Aalto-yliopisto
Insinööritieteiden
korkeakoulu

EEN-E4004 Fundamentals of HVAC Design

Task 4

Water and sewer design

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Task 4: Water and sewage design

Targets

- Learn how to calculate operating pressure level at the water meter.
- Learn how to choose water and sewage devices for residental building.
- Learn how to calculate domestic water dimensioning flows in residential building.
- Learn how to calculate sewer dimensioning flow in residential building.

Methods

- Calculate operating pressure level using pressure information from connection point statement
- Choose water and sewer devices using suppliers brochures and websites
- Calculate sum of nominal flows with devices you chosen
- Calculate dimensioning flows in hot, cold and main connection pipe and in sewer
- For backround information, use: D1 https://www.finlex.fi/data/normit/28208-D1_2007.pdf

Outcome

- **Document of calculation of operating water pressure level at the water meter**
- **List of chosen water and sever devices and their connection information**
- **Document of calculation of water and sever dimensioning flows**

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Part 1: Calculating operating pressure level at the water meter.

- Take into account our example house connection point statement
- Height of water meter
- Pressure drop of main water pipe under ground (tonttijohto) = 10 kPa (or calculated according to the actual design flow)
- Pressure drop of water meter 25 kPa

- Style of documentation is free, excel is recommended

Task 4: Water and sewage design

Part 2: Water and sewage fixtures and their connection information

- Choose the following fixtures from supplier brochures:
  - Toilet seat
  - Wash basin + tap
  - Shower
  - Tap for bath tub
  - Floor drains
    - Bathroom, sauna, techical room
  - Kitchen sink + tap
  - Utility room sink + tap
  - Technical room sink + tap
  - Water post

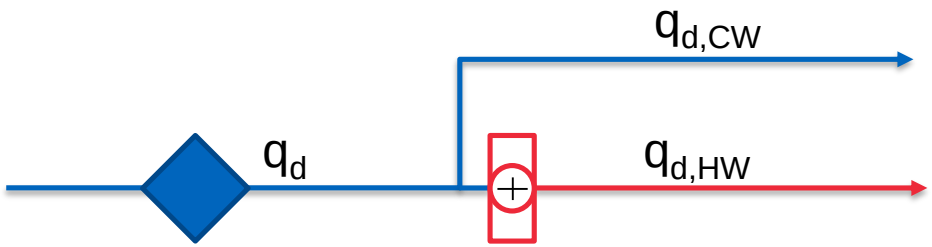
- Style of documentation is free. Excel sheet given with task recommended (*water and sewer fixtures.xls*)

Task 4: Water and sewage design

Part 3: Dimensioning flow of water (hot, cold and main water pipe)

- Calculate sums of water nominal flows.
- Calculate or use diagrams from D1 to determine the dimensioning flow of hot water $q_{d,HW}$, cold water $q_{d,CW}$, and main water pipe q_d.
- Use D1, Appendix 2

- Style of documentation is free



Task 4: Water and sewage design

Part 4: Dimensioning flow of sewer

- Calculate sum of sewer nominal flows.
- Calculate or use diagrams from D1 to determine the dimensioning flow of sewer.
- Use D1, Appendix 4

- Style of documentation is free