



APPLICATION

Fume extraction (weld/grind/EAF)

A fume-extraction fan pulls welding fume, grinding dust and electric-arc-furnace off-gas through the capture hood, ductwork and filter to the stack. The particulate is fine, metallic and abrasive; the airstream can carry hot embers and, on aluminium or magnesium grinding, combustible dust.

Capability envelope

fume-extraction service

PARAMETER	STANDARD RANGE	ON APPLICATION
Volume flow	up to 2,25,000 CMH	higher on enquiry
Static pressure	up to 1,000 mmWC	up to 2,000 mmWC for long-duct + high-resistance filter trains
Gas temperature	ambient to 200 °C (clean-side)	up to 500 °C for EAF primary off-gas
Inlet dust loading	clean side (low, post-filter loading); dirty side (high dust load)	higher with enhanced wear protection
Construction (ignition)	AMCA 99 spark-resistant Type B	Type A / C + ATEX Zone 22 (Cat 3) self-declared
Drive power	up to 425 HP	our largest drive delivered to date
Speed	600–1,800 RPM typical	per duty + sound limits
Balance quality	ISO 21940 G6.3	G2.5 / G1.0 on application

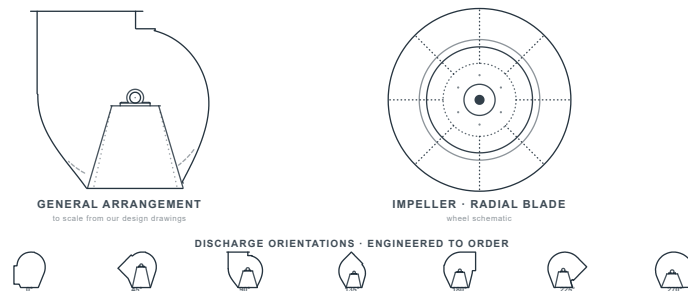


FIG. 1 Representative arrangement — a Jitmitra Radial fan, the family most often applied to this duty. The exact family and wheel are engineered to your operating point.

Construction & materials

documented on your GA

- **Spark-resistant construction** — AMCA 99 Type A / B / C selected to the ignition risk — **Type B** (non-ferrous rub ring) is the default for weld and grind fume; **Type A** (fully non-ferrous flow path) where the combustible-dust case is severe. Bonded earthing throughout, and a spark arrestor upstream of the filter on ember-carrying ducts.
- **Impeller & wear protection** — Radial-tipped self-cleaning wheel for dirty-side and EAF duty; backward-inclined only on the cleanest post-filter discharge. Hard-facing to the abrasiveness of the grit — chrome-carbide leading edges and **AR400** bolted-in wear plates with hinged access doors for in-place replacement on grinding-grit service.
- **Temperature — EAF primary** — On direct EAF extraction the off-gas is taken off a water-cooled duct that drops it into the fan's window; the fan is rated to 500 °C at the ceiling, casing upgraded to **IS 2062** or **SA 516 Gr 70**, shaft sized for thermal growth, and bearings selected for sustained 80–100 °C housing temperature.
- **Pressure-drop & control** — Sized to span the clean-filter and fully-loaded points across long duct runs — minimum 20% flow margin at clean condition, curve extending through the loaded condition. VFD default: filter loading shifts air demand across pulse-clean cycles, and speed control holds hood capture velocity instead of letting it coast down.

How a Jitmitra Fume extraction fan is specified

AMCA conventions

SPECIFICATION FIELD	OPTIONS
Arrangement (AMCA 99)	Arr. 1 (overhung, fan bearings) / Arr. 4 (direct, motor on base) / Arr. 8 (overhung on common base) / Arr. 9 (overhung, motor side) / Arr. 10 (overhung, motor inside base) — selected by drive, access, temperature and dust ingress.
Width / inlet	SWSI (single width, single inlet) default for fume duty; DWDI (double width, double inlet) for high flow at moderate pressure on large EAF canopy extraction.
Wheel type	Radial-tipped self-cleaning (default for dirty-side and EAF) / straight-radial (heavy grit and build-up) / backward-inclined (clean post-filter discharge, high-efficiency duty).

SPECIFICATION FIELD	OPTIONS
Spark-resistant construction (AMCA 99)	Type A (all non-ferrous parts in the airstream) / Type B (non-ferrous rub ring and non-ferrous parts across the shaft opening) / Type C (aligned construction that prevents ferrous rotating-to-stationary contact) — selected to the ignition risk; Type B is the fume-fan default.
Materials of construction	MS with AR400 bolted wear plates (weld / grind grit) / chrome-carbide-faced wheel (severe abrasion) / IS 2062 or SA 516 Gr 70 casing for EAF primary heat / 304 / 316L SS for corrosive fume / aluminium or bronze non-sparking parts for combustible metal dust.
ATEX scope	Zone 22 self-declared (Cat 3D) per 2014/34/EU for combustible metal dust (aluminium, magnesium, titanium grinding) — non-sparking impeller, bronze rub rings, bonded earthing, anti-static coatings, T-class bearing control.
Drive	Direct-coupled / V-belt / VFD (default for filter-loading and hood-velocity control). Drive up to 425 HP across the envelope; speed typically 600-1,800 RPM.
Accessories & acoustic scope	Spark arrestor upstream of the filter on ember-carrying ducts; VFD or damper control; bolted-in AR400 wear plates with hinged access doors; labyrinth + lip bearing seals against dust ingress; expansion joints and thermal scope on EAF duty; inlet and outlet silencers with acoustic-lagged casing (down to <75 dB(A)); drain and inspection doors.

Where the Fume extraction runs

IRON & STEEL EAF primary and canopy fume extraction, fourth-hole draught, ladle-furnace and secondary fume capture.	FOUNDRY, CASTING & FORGING Melting-fume capture, pouring and shake-out fume, grinding-booth extraction.
FABRICATION & AUTOMOTIVE Welding-bench and on-torch fume, robotic weld-cell extraction, grinding and finishing booths.	POLLUTION-CONTROL OEMS Fume fans supplied as a sub-package to baghouse, cartridge-collector and stack builders — interface documented up front.
HEAVY ENGINEERING Structural-steel fabrication shops, plate-cutting and gouging fume, shipyard and pressure-vessel weld extraction.	NON-FERROUS & LIGHT METALS Aluminium and magnesium grinding — combustible metal dust, ATEX Zone 22 with spark-resistant construction.
FERRO-ALLOYS & SMELTING Submerged-arc and induction-furnace fume, tapping and casting-bay extraction at elevated temperature.	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.