



WIND LOAD CALCULATION REPORT (TS EN 1991-1-4)

For preliminary design purposes; final design is the responsibility of a competent engineer in accordance with the relevant standards.

Project	Sample Project
Subject	Eurocode 1-4 – Wind Load Calculation for Curtain Walls
Prepared by	Civil Engineer
Approved by	Senior Civil Engineer
Date	18/10/2026

1) Inputs

Symbol	Description	Value
C_{dir}	Direction factor (NA, §4.2)	1.00
C_{season}	Season factor (NA, §4.2)	1.00
$V_{b,0}$ (m/s)	Basic wind speed (NA, §4.2)	25.00 m/s
$C_o(z)$	Orography factor (§4.3.3)	1.00
K_1	Turbulence factor (NA, §4.4)	1.000
z_o (m)	Roughness length (§4.3.2)	0.300 m
z (m)	Reference height	16.00 m
ρ (kg/m ³)	Air density (typ. 1.25)	1.25 kg/m ³

2) Intermediate Values

Symbol	Description	Value
V_b (m/s)	Adjusted basic wind speed (§4.2)	25.00 m/s
K_r	Wind profile factor (§4.3.2)	0.215389
$\ln(z / z_o)$	Height-roughness ratio	3.976562
$C_r(z)$	Height factor (§4.3.2)	0.856509
$V_m(z)$ (m/s)	Mean wind speed (§4.3.2–§4.3.3)	21.413 m/s
$I_v(z)$	Turbulence intensity (§4.4)	0.2515

Symbol	Description	Value
$q_p(z)$ (kN/m ²)	Peak velocity pressure (§4.5)	0.7910 kN/m ²
$C_{pe,A}$	Pressure coefficient (ZONE-A, suction)	-1.269
$C_{pe,D}$	Pressure coefficient (ZONE-D, pressure)	0.869

3) Facade Zone Loads

Zone	Formula	Value
ZONE-A (Suction)	$w_A = q_p \cdot C_{pe,A}$	-1.00 kN/m ²
ZONE-D (Pressure)	$w_D = q_p \cdot C_{pe,D}$	0.69 kN/m ²

4) Applied Formulas

Basic wind velocity: $v_b = C_{dir} \cdot C_{season} \cdot v_{b,0}$

Wind profile factor: $K_r = 0.19 \cdot (z_0 / 0.05)^{0.07}$

Height factor: $C_r(z) = K_r \cdot \ln(z / z_0)$

Mean wind speed: $v_m(z) = C_r(z) \cdot C_o(z) \cdot v_b$

Turbulence intensity: $I_v(z) = K_1 / [C_o(z) \cdot \ln(z / z_0)]$

Peak velocity pressure (kPa): $q_p(z) = [1 + 7 \cdot I_v(z)] \cdot \frac{1}{2} \cdot \rho \cdot v_m(z)^2$
(1 kPa = 1 kN/m²)

Area effect for components/claddings:

→ $A < 1 \text{ m}^2 \rightarrow c_{pe} = c_{pe,1}$

→ $1 \leq A \leq 10 \text{ m}^2 \rightarrow c_{pe}(A) = c_{pe,1} - (c_{pe,1} - c_{pe,10}) \cdot \log_{10}(A)$

→ $A > 10 \text{ m}^2 \rightarrow c_{pe} = c_{pe,10}$

Surface loads: $w_A = q_p \cdot c_{pe}^{(A)}$, $w_D = q_p \cdot c_{pe}^{(D)}$

Net load: $w_{net} = q_p \cdot (c_{pe} - c_{pi})$

Reference: EN 1991-1-4 §4.2–§4.5, §7.2.1; National Annex (C_{dir} , C_{season} , $v_{b,0}$, K_1 , c_{pe} tables).

Authority and Responsibility

This calculation report is prepared based on EN 1991-1-4 and relevant National Annexes for preliminary sizing. The outputs are for information only; the final design responsibility lies with competent engineers in accordance with the relevant standards.