Casals

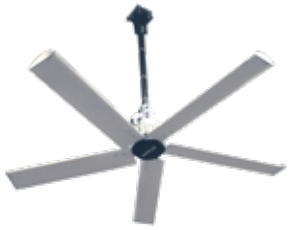
VORTICE GROUP

AERONIKA HVLS

High-flow, low-speed,
energy-efficient reversible
ceiling fan

TERTIARY, INDUSTRIAL
AND AGRICULTURAL

Casals
IPAF



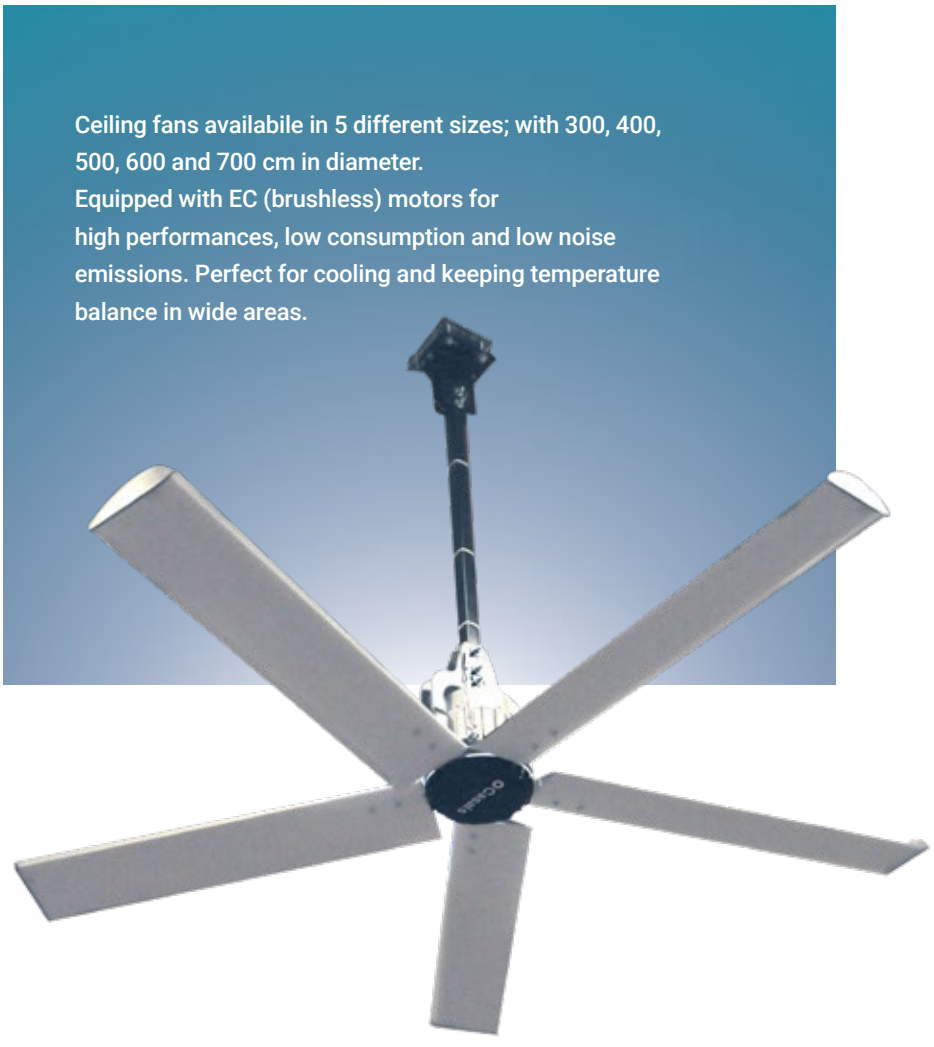
º AERONIKA HVLS
Reversible industrial ceiling fans

REGULATORY STANDARDS

Industrial ceiling ventilation products AERONIKA HVLS are compliant with the following Directives and Standards in their most recent versions:

- Machinery Directive: No. 2006/42/EC
- Electromagnetic Compatibility Directive: EMC 2014/30/UE
- Eco-Design Directive for electric motors No. 1781/2019/EC

AERONIKA HVLS



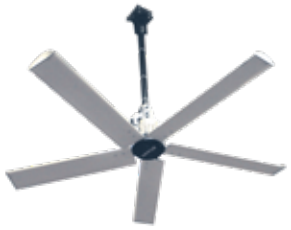
AERONIKA HVLS 300 T EEC

AERONIKA HVLS 400 T EEC

AERONIKA HVLS 500 T EEC

AERONIKA HVLS 600 T EEC

AERONIKA HVLS 700 T EEC



º WHY INSTALL AERONIKA HVLS

Because it allows the achievement of significant benefits in both summer and winter:

SUMMER OPERATION

As it is known, high temperatures and high relative humidity levels make environmental conditions uncomfortable and, in some cases, they can affect the occupants' productivity. Under normal conditions the human body feels the need to transfer heat from room temperatures above about 23 °C.
Compared to air conditioners, which reduce the room temperature, fans, favour the cooling by convection and evaporation of sweat at the same temperature.

WINTER OPERATION

Warm air, less dense than cold air, accumulates near the ceiling, resulting in a phenomenon known as "**stratification**". The adoption of fans capable of pushing warm air downwards performs the reshuffling ("destratification") useful to overcome the problem, guaranteeing significant savings both in terms of lower energy dissipation through walls and roof, and reduced caloric intake necessary for the maintenance of adequate temperature levels at occupant level.

