
Insinööritieteiden
korkeakoulu

EEN-E4004 Fundamentals of HVAC Design

Task 3

Ventilation design

M.Sc Vikke Niskanen

Task 1: Ventilation design

Targets

- Learn how to calculate ventilation rates for residential buildings
- Learn how to choose air devices and air handling units for residential buildings

Methods

- Calculate ventilations rates using FINVAC guides:
https://www.talotekniikkainfo.fi/sites/default/files/finvac_opas-asuinrakennusten-ilmanvaihdon-mitoitukseen_2017-11-30.pdf
- Choose air devices and AHU using supplier brochures

Outcome

- **Make and document calculations of ventilation rates for each room and the whole building**
- **Document air devices and AHU for building**

Task 1: Ventilation design

Part 1: Ventilation rates

- Calculate air ventilation rates for each room and the whole building using Finvac guide (lecture slides 4 ... 7)
- Style of documentation is free, excel is recommended

Task 1: Ventilation design

Part 2: Air devices

- Choose the following air devices from supplier brochures:
 - Supply air device (both for wall and ceiling installation)
 - Supply air device for sauna
 - Extract air device
 - Extract air device for sauna
 - Kitchen hood
 - Transfer air device
 - Silencer
 - Balancing damper
 - Outdoor and exhaust (or combined) air devices

- Style of documentation is free, excel/word is recommended

Task 1: Ventilation design

Part 3: Air handling unit

- Choose an air handling unit using design software by a manufacturer:
 - Documentation can be a printed technical specification through the software or other documentation method
 - Use external pressure loss of 80 Pa for external pressure loss for both supply and extract air
- Choose a roof fan for the kitchen hood (or use a AHU with the functionality)
- Choose a roof fan for radon extract