

AIR COMPRESSOR SOUNDPROOFING CASE STUDY.

ABSTRACT

Air compressors are found in most factories and warehouses, used for many different functions within a plant or office. They come in many different sizes and configurations

INTRODUCTION

One of the AMAZON warehouses had several air compressors installed in close proximity to employee traffic, it was close to impossible for them to keep up with work and dealing with the notorious noise coming from the compressors, employees complained, although noise levels were within the OSHA guidelines management was concerned about the employee moral and productivity. They decided to take action and contacted Noise Control for consultation and a plan of action.

CRITERIA

The company's main issue to tackle was the overall noise reduction of the compressors and the safety and wellbeing of the employees. Other concerns were ensuring the mitigation of noise would not interfere with the proper function of the machinery. The next concern was the accessibility to the equipment, and the possibility to move the noise reducing equipment together with the machinery in case it had to be moved to a different spot in the warehouse. Overall cost was a factor for the financial department. The design criterion was to reduce the sound level by 10 dBA at 3 feet.

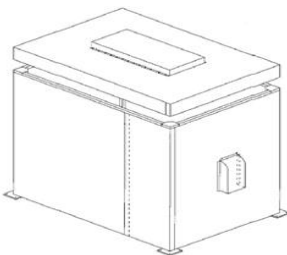
PROCEDURE

Our team performed a site visit and took measurements while the air compressors were in their on and off cycle and also when both compressors were working simultaneously.

The measurements were analyzed and compared to the noise criteria, that way we could determine the amount of noise attenuation required and develop the perfect noise mitigation application.

RECOMMENDATION

We recommended mitigation close to or near to the source of noise to maximize effect. Primary goal was to decrease decibel levels without limiting access to the machinery. Recommendations include the following in order of priority.



Installation of a sound curtain barrier wall, made of a 1" fiberglass absorber bonded to a 1 lb. per square inch loaded vinyl noise barrier, hanging from a double track system with floor mounted uprights positioned to form a sound barrier on the open sides of the corner of the facility where the compressors are located. This application would reduce noise from 10 up to 13 decibel.

Adding a roof to option one, which reduces the reflected noise. The roof would be constructed of a 2" thick vinyl sound curtain absorber panel filled with fiberglass or sound absorbing foam.

RESULT



The company decided for the installation of the sound curtain barrier wall with a roof.

Validation measurements showed that 13-decibel of attenuation was achieved at 3 ft. outside of the enclosure and 14-decibel reduction by close proximity of the workers.

Management had achieved its noise reduction goals and Noise Control was happy to help.