BENEFITS OF INSTALLING AERONIKA HVLS

The use of ceiling fans of the AERONIKA HVLS series, which has a high (IP65) degree of resistance to water and dust, offers a wide range of temperatures in continued operations (-10 °C to +50 °C) and speed regulations.
They are particularly suitable for industrial environments (such as warehouses, depots, stables, etc.), where the use of air conditioning systems would be impossible or too expensive, as well as for commercial areas (such as supermarkets, gyms, airports, etc.), where their action allows significant savings in connection with the amplification of the effects of any already existing air conditioning systems and thanks to air destratification.

º FEATURES

Large diameters for wide areas, nominal up to Ø 7 m

3 m | 4 m | 5 m | 6 m | 7 m

• High reliability even in particularly demanding operating conditions: the adoption of EC motors, efficient, virtually maintenance-free and intrinsically adjustable, makes the use of mechanical gearboxes useless.

• Easy and quick to install, thanks to the system for fixing the blades to the engine, designed to facilitate coupling and thus reduce errors that could cause damage to the components.

• Reversibility (the operation of the products is optimised to generate a downward flow of air, but the product control system also allows them to rotate in the opposite direction, in cases where it is preferred to avoid a current of air directed towards the occupants).

• Low specific consumption, perfectly compatible with intensive use.

• Particularly low sound emission levels.

• Wide operating temperature range (-10 °C / +50 °C)

• High (IP65) rating level against dust and water, suitable for use Industrial applications.

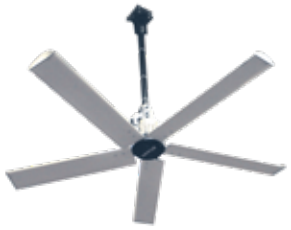
• Anodised blades for high resistance to corrosion and abrasion.

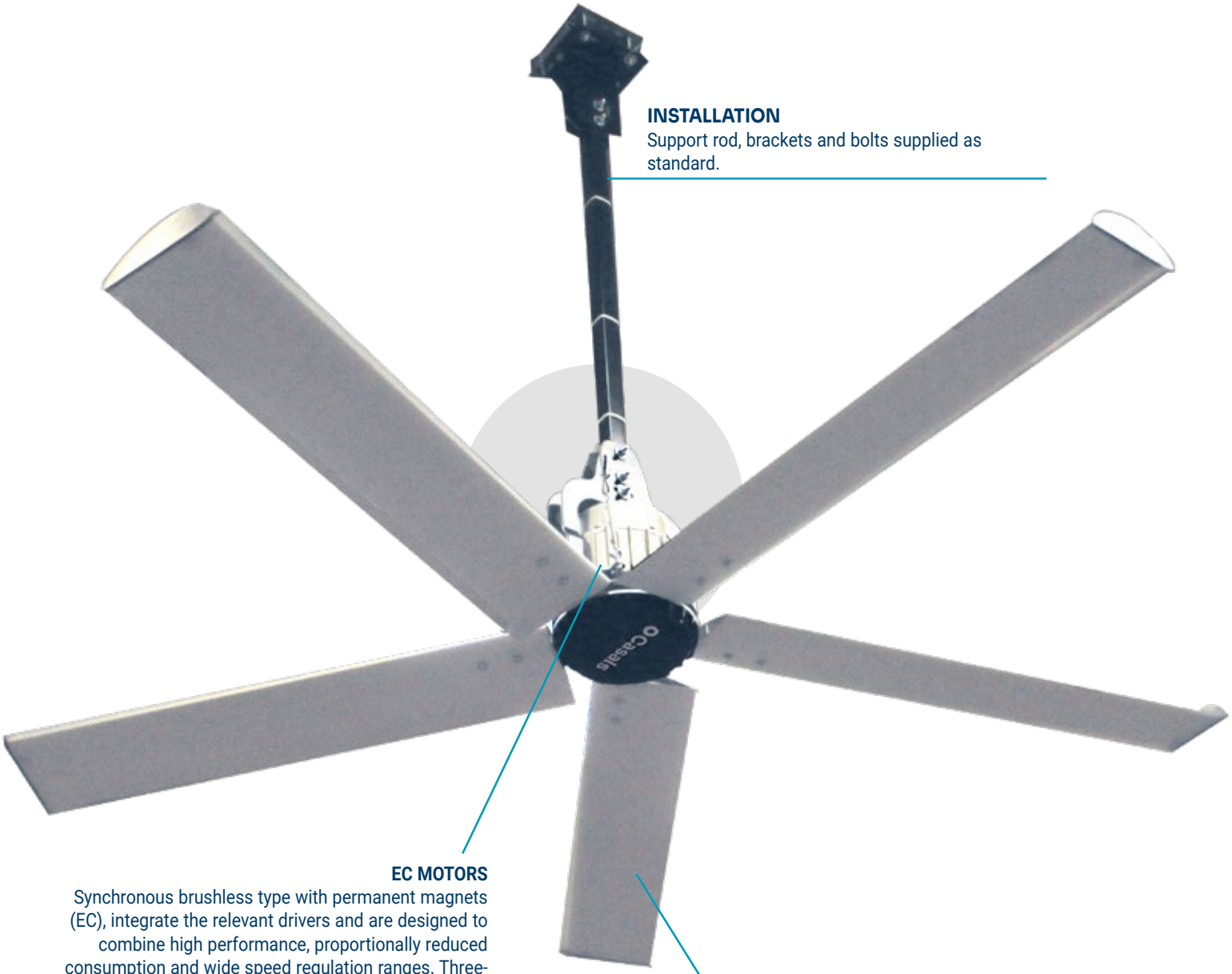
• Specially designed motor, rotor (e.g. blades made of one piece and therefore less subject to failure or breakage over time) and integrated electronics for greater reliability over the time.

• Ready for integration into the BAS (Building Automation System) Communication protocol Mod Bus RTU.

