

DIESEL GENERATOR SYSTEMS

Acoustics and Ventilation

Diesel generators are usually situated in specialist plant rooms which house all the ancillary equipment as well as the generators themselves. Enclosing generators in their own individual spaces poses a challenge to ensure the engines are well ventilated for efficient operation. The ventilation openings affect the major reason for enclosing the generator that being to maintain the external noise to an acceptable level. Inside a concrete plant-room there is a requirement to minimize the build up of reverberant noise for health and safety reasons.

Sound Seal Acoustics with its total acoustic responsibility philosophy is uniquely placed to provide a complete solution. With a full range of industrial silencers, acoustic louvres, Sound Seal panels and a sheet metal duct division the complete package can be delivered. These products coupled with our design expertise ensure that the correct level of ventilation is delivered to the optimum areas to ensure peak generator performance is not compromised. At the same time maintaining the correct acoustic envelope to meet both internal and external noise requirements.



Acoustic Enclosures

These can be used for either external or internal applications. Each project is a turnkey application and can incorporate such features as windows, doors, access panels and ventilation systems. For applications where oil or grease absorption could be a fire hazard, Melinex lining can be used to wrap the acoustic material. For greater detail see our Acoustic Panels section.



Acoustic Wall Panels

These are manufactured in a complimentary range to the Sound Seal panels with a purpose designed wall mounting framework. The panels are designed for use in diesel rooms to lower the internal noise levels. To achieve optimum noise reduction for minimum cost at least 80% of the wall and ceiling space should be lined. It is not necessary to try and achieve a 100% coverage.



Sound Absorption to AS 1354-2006

Thickness (mm)	Octave Band Centre Frequency Hz						NRC
	125	250	500	1K	2K	4K	
50	0.2	0.65	1.01	1.01	0.97	0.86	0.95
75	0.55	0.95	1.05	1.01	0.99	0.88	1.00
100	0.67	1.05	1.10	1.05	0.99	0.90	1.10

Sheet Metal Shop

Sound Seal Acoustics has its own sheet metal manufacturing facility, for more detail see section on related companies. We can provide a complete design, manufacture and installation package for

enclosure ventilation systems. This includes fans, attenuators and duct work to maintain optimum generator performance.

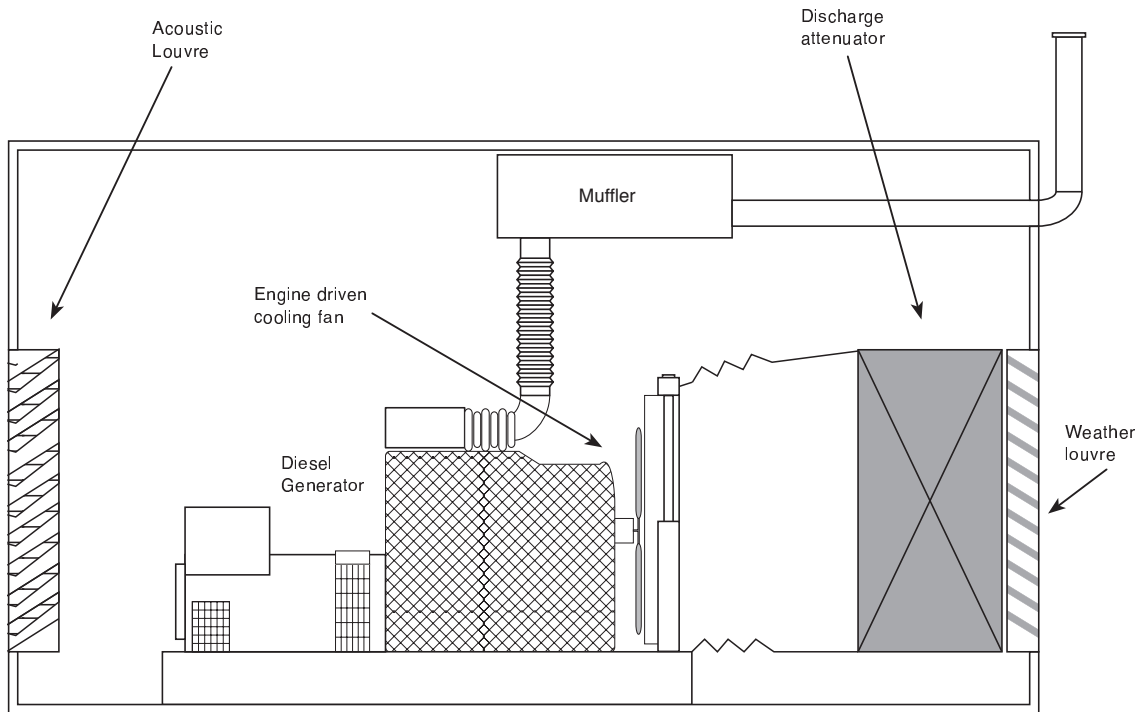


Ventilation Attenuation Equipment

The performance data for our ventilation equipment is given in the circular and rectangular data sheets, further information can be seen in the Acoustic Louvre section and the technical data section for applications. The primary difference for diesel generator applications is in the materials of construction. Mass layer lagging of the external case is a common requirement to achieve the external levels. Aerodynamic implications of specific installations can be derived from the data sheets in the technical section. These products can be integrated into both generator powered ventilation, or remote fan powered, ventilation systems.



