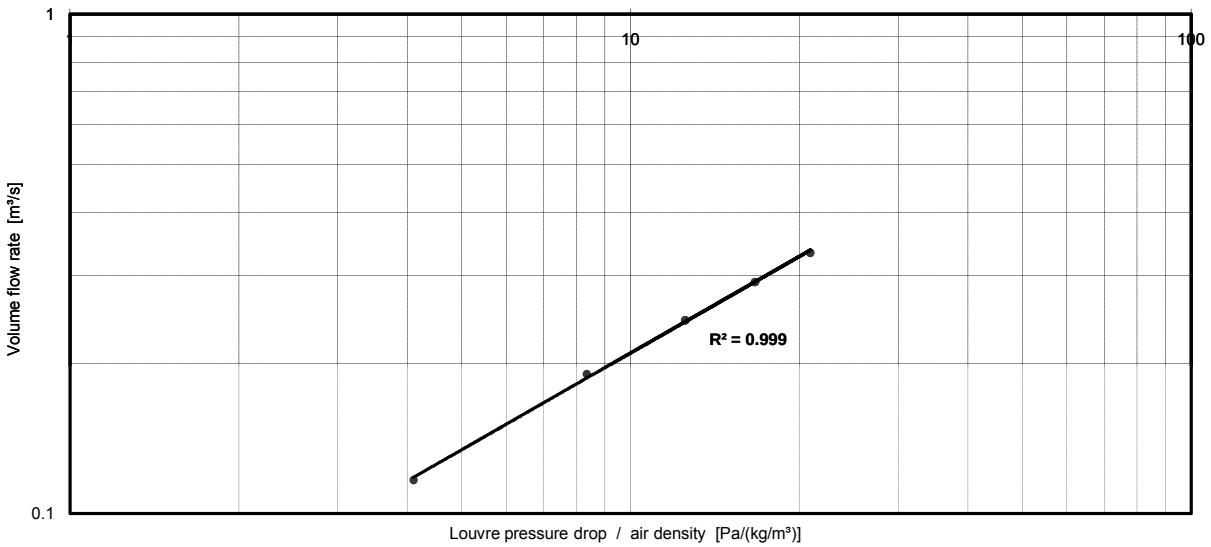
SINTEF

EN 13030 aerodynamic test of ventilation louvres.
(Flow measurement method ISO 5167-2)

Louvre description	Møre Trafo transformator rist med G4 filter (Viledon PSB/290S matte)	
Louvre core area	0.4794	[m²]
Is the louvre symmetrical?	yes	
Entry or discharge test	entry	
Manometer for ISO orifice	DPM TT 570SV instr. # 5784, kalibrert	
Manometer for louvre	Swema 3000 instr. # 675919, kalibrert	
Flow area behind louvre	1	[m²]
Duct internal diameter (D)	300	[mm]
ISO orifice tappings type	Corner	[-]
Dry bulb air temperature	21.1	[°C]
Relative humidity	30	[%]
Barometric pressure	1004.7	[mbar]
Humidity ratio	0.0046836	[kg/kg]
Air density	1.18611286	[kg/m³]
Dyn. viscosity	1.7956E-05	[Pa·m]

Measured by: TER
Date: 16.okt.2009
Korrigert av PGS: 29.sep.2010

ISO orifice diameter (d) [mm]	ISO-orifice Δp_s [Pa]	Calibration-corrected pressure (Δp_s) [Pa]	Louvre static pressure drop (Δp_s) [Pa]	Calibration-corrected pressure (Δp_s) [Pa]	Corrected local static pressure loss (Δp_s) [Pa]	True volume flowrate (q_v) [m³/s]	Louvre face velocity [m/s]	Discharge coefficient (C_D)	Variance from mean C_D [%]	Entry loss coefficient (C_E)	Variance from mean C_E [%]
160	49	49	4.9	4.9	4.86484412	0.116721	0.24347309	0.085	-14.3 %	0.085	-14.4 %
160	131	131	10.0	10.0	9.90671828	0.19012897	0.39659776	0.097	-2.3 %	0.097	-2.3 %
160	216	216	15.0	15.0	14.8467073	0.24373101	0.50840845	0.101	2.3 %	0.102	2.3 %
160	308	308	20.0	20.0	19.7819216	0.29070759	0.60639881	0.104	5.7 %	0.105	5.7 %
160	404	404	25.1	25.1	24.8144614	0.33264608	0.69388001	0.107	7.9 %	0.107	8.0 %



Summary

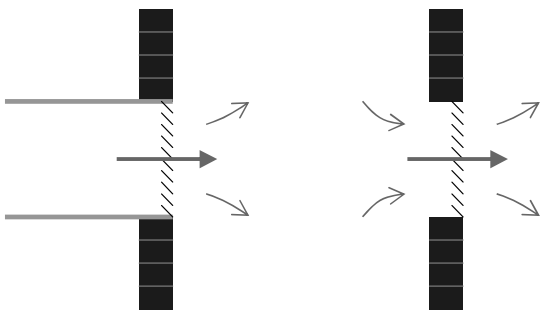
Discharge coefficient C_D = **0.099**

EN 13030 Class = **4**

Equations:

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

Examples:



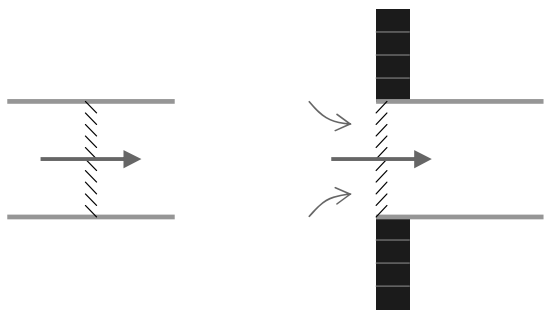
Entry loss coefficient C_E = **0.099**

EN 13030 Class = **4**

Equations:

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

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 lovre [Pa]
ρ = Air density ≈ 1.2 [kg/m³]