• Compatible with a wide set of control and regulation devices.

• Standard and optional installation kits for total safety of installation and use.





INSTALLATION
Support rod, brackets and bolts supplied as standard.

EC MOTORS
Synchronous brushless type with permanent magnets (EC), integrate the relevant drivers and are designed to combine high performance, proportionally reduced consumption and wide speed regulation ranges. Three-phase (200-480 V / 50-60 Hz).
All feature a high (IP65) degree of protection from dust and water, making them perfectly compatible with use in particularly demanding conditions.

BLADES
Made of anodised Al, they achieve high efficiency values in downwash operation (generated air flow facing downwards) and ensure particularly low sound emission levels thanks to the sophisticated NACA aerodynamic profile. Each one mounts a winglet to increase its aerodynamic efficiency, decreasing drag induced by the tip vortices and containing the noise emissions.

Casals
soul made fans

º APPLICATIONS

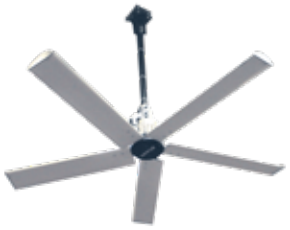
Designed for installation at a minimum distance from the target ceiling equal to 1.5 m, they reach maximum effectiveness installed at about 4 m from the ground. Under these conditions, the useful area is approximately 3 times the diameter of the product.

STORAGE

HANGAR

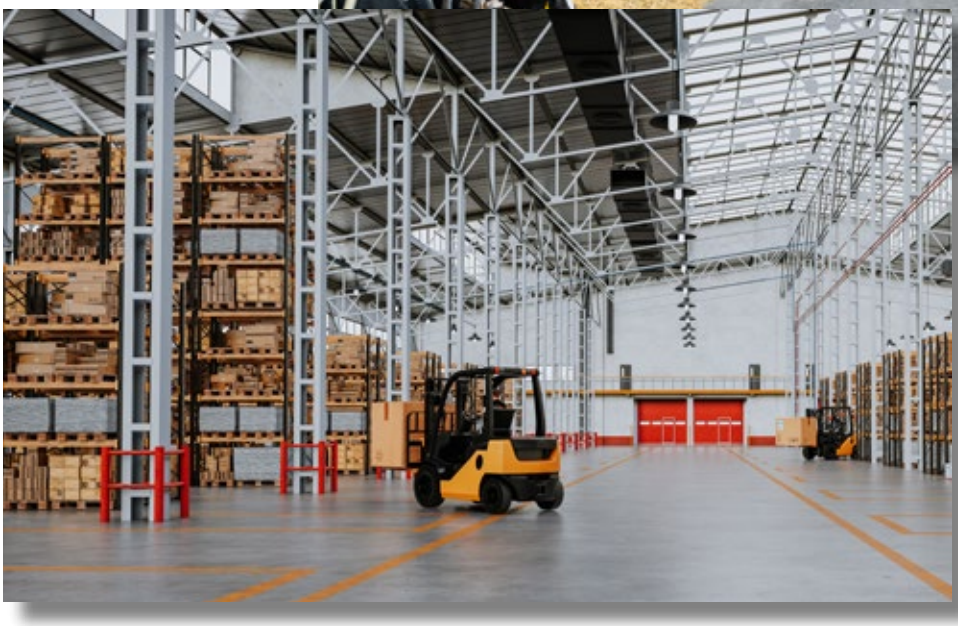
SUPERMARKETS

Casals
soul made fans



AIRPORTS

STABLES



LOGISTICS WAREHOUSE

º TECHNICAL CHARACTERISTICS

AVAILABLE MODELS

• Available in 5 diameters (300, 400, 500, 600 and 700 cm).

• Made of anodised Al, they achieve high efficiency values in downwash operation (generated air flow facing downwards) and ensure particularly low sound emission levels thanks to the sophisticated NACA aerodynamic profile. Each one mounts a winglet to increase its aerodynamic efficiency, decreasing the induced resistance induced by the tip vortices and containing noise emissions.

MOTORS

• Synchronous brushless type with permanent magnets (EC), integrate the relevant drivers and are designed to combine high performance, proportionally reduced consumption and wide speed regulation ranges. Are characterised by three-phase power supply (200-480 V / 50-60 Hz). All boast a high (IP65) degree of protection from dust and water, making them perfectly compatible with use even in particularly demanding conditions.

ELECTRONICS

Power and control electronics

Housed in the aluminium casting containing the motor, to grant adequate protection from water and dust, electronic controls to manage power supply and fine adjustment of speed according to the specific needs.

The AERONIKA HVLS electronics are complete with EMI/EMC filters for preventing the risks related to electromagnetic interference, and include:

• Opto-insulated RS485 connector for integration into the BAS (Building Automation System) Modbus RTU communication protocol

• An isolated analogue input, for regulating the fan speed through an external potentiometer or other device operating with 0-10 V signal.

The safety systems integrated into the electronics (drivers) include protection against overcurrent, short circuits, overtemperatures, overvoltages and undervoltages and anti-disturbance filters, in accordance with current international standards for safety and electromagnetic compatibility.

In accordance with NFPA 72 requirements as per US National Fire Protection Agency, the fan control system forces shutdown and immediate blocking upon detecting a water flow signal from the fire alarm system, so as not to affect the effectiveness of the devices (sprinklers) that may have been installed.

KITS

• Kit for ceiling installation.

Each fan is supplied with a complete installation kit consisting of a rod, with a standard length of 1.5 m, a pair of brackets and the related metal hardware. Fully made of steel, this kit ensures the right and solid installation of the device on the target ceiling in the most common installation methods.

