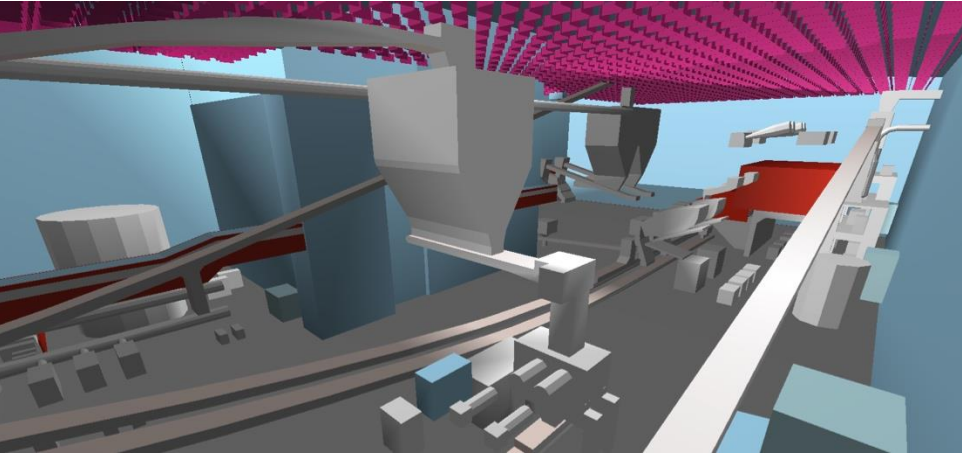


MINE PROCESSING OCCUPATIONAL NOISE ASSESSMENT



FOCUS AREA

Industrial and Mining
Occupational Noise

SECTOR

Industrial and Mining

SERVICE

Noise Assessment

► CHALLENGE

Patching Associates was retained by a leading global resources company to conduct an engineering noise assessment at a mine located in the Northwest Territories.

The Northwest Territories Mine Health and Safety Act requires managers to take all reasonable measures to ensure that worksites in a mine do not exceed a specified noise exposure level limit. Noise must be controlled through the use of engineering controls first, followed by administrative controls, and finally personal protective equipment if engineering controls are not practicable to eliminate or sufficiently reduce a hazard.

The main objectives of the project were to:

- Quantify the existing occupational noise levels at the mine process plant and power plant, and compare them to the noise exposure target levels.
- Develop engineering noise control measures to lower the plant noise levels as low as reasonably practicable to the noise exposure target level.

A process plant and power plant operator must be in a working environment of 83 dBA or less during a 12 hour shift in order to stay within the 85 dBA noise exposure limit.

► SOLUTION

Using a Sound Pressure Level sound meter, a large sample of noise measurements were taken inside each subject area at high-traffic, key working locations. The measurements were used to produce a birds eye view noise map of the plants, showing the noise contours at different working floors. The noise contours highlighted the locations where the occupational noise levels exceeded the noise exposure target level.

Using a Sound Intensity Level sound meter, close proximity measurements from the noise-emitting equipment were taken to quantify the noise emissions of each noise source inside each plant. A detailed 3D noise model was then created for each plant based on structural drawings and the quantified noise emissions. The model calculated the noise propagation at desired locations, and the modeled levels could be compared to measured levels to test the accuracy of the model. Noise control measures were developed, and were designed to be as close as practically achievable to the noise exposure target level.

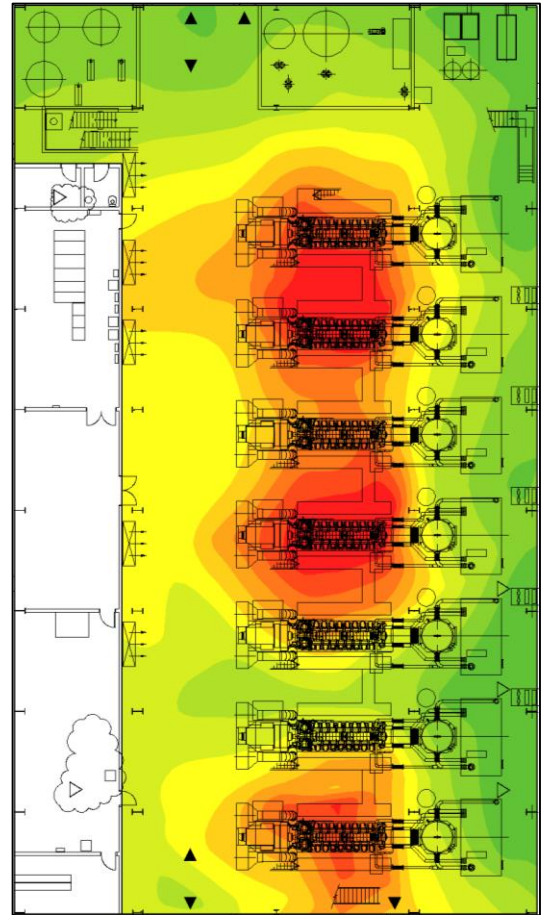
The noise model quantified the noise reduction level after each noise control step, and predicted the reduced occupational noise levels at each key working location.

► RESULT

The noise assessment of the process plant determined that the average occupational noise levels at key working locations would meet the noise exposure target levels after implementation of the recommended noise control measures.

The engineering noise control measures were developed into specifications which allowed the facility owner to obtain competitive bids on noise control equipment.

Patching Associates provided important insight and analysis needed for the operations team to implement specific noise control measures and assess the cost and benefit of specific solutions.



RECOMMENDATIONS

- Installing acoustic blankets around the rotating equipment.
- Installing ventilation silencers on the HVAC units.
- Installing acoustic panels on the walls and ceiling.

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