



Major Design/Build firm for a Co-Generation Facility, Ontario Canada

IMI Acoustics Corporation

Boiler Exhaust Forced Draft Fan Noise: Property Line Noise Issue

Issues:

- The expansion of an existing Gas Turbine driven power plant Heat Recovery system was under construction as a “design/build” project. The customer was installing two auxiliary blowers that would be exhausting outdoors. Each fan was rated at over 90,000 CFM. After analysis by an acoustical consultant, it was found that the units would exceed property line noise limits.
- The fans were sensitive to additional static pressure, which would diminish the efficiency of the recovery system. This would translate into increased operating costs per kilowatt generated.
- The ductwork design limited the length of any proposed silencer unit to no more than 72”. The acoustical specifications called for a silencer Dynamic Insertion Loss of 28 db at 63 Hz, 38 db at 125 Hz and 57db at both 250 & 500 Hz!
- The silencers would also need to be mounted in an elevated location and weight was a major concern.
- The casings of the silencers also had to meet very stringent Transmission Loss (TL) requirements since they were mounted inside the occupied area of the plant.

Solution:

- The acoustical consultant provided the requirements to the factory for silencer selection. After analysis, our Dual Spiral unit was selected. This Dual unit incorporated (2) Oxel® spirals in-line with a resonating chamber space between the two

- A heavy casing was also utilized to prevent breakout noise from the silencer.
- Even with the high attenuation provided by the dual units, they were less than half the length of a standard baffle-type silencer and had a smaller face area for the same given pressure drop..

Results:

- The silencer provided the specified attenuation, low pressure drop and did not require any additional structural supports outside of the ones present for the ductwork.
- The facility was able to use the originally designed locations for the duct exhausts without having to modify the entire wall of the facility already under construction. This saved the facility the substantial cost of redesigning and modifying the structure.

Some of the Advantages of using An Innovative Solution from IMI Acoustics Corporation:

- The high attenuation, combined with lower pressure drops that the Oxel® Spiral Silencers provide, address many requirements that a standard, heavier baffle silencer cannot.
- The physically smaller size and weight of the Oxel® Silencer, typically eliminates increased project costs for additional structural modifications and support normally required for standard baffle silencers.
- Energy savings realized by reducing the required blower/fan horsepower needed, due to the lower system static pressure.