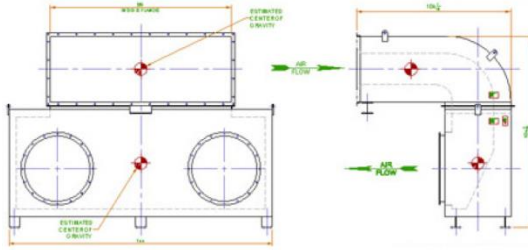


Case Study: Marine Gas

Turbine Noise Control

PROJECT DESCRIPTION

An Inlet Silencer for a 22 MW marine gas turbine generator ventilation system had to meet a significant noise reduction requirement with very little available space for noise attenuation equipment. The gas turbine generator package was installed deep within an oceangoing cruise ship, allowing for minimal space for the accessory equipment necessary to operate the machine. The turbine enclosure required an ambient air flow rate of 21,500 cfm to maintain the desirable temperature for the turbine and other equipment operating in the enclosure. Two centrifugal fans (one operating, one stand-by) located on



the roof of the enclosure provided the cooling air. Based on the available space and predetermined equipment layout within the ship, the ventilation system inlet silencer needed to do more than just provide the specified noise insertion loss. The layout required the silencer to direct the airflow over the top of the fans and turn it 180 degrees into the horizontal fan inlets.

ENGINEERED SOLUTION

Combining two VAW Systems' silencer designs, the model EIB Elbow Silencer and the Model RSB Rectangular Inlet Box Silencer, a custom silencer package was developed to meet the performance requirements. The Elbow Silencer was specially designed to be close-coupled to the turbine system's main air intake duct, directed horizontally across the top of the fans, and turned vertically downwards while providing a portion of the desired noise insertion loss. The Rectangular Inlet Box Silencer then turned the airflow horizontally into the two fans' circular inlets, providing the balance of the insertion loss. The two part silencer package allowed for just one system to be in service, regardless of which fan was operating, minimizing the physical space needed for this noise attenuation equipment. The customer installed back draft dampers at the two fans' outlets to insure this common inlet silencer layout did not create recirculation ("short-circuiting") of the ventilation air. This VAW Systems' silencer package is now sailing the high seas aboard a number of ships operated by a world renowned cruise line.