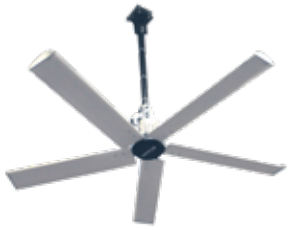
• Tie-rod kits (KIT TIRANTES PARA VARILLA)

Optional kit consisting of 4 tie rods specifically designed for an additional degree of axial stability, useful whenever the fan is subject to an external stress (e.g. strong wind), or when the target floor does not meet the necessary requirements of solidity, in relation to the weight of the product and the stresses induced by its operation.

In particular, the usage of this kit is to be considered mandatory when the position chosen for the installation of the fan exposes it to wind gusts, to the risk of accidental collisions with machines or equipment moving in its, to the possible impact of birds or, again, is located in a seismic area or otherwise subject to appreciable vibrations (e.g. industrial processes involving the use of power hammers, industrial presses, etc.).

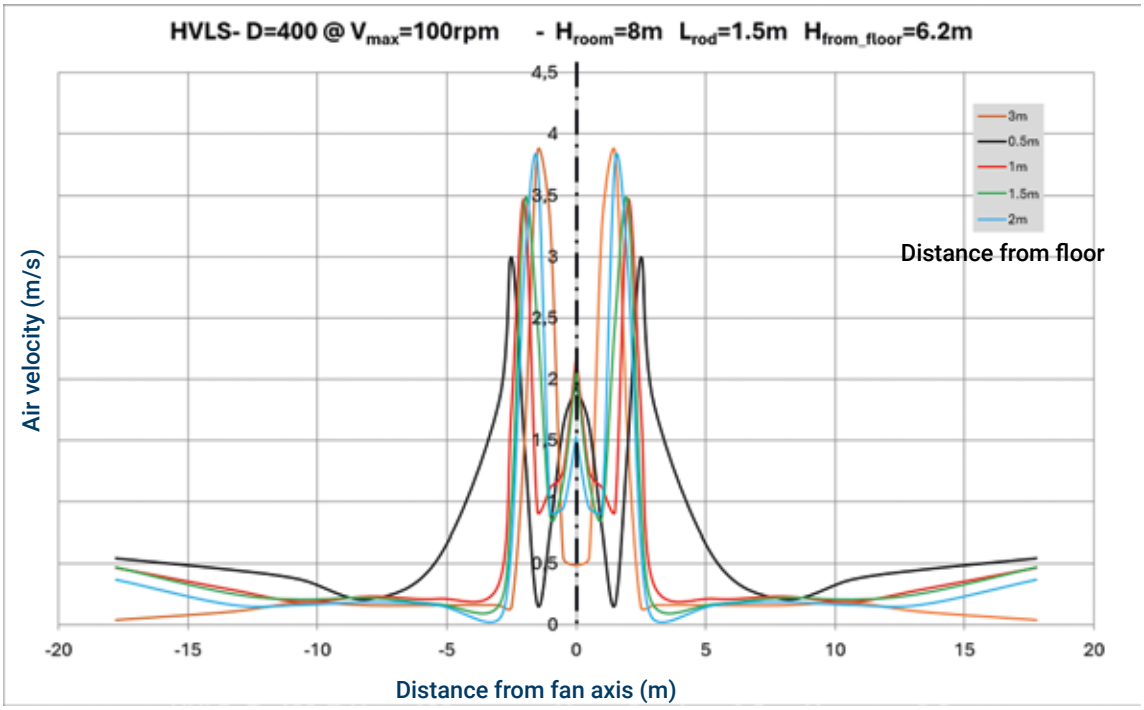
Motor's IP rating:

• IP65



TECHNICAL DATA

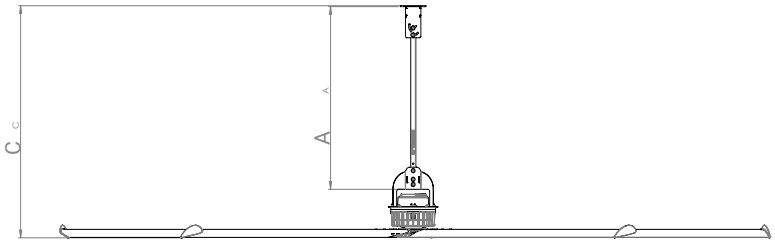
MODEL	CODE	W max	A	IP	°C max	RPM max	MAX FLOW RATE m³/h		Ø m	N° OF BLADES	KG
							AMCA 230-2023	AMCA 230-1999			
AERONIKA HVLS 300 T EEC	ARNK300TEEC	500	0.9 -1.8	65	50	140	79.400	112.287	3	5	76
AERONIKA HVLS 400 T EEC	ARNK400TEEC	300	0.7 - 1.1	65	50	75	103.000	145.663	4	5	86
AERONIKA HVLS 500 T EEC	ARNK500TEEC	730	1.2 - 1.9	65	50	80	205.000	289.911	5	5	126
AERONIKA HVLS 600 T EEC	ARNK600TEEC	850	1.4 - 2.8	65	50	60	253.800	358.924	6	5	136
AERONIKA HVLS 700 T EEC	ARNK700TEEC	790	1.3 - 2.5	65	50	50	330.800	467.817	7	5	156

