



FAN/BLOWER NOISE CONTROL

Customized noise control solutions for all types of fans & blowers

Acoustics India Private Limited is an ISO 9001 certified full service solution driven engineering company with a manufacturing capability of manufacturing noise pollution control equipment since 1988. With a vast experience and a clientele across disciplines, our range of products encompass Steam Vent Silencers, Acoustic enclosures, Diesel generator noise control packages, Compressor noise control packages, Silencers for compressors/ fans/ blowers, Sound proof doors, Acoustic treatment for buildings/ ducting/ test facilities and design of complete noise control packages, comprehensive noise survey and analysis.

Silencer For Sinter Waste Gas Fan



Managing the Fan Noise

The noise from centrifugal fan is dominantly a superposition of discrete tones at the impeller or blade passing frequency and broadband aerodynamic noise. The origin of the discrete noise is from two sources. First, each time a blade passes a point in space, a pressure fluctuation is created due to the displacement of air. Second, as the blades pass the cutoff point in the scroll, abrupt pressure changes or pulses also occur at the blade passing frequency and higher integer ordered harmonics.

The broadband aerodynamic noise originates from vortices created at the leading and/or trailing edge of the blades and turbulence imparted to the fluid, usually in the form of eddy like flow.

Axial fans generally operate at higher pressures than centrifugal fans and usually are considered noisier. Due to the number of blades and high rotational speeds, the noise from axial fan is generally characterized by strong discrete blade passing tones.

To effectively control the noise, we suggest the following:

- * Inlet Silencer
- * Discharge silencer.
- * Acoustic enclosure for the fan/blower
- * Ventilation system for the Acoustic Enclosure.

The fan/blower silencers should be placed as close as possible to the blower to minimize noise radiated from the piping between the blower and the silencer. The noise radiated from the casing of the fan/blower shall be effectively controlled by providing an acoustic enclosure around the blower.

Suction & Discharge Silencers

These silencers are designed for high attenuation and low pressure drop. The silencers are of either rectangular or circular in construction depends upon the design requirement. The air passes through the space between the splitters where the sound energy is absorbed. The straight flow path ensures minimum pressure drop. Either carbon steel, galvanized steel or stainless steel will be provided for internals based on the customer's choice.

Acoustic Enclosure

The Acoustic Enclosure comprises of modular structure frames made out of MS channel, angles and pre-fabricated high performance acoustic panels. The modular structural frame could be easily assembled since they are constructed as bolted structures. The construction is so



designed to facilitate easy assembling and dismantling. The acoustic enclosure will also be provided with sound proof industrial sound reducing doors, so that, the routine check-up or minor maintenance could be carried out by the operator by getting inside the acoustic enclosure through the sound reducing doors, as sufficient space inside the enclosure is provided around the compressor for an operator to move around on all sides. The acoustic enclosure is sufficiently illuminated and the ventilation arrangement with ventilation silencers and ventilation blowers will be provided to restrict the temperature raise within 7° C above the ambient temperature. The entire structure borne noise transmission path will be traced and acoustically treated to maintain the noise level within the desired limit.

Ventilation

The ventilation air sucked through the intake silencers takes away the heat dissipated. Further more, the ventilation air travels around the blower and motor to take away the heat from the blower and motor and then, it escapes through the exhaust blowers, mounted on the roof of the enclosure with ventilation exhaust silencers.

Rotary Blower Silencers

Rotary Blower Inlet and Discharge Silencers are circular in construction. It is a combination of reactive and absorptive type silencer. It provides pulse control as well as the attenuation required for the design requirement with minimum pressure drop. The material of construction shall be either carbon steel or stainless steel depends upon the service and the customer requirement.

Case Studies

Tisco - Sinter Exhaust Gas Fan Noise Control

Noise Control of Fan handling 9,80,000 m³/hr hot dust laden sinter gases at 1650 C driven by a 6500 KW motor. The noise control scheme is designed to bring down the noise level within 85dBA at a distance of 1m around the blower and the silencer is designed to offer minimum pressure drop.

