

dB NOISE REDUCTION (dBNR)

John Praskey*

240-J Holiday Inn, Cambridge, ON, N3C 3X4

Résumé

dB Noise Reduction (dBNR) a été créé en 2002 par des experts de contrôle du bruit spécialisés dans la conception des silencieux industriels et environnementaux. En tant que concepteurs et fabricants responsables, dBNR garantie que leurs conceptions sont performantes et que la qualité des produits assurent au client un cycle de vie du produit long et productif.

Mots-clés: Silencers, enceintes, conception de contrôle du bruit

Abstract

dB Noise Reduction (dBNR) was established in 2002 by noise control experts in advanced industrial and environmental silencer design. As responsible designers and manufacturers, dBNR warrants that their designs perform and the quality of the products guarantee a long and productive lifecycle for the customer.

Keywords: Silencers, enclosures, noise control design

1 Introduction

dB Noise Reduction's (dBNR) head office and engineering is located in Cambridge, ON with additional sales offices in Winnipeg, MB, Dublin, OH and Belvidere, IL. Our product manufacturing takes place at locations in the USA, Canada and Mexico. All are capable handling equipment sized up to 25,000 lbs. Our offices and facilities are ISO 9001:2008 certified in accordance with our strict quality control procedures.

2 Product Line

dBNR's product offering continues to grow, and along with silencers, mufflers, tuned-reactive and vent silencers, accompanying rain and weather hoods and accessories such as filter boxes and houses, flex connectors and acoustical flex connectors. We also offer Nois-eNvelope™ Architectural Environmental Noise Barrier Systems, shown in Figure 1, and Noise Control Enclosure Systems with our proprietary single-span panels UP TO 24'-0" long! We have expanded into Architectural Acoustics by offering easy to install wall and ceiling panels, floor underlayment's, as well as resilient sound isolation clips. These products contribute to improving individual comfort levels and workers productivity by improving STC and IIC ratings.

Our noise control application areas include - Refineries; Steel Mills; Power Generation; Mining and Tunnel Ventilation; Paper and Pulp; Gas Turbines; Nuclear Plants; Cement, Gas and Ethanol Production.

2.1 Areas of Application

In the area of architectural acoustics applications, we supply

products to Health Facilities, Office Buildings, Learning Facilities, Places of Worship, Commercial Buildings and Residential Buildings.



Figure 1: dBNR Nois-eNvelope™ noise barrier systems

An example of a stack silencer is shown in Figure 2 below.



Figure 2: Stack Silencer for South American Power Plant

3 Noise Control Example

3.1 Problem

A long established nickel and copper mine was in need of extensive upgrades to bring its operations into compliance with current environmental regulations. At the top of the list of potential improvements, was a retrofit for the noisy 140,000 ACFM mining ventilation system. After extensive

* jpraskey@dbnoisereduction.com

internal discussions, a custom fan silencer system incorporated into a refurbished air intake building was selected as the optimal solution.

Since mining operations run twenty-four hours per day, seven days per week, the noise levels from the mine ventilation system were an on-going problem for employees and nearby residents alike. Complicating the project was the condition of the existing ventilation enclosure, which was in need of extensive clean up, including the removal of hazardous material.

The dB Noise Reduction team worked with the mining company's acoustical consultant to develop a customized industrial silencer solution for the noisy 104 dBA axial fan currently in use. An integral part of the project included disassembly of the existing steel structure to remove corrugated asbestos paneling.



Figure 3: Ventilation system before control

3.2 Solution

The dB Noise Reduction team addressed all phases of the mine ventilation system upgrades through a number of phases that were completed over a twelve week period. The first step was to clean up the existing structural steel using a high pressure water blasting process. This avoided the need for environmentally harmful materials and eliminated the potential for dust and debris. Minimizing particulate was essential during this process, as the ventilation fan needed to remain in operation. Once the cleanup process was complete, a protective paint was applied to the steel structure.

The next phase in the project included special precautions for the removal of the corrugated asbestos. This was the only part of the project during which the ventilation fan had to be temporarily halted, due to the potential for asbestos exposure.

The dB Noise Reduction team coordinated the hazardous material removal with a certified removal team, who completed the job in less than one day. Following the excavation of the area, the newly cleaned and treated steel structure was enhanced with the installation of four modular fan intake silencers, two absorptive acoustic walls, and an absorptive acoustic roof. The new fan silencer system designed, supplied and installed by the dB Noise Reduction team reduced the noise level from 104 dBA to 72 dBA, a 32

dB reduction from the original noise level, and well below all applicable government noise regulations.



Figure 4: Ventilation system after control





ACOUSTICS



NOISE



VIBRATION

- > Noise & Vibration Control in Land-use Planning
- > Noise & Vibration Studies: Residential and Commercial
- > Building Acoustics, Noise & Vibration Control
- > Land-use Compatibility Assessments
- > Third-party Review of Peer Reports
- > Expert Witness Testimony

905-826-4546
answers@hgcengineering.com
www.hgcengineering.com