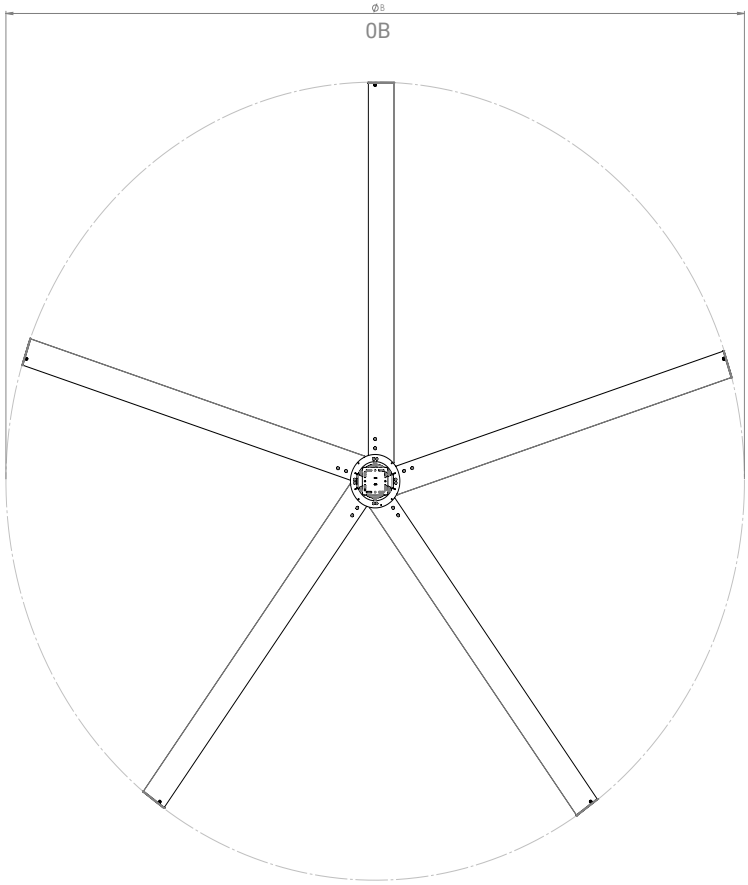


In many applications, the effectiveness of an HVLS fan depends on the speed of the air flow generated; this varies, with the same fan diameter and installation height, with the distance from the axis and blades. The picture shows this trend in the case of an AERONIKA HVLS 400 installed 6 m above the ground, in the absence of obstacles (machinery, racking, transverse air flows, etc.) which may in turn influence the result.

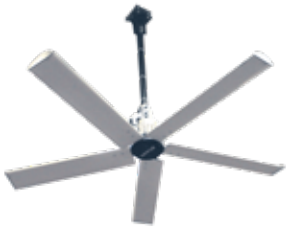
DIMENSIONAL DATA

TYPE A



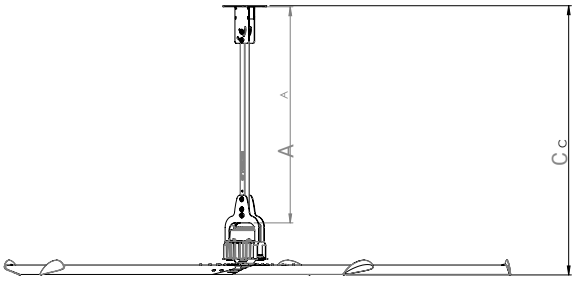


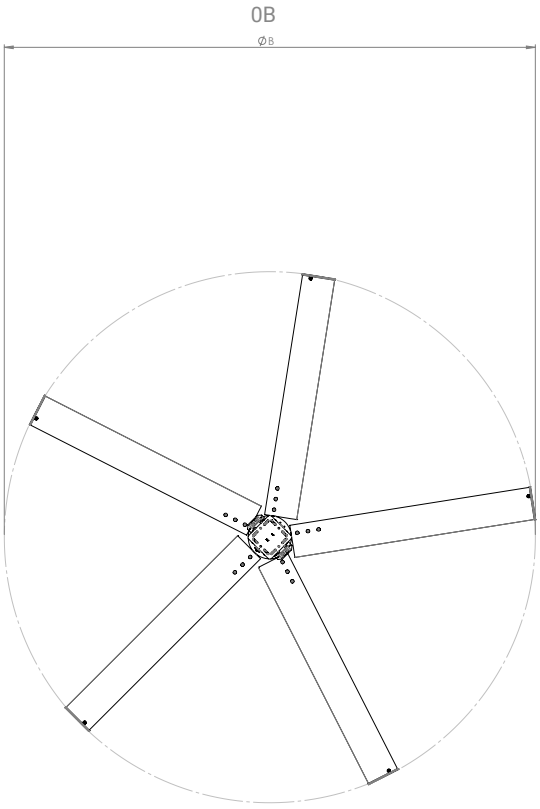
MODEL	CODE	TYPE	A	OB	C
AERONIKA HVLS 500 T EEC	ARNK500TEEC	A	1600	4950	2015
AERONIKA HVLS 600 T EEC	ARNK600TEEC	A	1600	5950	2015
AERONIKA HVLS 700 T EEC	ARNK700TEEC	A	1600	6950	2015



DIMENSIONAL DATA

TYPE B





MODEL	CODE	TYPE	A	ØB	C
AERONIKA HVLS 300 T EEC	ARNK300TEEC	B	1600	2950	1995
AERONIKA HVLS 400 T EEC	ARNK400TEEC	B	1600	3950	1995

REGULATORS

Code FX263300

REGC

Speed controller for EC motors.

