



APPLICATION

Gas Recirculation (GRF)

A GRF fan does not send gas to the stack — it takes a controlled slice of flue gas off the boiler or kiln and pushes it back into the furnace, windbox or duct to reshape the temperature profile and hold NO_x down. The gas it handles is hot, ash-laden and often below the acid dew point, and it runs on a closed recycle loop where a stumble shifts the combustion balance.

Capability envelope

GRF service

PARAMETER	STANDARD RANGE	ON APPLICATION
Volume flow	up to 2,25,000 CMH	higher on enquiry
Static pressure	up to 2,000 mmWC	higher on enquiry
Recycled gas temperature	up to 500 °C continuous	wheel and casing metallurgy chosen for the duty
Inlet particulate loading	heavy inlet loading	higher with enhanced wear protection
Recirculation ratio	10–25% of total gas flow typical	per combustion and NO _x -control design
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

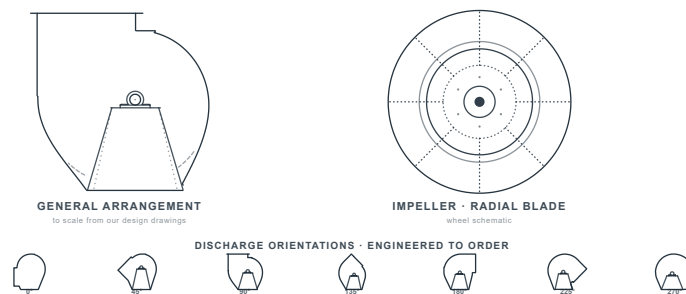


FIG. 1 Representative arrangement — a Jitmitra Radial fan, the family most often applied to this duty. The exact family and wheel are engineered to your operating point.

Construction & materials

documented on your GA

- **Materials & corrosion protection** — Mild steel + epoxy standard; Corten or 316L where the loop sits below acid dew point; a higher alloy on aggressive chloride/sulphur gas; casing insulation and heat tracing to hold the wall above dew point on the recycle loop.
- **Wheel geometry & wear protection** — Radial-tipped backward-curved by default for efficiency with dust tolerance; straight-radial where recirculated-ash build-up dominates. Chrome-carbide leading edges and AR400 bolted-in wear plates at the throat and outlet, with access doors for in-place replacement.
- **Recirculation-ratio control** — **VFD default** — The temperature profile and NO_x setpoint move with boiler load, so the recycle split must track. VFD speed control holds the ratio across the range and avoids the throttling loss of a damper at part load; inlet vane dampers remain available for legacy retrofit.
- **Thermal management** — Shaft cooling disc standard above 400 °C (available from 350 °C on request); fabric or metal expansion joints sized for growth of order ~25 mm at 400 °C; shaft sized for thermal expansion and bearings selected for sustained 80–100 °C housing temperature.

How a Jitmitra Gas Recirculation 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 and temperature.
Width / inlet	SWSI (single width, single inlet) default for GRF duty; DWDI (double width, double inlet) for high recycle flow at moderate pressure.
Wheel type	Radial-tipped backward-curved (default, efficiency with dust tolerance) / straight-radial (when recirculated-ash build-up dominates) / backward-curved (clean-recycle, high-efficiency duty).

SPECIFICATION FIELD	OPTIONS
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 higher pressure and tip speed.
Materials of construction	MS + epoxy (standard) / IS 2062 or SA 516 Gr 70 casing for high-temperature recycle / AR400 bolted wear plates and chrome-carbide-faced wheel for recirculated-ash abrasion / Corten, 316L or Duplex 2205 for acid dew-point and corrosive gas.
Drive	Direct-coupled / V-belt / VFD (default for recirculation-ratio control). Drive up to 425 HP across the envelope; speed typically 600–1,800 RPM.
Discharge & rotation (AMCA orientation)	Rotation CW or CCW (viewed from drive side) with discharge angle per AMCA — e.g. TH/BH/UB/DB — set to match your recycle-duct take-off and re-injection routing.
Accessories & high-temp scope	Inlet vane damper or VFD control; fabric or metal expansion joints (thermal growth to ~25 mm at 400 °C); shaft cooling disc (standard above 400 °C); bolted-in AR400 wear plates and access doors; casing insulation and heat tracing for acid dew-point service; drain and inspection doors.

Where the Gas Recirculation runs

POWER GENERATION Boiler gas-recirculation fans for steam-temperature control and NOx reduction on utility and cogen units.	IRON & STEEL Reheating- and heat-treatment-furnace recirculation, sinter-plant gas recycle for temperature profiling.
CEMENT & LIME Kiln and calciner gas-recirculation loops for thermal profiling and emissions control.	CHEMICALS & PETROCHEM Fired-heater and process-furnace flue-gas recirculation for temperature and NOx management.
GLASS & CERAMICS Melting- and annealing-furnace gas recirculation for uniform temperature across the bath.	WASTE-TO-ENERGY Incinerator flue-gas recirculation for combustion staging and NOx control on the grate.
FURNACES & HEAT TREATMENT Recirculation fans that even out the temperature profile inside industrial furnaces and ovens.	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.

Jitamitra Electro Engineering Private Limited

Works Units N-7 & B-20/2, MIDC Ahilyanagar (Ahmednagar) 414111 · Sales: Karvenagar, Pune 411052
Part of the Zen Group of Industries (est. 1993) · CIN U31908PN2009PTC134884

+91 83291 72325

sales@jitamitrablowers.com
jitamitrablowers.com

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