Generator Powered Ventilation



This is in some ways the simplest of the ventilation methods. Although it can result in large air flows in the diesel room and hence large attenuators are required.

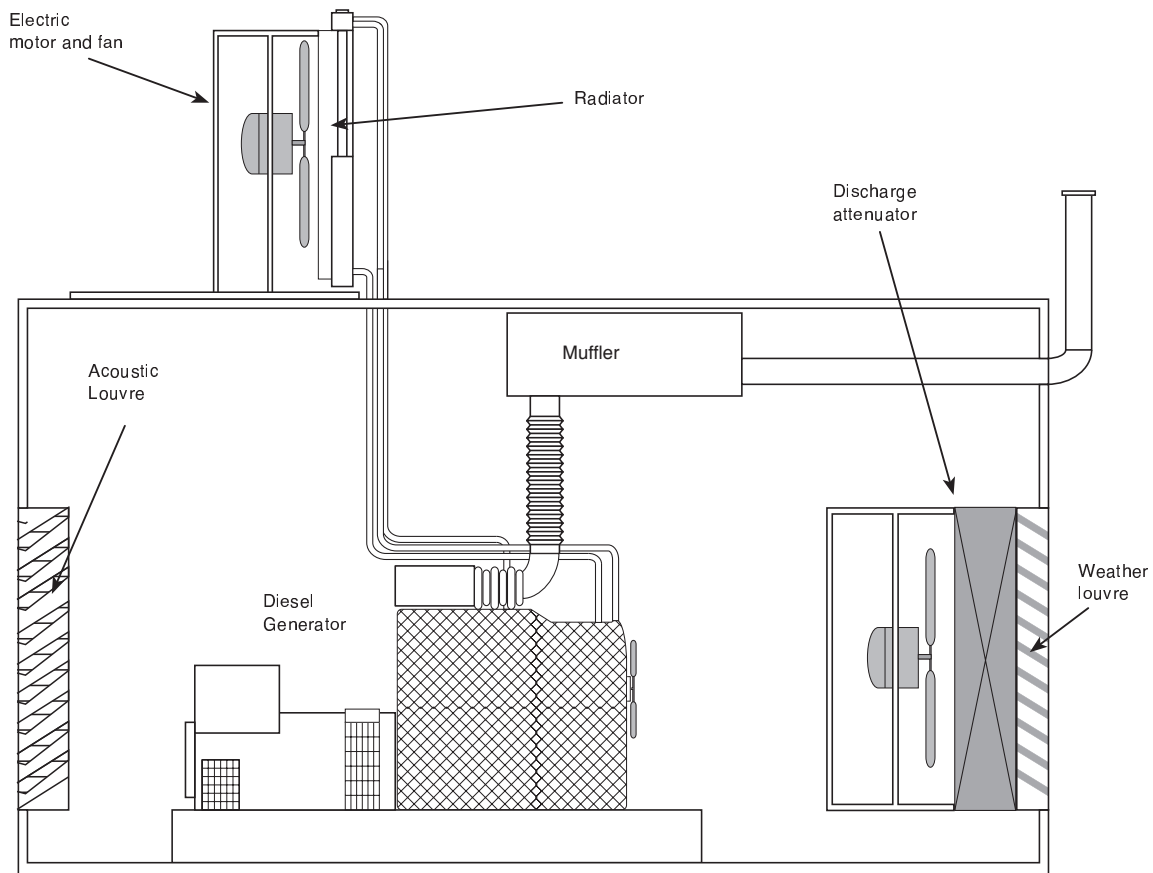
The ideal setup is for the outside air to enter at low level and to be drawn across the engine then through the radiator and exhausted on the other side of the plant-room. The air intake and discharge sizes must take account of total air flow for the radiator cooling air, combustion air, and plant-room ventilation.

This total air flow must be balanced with the limited external pressure loss of the inbuilt generator cooling fan. To achieve the optimum

generator performance often requires ducting of the inlet and/or outlet air. The resultant pressure losses for this duct work must be built into the design sizes thus requiring even larger attenuators to maintain a low pressure drop through the system.

This can occasionally be an impractical solution and when the additional loss requirements become too high we must go to an external fan powered ventilation system.

External Fan Powered Ventilation



This solution will result in smaller attenuators and smaller building penetrations. It will however require more expensive installation and ancillary equipment costs. There two distinct options:

- a. The radiator within the plant-room but cooled by a separate fan.
- b. A remote radiator external to the plant-room.

In case (a) the air flow requirements are the same as the generator powered ventilation option. However as we have a separate fan we can utilize higher pressure losses and thus smaller duct work and ventilation attenuators. It also means the plant-room penetrations are correspondingly

smaller. It can have the added advantage that by variable speed fan drives the optimum diesel performance can be achieved irrespective of the ambient air temperatures.

In case (b) if the radiator can be located remote from the diesel room without causing external noise problems then option b is preferred as the ventilation system only needs to provide for combustion air and heat gain within the room. This results in greatly reduced air flow with smaller equipment and penetrations in plant-room walls.