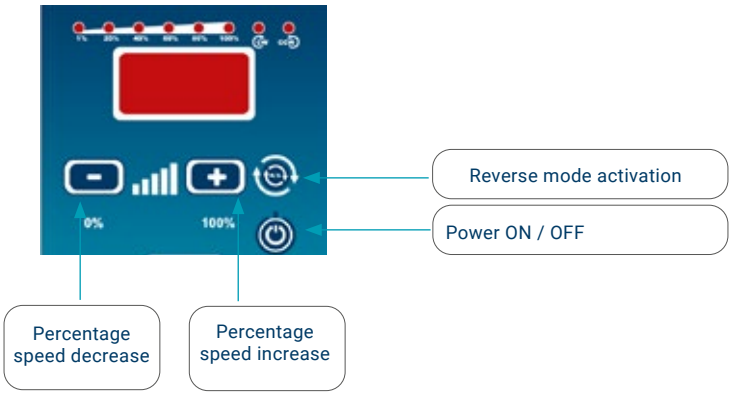
- Speed remote controller for EC motors.
- Adjusts the flow rate in a range from 0 to 100% at a maximum distance of 10m.
- It can be recessed or mounted on a wall.
- It can be installed outdoors.
- Working temperature from 0 to 40°C.

Code FX263300REV

REGC REVERSIBLE

REGC REVERSIBLE is a digital potentiometer for regulating the operating speed of the fans from the AERONIKA HVLS.

- Fans speed percentage adjustment (settable value: from 0% to 100% / OUTPUT: 0-10V).
- Reverse mode activation («R.V» button).
- Switching off ('OFF' displayed on screen): the connected fans stop (speed value=0%).
- Operating temperature: -10...+55°C.



SUSPENSION TIE-RODS KIT

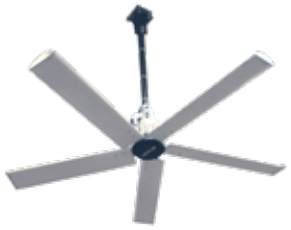
Code KITTIRARNK

KIT TIRANTES PARA VARILLA AERONIKA HVLS
Optional kit including four tie-rods, designed to ensure a solid and safe installation.

This kit is mandatory in case of:
- strong wind;
- risk of accidental impact with machines or other objects moving close to the ceiling fan;
- presence of birds;
- installation in seismic zones or other areas with vibrations (e.g. industrial processes involving the use of hammers or industrial presses).

Code PL3ARNK

PALO 3M AERONIKA HVLS
Pole, 3m long, for installation on high ceilings.



ANCHOR BRACKETS

Code STF1ARNK

SOPORTE PARA ANCLAJE 1
Bracket for anchorage to steel beams. Option 1

Code STF2ARNK

SOPORTE PARA ANCLAJE 2
Bracket for anchorage to steel beams. Option 2

Code STF3ARNK

SOPORTE PARA ANCLAJE 3
Bracket kit for anchorage with existing structure 3m-5m. Rod not supplied

Code STF4ARNK

SOPORTE PARA ANCLAJE 4
Bracket kit for anchorage with supplied hinge.
(3 m length)

Code STF5ARNK

SOPORTE PARA ANCLAJE 5
Bracket kit for anchorage with omega beam.

Code STF6ARNK

SOPORTE PARA ANCLAJE 6
Bracket kit for anchorage to joist under a windshield (2 m length)

Code STF7ARNK

SOPORTE PARA ANCLAJE 7
Bracket kit for installation on laminated beams

º THERMAL DESTRATIFICATION

Well-being and energy saving even in wide industrial and commercial environments thanks to ceiling fans

Adequate comfort conditions and air quality are key elements in a work environment.
In wide commercial and industrial spaces with very high ceilings, it is hard to ensure adequate heating during all working hours. The energy costs are high and the results are not very satisfying.

The heat generated by the heating systems (radiators, air-heaters, etc.) moves upwards in convective motion and stratificates near the ceiling, leaving the areas near the floor colder. In industrial depots, shopping centres, museums, or workshops, it often happens that, in order to keep 18 °C at "users' level", the air temperature near the ceiling exceeds 30-35 °C. Under these conditions, the well-being of those living the environment decreases, while the costs to keep the ideal temperature are rising.

The solution to this problem is thermal destratification using ceiling fans.
If well-placed, ceiling fans create a perfect mix between warm air and cool air even at low speed, keeping a uniform temperature. This comes with all the advantages in comfort and effective reduction of energy consumption. Specific studies show that the savings provided by the application of thermal destratification systems in particular commercial and industrial environments can cover purchasing and installation costs in just 4 years.

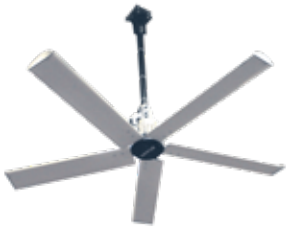
Especially since ceiling fans are more often used during summertime **to eliminate stagnation and humidity and to allow adequate air circulation.**

Casals Ventilación has the ideal know-how, experience, and range of products to install thermal destratification systems in wide environments.
Our qualified technicians are at our customers' disposal for designing and creating customised solutions, also using thermal-fluid-dynamic simulation systems. The pictures in these pages are taken from a simulation made by the Casals Ventilación R&D department on a study commissioned by a customer and later experimentally confirmed.

