

Industrial Ventilation Sizing Guide

Sixion Industrial Fans: estimate based on ASHRAE/ACGIH technical standards

Insufficient ventilation reduces productivity and can put worker safety at risk. This guide presents a simple, technically grounded way to estimate the required airflow for your industrial environment.

Why moving air feels cooler

The human body generates heat continuously and needs to release that excess through the skin. Moving air speeds up that heat exchange, which is why a ventilated environment feels cooler even when the thermometer reading doesn't change.

Air velocity (m/s)	Cooling sensation (°C)
0,1	0
0,3	1
0,7	2
1,0	3
1,6	4
2,2	5
3,0	6
4,5	7
6,5	8

An environment with air at 2.2 m/s feels as if it were 5°C cooler than the same environment with still air. For normal work environments, air velocity should be kept between 0.5 and 2.5 m/s.

Air changes per hour (ACH) by environment type

Environment type	ACH
Fundições / Foundries / Fundiciones	5 – 20
Pequenas oficinas / Small workshops / Pequeños talleres	8 – 12
Oficina mecânica / manutenção / Mechanical workshop / Taller mecánico	8 – 12
Pintura e polimento / Painting and polishing / Pintura y pulido	10 – 22
Solda a arco voltáico / Arc welding / Soldadura de arco	18 – 22
Cozinha industrial / Industrial kitchen / Cocina industrial	10 – 30
Lavanderia industrial / Industrial laundry / Lavandería industrial	10 – 60
Depósito / armazém / Warehouse / Depósito	2 – 15
Garagem / oficina automotiva / Garage / Garaje	6 – 10

Source: ASHRAE (American Society of Heating and Air Conditioning Engineering), Guide and Data Book. In hot/equatorial climates, double the values above.

Calculation formula

$$Q \text{ (m}^3\text{/h)} = T \text{ (changes/hour)} \times V \text{ (environment volume in m}^3\text{), where } V = \text{area (m}^2\text{)} \times \text{ceiling height (m).}$$

Practical example

Mechanical workshop, 200 m² area, 5 m ceiling height, standard climate: Volume = 200 × 5 = 1,000 m³. Category "Mechanical workshop/maintenance" (8–12 ACH, average 10): Q = 10 × 1,000 = 10,000 m³/h ≈ 167 m³/min. Two EV 60 units (123 m³/min each) cover the need with margin.

Tip: warehouses with a pitched (truss) roof. Pitched roofs have extra air volume above the straight ceiling height: roof_volume = length × width × truss_height ÷ 2. Example: a 30×15m warehouse, 5m ceiling height, and a 1.5m truss: straight volume 2,250 m³ + roof volume 337.5 m³ = 2,587.5 m³ (≈2,600 m³). That's the total volume to use in the formula.

Sixion product line

Model	Airflow	Reach
AP 50 / AC 50	30 m³/min	12 m
AP 60 / AC 60	125 m³/min	20 m
EV 50	43 m³/min	15 m
EV 60	123 m³/min	25 m
EV 80	160 m³/min	35 m

Important

This guide and the website calculator (sixion.com.br/en/calculadora) provide an initial estimate, not an engineering project. Environments with toxic contaminants, explosive atmosphere, or specific regulatory requirements should be assessed by a professional. Talk to our technical team to confirm the ideal sizing.

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