



APPLICATION

Cleanroom / pharma AHU

A cleanroom AHU fan drives filtered air through pre-, fine- and HEPA/ULPA banks to hold the pressure cascade and air-change rate that keep an ISO 14644 / GMP grade A–D space clean. This is filtered, clean air — the opposite of dirty-gas duty.

Capability envelope

cleanroom AHU service

PARAMETER	STANDARD RANGE	ON APPLICATION
Volume flow	5,000–60,000 CMH typical per AHU	up to 2,25,000 CMH on application
Static pressure	600–1,200 mmWC across a loaded filter bank	up to 2,000 mmWC on application
Air temperature	ambient to 40 °C (conditioned supply air)	warmer on application
Static efficiency	high static efficiency as standard	higher on airfoil builds
Air-change rate served	20–60+ ACH per the ISO 14644 class	higher on application
Sound level	<80 dB(A) @ 1 m	<72 dB(A) with silencers / acoustic enclosure
Balance quality	ISO 21940 G2.5	G1.0 on application
Bearing life (design target)	L10h ≥ 40,000 h continuous	longer L10 on application

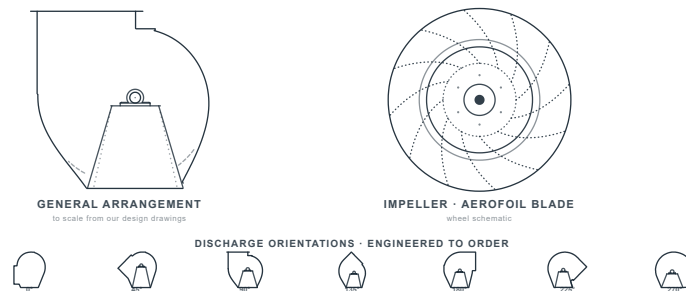


FIG. 1 Representative arrangement — a Jitmitra Aerofoil fan, the family most often applied to this duty. The exact family and wheel are engineered to your operating point.

Construction & materials

documented on your GA

- **Impeller geometry** — High-efficiency backward-curved or airfoil-bladed wheel for the highest static efficiency across the filter bank — higher again on airfoil builds — sized onto its best-efficiency point at the AHU design static.
- **Configuration — plug / plenum (unhoused)** — Plug / plenum (unhoused) build for direct integration into the AHU plenum — no scroll to trap dirt, even discharge into the filter bank, and a compact footprint inside the air-handling unit.
- **Hygienic materials & finish** — SS304 or SS316, or cleanable epoxy on steel — crevice-free, smooth-welded and ground, low-leakage casing, with an IP55/IP66 washdown-duty motor. No wear or dust package: the air is clean.
- **Control — EC or VFD to hold setpoint** — EC (for small AHUs) or VFD speed control holds the cascade pressure and air-change rate as filters load from clean to change-out — precise pressure-balance control without the throttling loss and hunting of a damper.

How a Jitmitra Cleanroom / pharma AHU fan is specified

AMCA conventions

SPECIFICATION FIELD	OPTIONS
Arrangement (AMCA 99)	Plug / plenum (unhoused) for direct AHU integration is the default; Arr. 4 (direct, motor on base) / Arr. 1 (overhung, fan bearings) / Arr. 9 (overhung, motor side) where a housed fan is specified — selected by drive, access and AHU layout.
Width / inlet	SWSI (single width, single inlet) default for cleanroom AHU duty; DWDI (double width, double inlet) for higher makeup-air flow at moderate static.
Wheel type	Backward-curved (default, best efficiency on clean air) / airfoil-bladed (highest-efficiency builds where the run hours justify it). No radial or high-solidity wheels — the air is clean, so efficiency wins.
Class (by pressure / outlet velocity)	Class I / II / III selected from the duty point on the pressure-vs-outlet-velocity limits; higher class = heavier construction for the higher filter-bank static and tip speed.

SPECIFICATION FIELD	OPTIONS
Materials of construction	SS304 or SS316 (hygienic, cleanable, crevice-free) / cleanable epoxy on steel where SS is not required — smooth-welded and ground, low-leakage casing. No wear or dust-abrasion package: the air is filtered and clean.
Drive	Direct-coupled / EC (small AHUs) / VFD (default for cascade-pressure and air-change control). IP55/IP66 washdown-duty motor; speed typically 900–1,800 RPM per duty and sound limit.
Discharge & rotation (AMCA orientation)	Plenum fans discharge into the AHU plenum (no scroll); for housed builds, rotation CW or CCW (viewed from drive side) with discharge angle per AMCA — e.g. TH/BH/UB/DB — set to match the AHU take-off and footprint.
Accessories & hygiene scope	Plug / plenum (unhoused) mounting; IE4 / VFD-rated washdown motor; flexible connection / expansion joint at the AHU take-off; inlet / discharge silencer and acoustic enclosure / sound hood for occupied space; special coating / paint (cleanable epoxy) or special material of construction (SS304/316); bearing isolators; vibration sensor / switch on critical units; drain and inspection access.

Where the Cleanroom / pharma AHU runs

PHARMACEUTICALS OSD, sterile and API cleanroom AHUs — grade A–D supply, HEPA-bank makeup air, pressure-cascade control across cleanroom, airlock and process room.	SEMICONDUCTOR & ELECTRONICS Fab and mini-environment recirculation, HEPA/ULPA bank fans, dry-room and assembly makeup air.
FOOD & BEVERAGE Hygienic packing and filling halls, aseptic-area supply air, controlled-environment AHUs with cleanable finish.	HVAC & COMMERCIAL BUILDINGS Hospital operating-theatre and isolation-room AHUs, laboratory supply air, controlled-environment plant rooms.
DEFENCE & NUCLEAR Controlled-area and containment AHUs, filtered supply air for classified and clean spaces.	GLASS & CERAMICS Precision-manufacturing clean areas — controlled-particle supply air for coating, lithography and inspection lines.
PRECISION MANUFACTURING Optics, medical-device and calibration cleanrooms — low-particle, low-vibration supply air held to class.	YOUR DUTY POINT Send us flow, static pressure and the air / gas condition — we size the wheel to it and quote in 3 to 5 working days — 5 to 7 working days for ATEX and special projects.

Standards & conformity

PERFORMANCE Tested to the IS 4894 / ISO 5801 / AMCA 210 method, in-house on our 200 HP VFD rig. Tested-to-method — not AMCA-certified.	QUALITY SYSTEM ISO 9001:2015 — third-party certified (our only third-party certification).
CE CONFORMITY Self-declared per 2006/42/EC + 2014/35/EU . Not a notified-body certificate.	ATEX CONFORMITY Self-declared, spark-resistant (SR), Zone 2/22 Cat 3 per 2014/34/EU , where area classification requires.
BALANCE & VIBRATION Balance ISO 21940 (G6.3 std, G2.5 on request); fan vibration acceptance ISO 14694 , measurement ISO 14695 .	WELDING & HEAVY DUTY ASME Sec IX welders + WPS; API 673 available as project-specific scope for oil & gas.

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Figures indicate family capability; every fan is engineered to the customer's duty point and confirmed on the approved GA drawing.