BEFORE
Heat rises to the ceiling → air stratification → **energy waste**

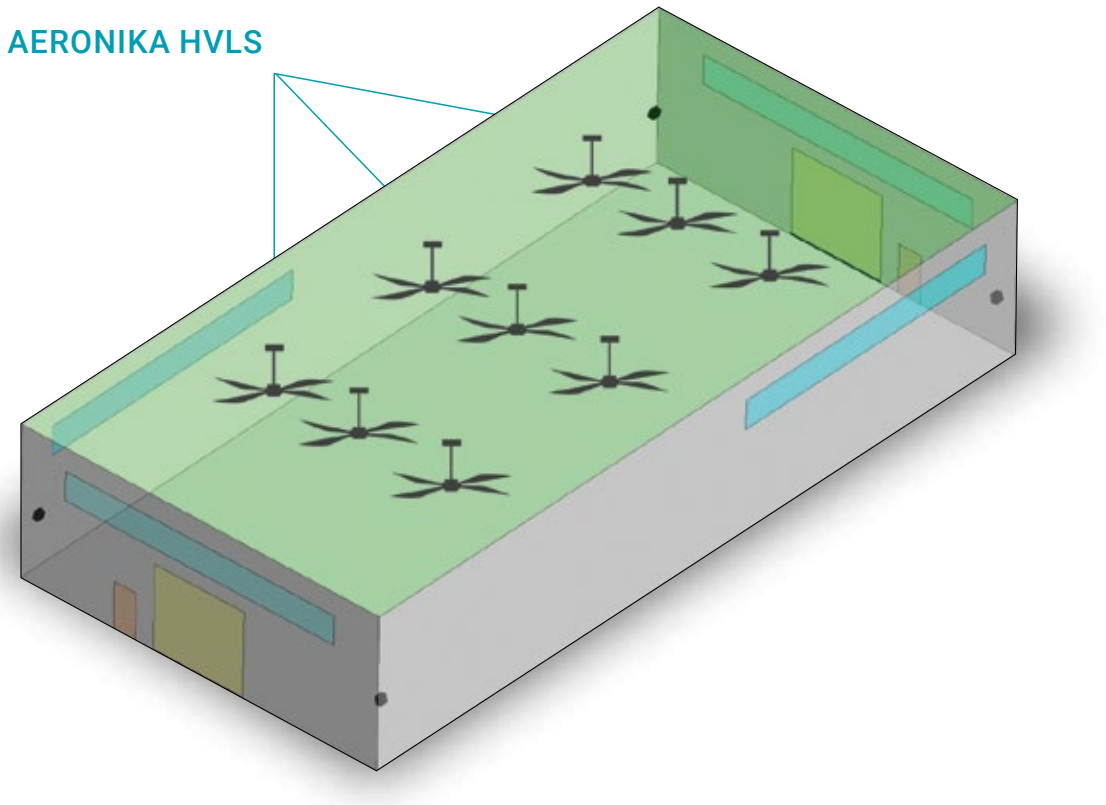
WITH HVLS FAN
AERONIKA mixes warm and cool air → even temperature at all heights

RESULT
Less heating needed → **payback in less than 4 years**



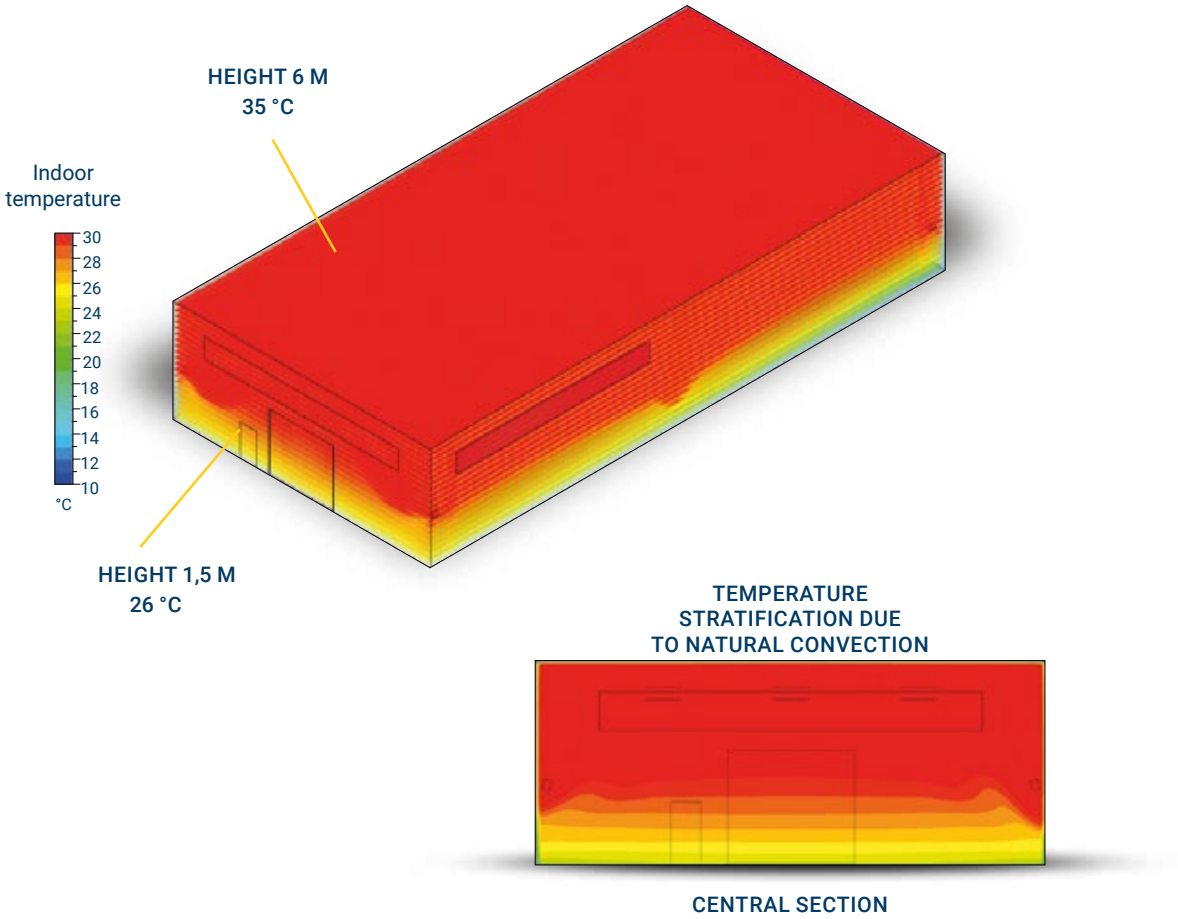
º INDUSTRIAL BUILDING EXAMINED:
MODEL LAYOUT