AIPL carried out the design analysis and designed a system, which comprises of acoustic enclosure, Sinter fan discharge silencer, acoustic insulation of fan intake ducting and acoustic insulation of fan discharge transition ducting.

The Silencer is of absorptive type and rectangular in construction and installed in the discharge side of the Sinter Fan. The internals of the silencer comprised of splitter elements arranged in parallel inside the rectangular steel casing. The internal splitter was designed for better aerodynamic performance and for minimum pressure drop.

The inlet dampers connected to the hydraulic actuators posed a serious problem due to complex arrangement.

A precisely designed acoustic treatment scheme for the damper actuators thereby offering noise reduction without compromising the functional requirement. The whole system was installed at site and the noise level was measured as 83.6 dBA as against the guaranteed noise level of 85dBA.



The Acoustic cladding material being assembled around the Blower casing



The discharge silencer having a dimension of 4200mm wide x4050mm height x 3300mm length weighing 14MT being dispatched from our factory.

Noise Reducers For Motors



Customer: BHEL, Bhopal

Sinter Fan Discharge Silencer



Customer: Howden, India

Fan Suction Silencer



Customer: Linde-BOCI/JSW

Quality

Quality bench marks are to the highest level playing field. Stringent processes that doubly ensure quality is maintained right from raw material sourcing to the finished product inspection prior to dispatch. On customer preferences, silencers are inspected by LRIS, DNV, BVIS, EIL, etc and are certified for quality. All our products perform par excellence. Our products are ensured to comply with the requirements of OSHA/ISO Standards.

Clientele

Steel & Power	Engineering	Chemical & Fertilizers	Oil / Petro Chemical
Tata Steel	EIL	FEDO	GAIL
IISCO	RIL BECHTEL	HFCL	KRL
SAIL	Andrew Yule & Co	CFCL	HPCL
Visag/Bokaro/Bhilai Steel	Linde/BOC India	SPIC	BPCL
Jindal/Durgapur Steel	L&T/L&T MHI	RCFL	BRPL
JSPL	UHDE/UHDE GMBH	MFL	MRPL
BHEL HYD/HWR/BPL	Technimont ICB	EID Parry	ONGC
NTPC	BHPV	GNFC	RIL
MSEB/KSEB/TNEB	SABIC	Indo-Gulf	IOCL
Korea Heavy Industries	KTI	IFFCO	ESSAR Oil
Alstom Projects	MECON	GFCL	Quippo Infrastructure
BSES	Indian Railways	GSFC	Adyard Abu Dhabi
Deutsche Babcock	Howden India	Ultra Tech Cements	PetroFac International
Thermax Babcock	Siemens	Heidelberg Cements	Southern Petrochemical
Mitsui Babcock	Atlas Copco	MCSC	Haldia Petrochemicals
IJT	Air Liquide	FLSmith	Heurtey Petrochemicals
Torrent Power	Thyssen Krupp Industries	Jubilant Organosys	Numaligarh Refinery
ESSAR Steel	Praxair India Pvt Ltd	Ranbaxy Laboratories	
Mono Steel	Copes-Vulcan	Sudha Agro	
METSO Power	Jubail Chemicals	Shree Cements	
Belleli Energy	Ansaldo Caldaie Boilers	Saurashtra Chemicals	
Deutz	Tata Motors Limited		
Mazagon Dock	SPX Process Equipment		
Stewards & Llyods	Downer Energy Systems		
GIPCL	GALFAR Engineering/PDO		
Hindalco	TOPS Technologies / CTCI		
INOX AIR Products	ABB		
BGR Energy	Bateman Engineering		
Caterpillar	DRDL		
DF Power Systems	Punj Llyod		
TD Power Systems	Spirax Marshall		
	Samsung Engineering		

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