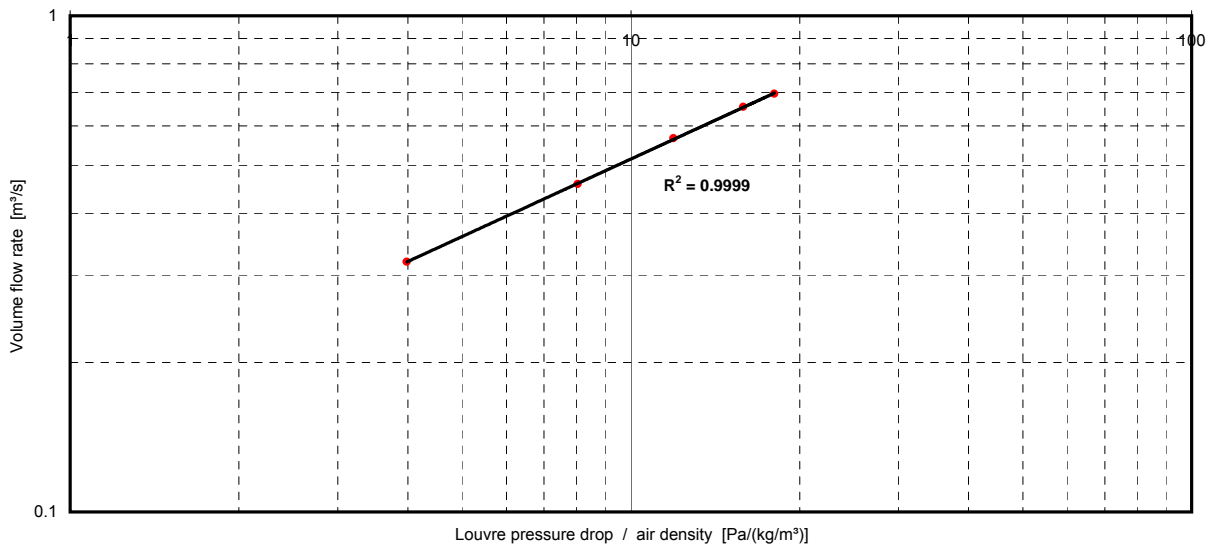


| | | |
|--|---------------------------|---|
| Louvre description NorSap transformator rist | | Measured by: TER |
| Louvre core area | 0.38064 [m ²] | Date: 7.okt.2009 |
| Is the louvre symmetrical? | yes | |
| Entry or discharge test | discharge | |
| Manometer for ISO orifice DPM instr. # 2302, kalibrert | | |
| Manometer for louvre DPM instr. # 5784, kalibrert | | |
| Flow area behind louvre | 1 [m ²] | |
| Duct internal diameter (D) | 300 [mm] | |
| ISO orifice tappings type | Corner [-] | |
| Dry bulb air temperature | 21.1 [°C] | Humidity ratio 0.00418598 [kg/kg] |
| Relative humidity | 26.5 [%] | Air density 1.17170608 [kg/m ³] |
| Barometric pressure | 992.2 [mbar] | Dyn. viscosity 1.7738E-05 [Pa·m] |

| ISO orifice diameter (d) | ISO-orifice Δp_s | Calibration-corrected pressure (Δp_s) | Louvre static pressure drop (Δp_s) | Calibration-corrected pressure (Δp_s) | Corrected local static pressure loss (Δp_s) | True volume flowrate (q_v) | Louvre face velocity | Discharge coefficient | Variance from mean C_D | Entry loss coefficient | Variance from mean C_E |
|--------------------------|--------------------------|---|--|---|---|--------------------------------|----------------------|-----------------------|--------------------------|------------------------|--------------------------|
| [mm] | [Pa] | [Pa] | [Pa] | [Pa] | [Pa] | [m ³ /h] | [m/s] | (C_D) | [%] | (C_E) | [%] |
| 160 | 367 | 367 | 5.0 | 5.0 | 4.67020951 | 0.31908007 | 0.83827257 | 0.285 | -1.6 % | 0.297 | -1.8 % |
| 160 | 760 | 760 | 10.1 | 10.1 | 9.42060096 | 0.45797638 | 1.2031746 | 0.287 | -0.7 % | 0.300 | -0.8 % |
| 160 | 1167 | 1167 | 15.0 | 15.0 | 13.9606898 | 0.56643907 | 1.48812282 | 0.292 | 0.8 % | 0.305 | 0.8 % |
| 160 | 1565 | 1565 | 20.0 | 20.0 | 18.6106104 | 0.65492661 | 1.72059323 | 0.292 | 0.9 % | 0.305 | 1.0 % |
| 160 | 1771 | 1771 | 22.7 | 22.7 | 21.1301053 | 0.69617091 | 1.82894839 | 0.291 | 0.7 % | 0.305 | 0.7 % |



Summary

Discharge coefficient

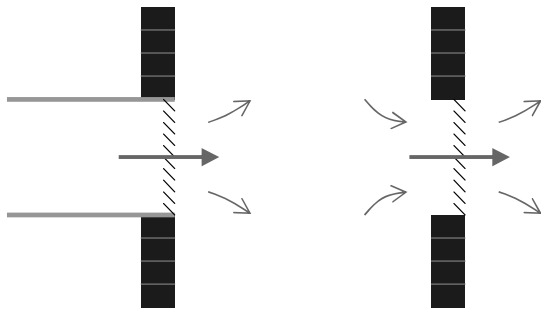
$$C_D = 0.289$$

EN 13030 Class = 3

Equations:

$$\frac{q_v}{A} = v = C_D \sqrt{\frac{2 \cdot \Delta p_t}{\rho}} \Leftrightarrow \Delta p_t = \frac{1}{C_D^2} \cdot \left(\frac{1}{2} \rho \cdot v^2 \right)$$

Examples:



Entry loss coefficient

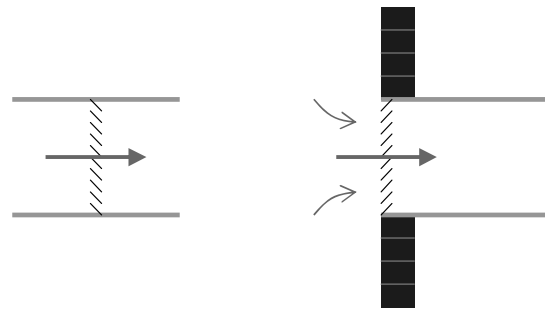
$$C_E = 0.302$$

EN 13030 Class = 2

Equations:

$$\frac{q_v}{A} = v = C_E \sqrt{\frac{2 \cdot \Delta p_t}{\rho}} \Leftrightarrow \Delta p_t = \frac{1}{C_E^2} \cdot \left(\frac{1}{2} \rho \cdot v^2 \right)$$

Examples:



Nomenclature:

- q_v = Volume flow rate [m³/s]
- A = Core area of louvre [m²]
- v = Nominal velocity at face of louvre [m/s]
- Δp_t = Total pressure drop through louvre [Pa]
- ρ = Air density ≈ 1.2 [kg/m³]