AERONIKA HVLS



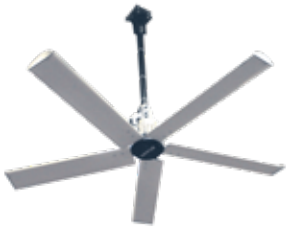
° 4 FAN HEATERS OF 12 KW HEATING CAPACITY (TOTAL 48KW)

(free convection, ceiling fans = off)



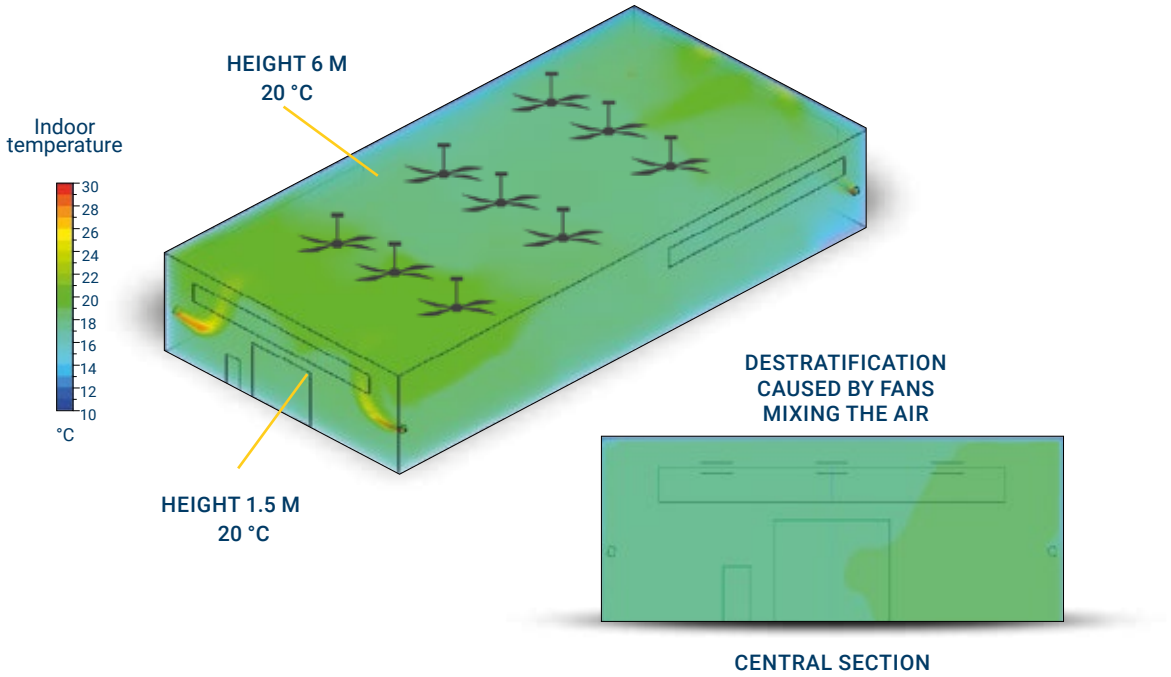
"STANDARD" INDUSTRIAL BUILDING (ONLY HEATING SYSTEM ON): DISTRIBUTION OF INTERNAL TEMPERATURE

Simple heating system with 4 thermal fans, with a total power of 48 kW, manages to reach a minimum temperature of 20 °C inside the building, but characterised by an inefficient temperature stratification in height caused by natural convection.

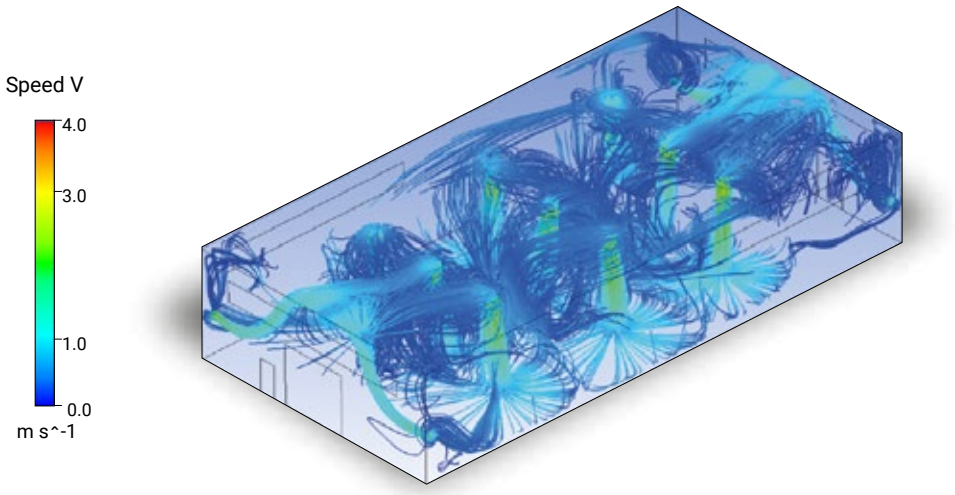


º 4 FAN HEATERS OF 9 KW HEATING CAPACITY (TOTAL 36KW)

(ceiling fans = on)



DESTRATIFICATED AIR: INTERNAL TEMPERATURE DISTRIBUTION
Low-speed fan operation creates a uniformly heated and comfortable environment, reaching the desired temperature of 20 °C with reduced energy consumption levels.



AIR SPEED FLOW LINES DURING FAN OPERATION
Even at low speed, the fans can efficiently mix warm air and cool air without any side effects on the occupants in the building.

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