

## OUTDOOR HVAC NOISE SOLUTIONS

### Outdoor HVAC Noise Solutions

So you have a noise problem. Let's go through the steps in determining what is creating the sound and the options on how to solve the issue.

What type of equipment is making the noise? Chillers, fans, cooling towers, condensers, air handling units, heat pumps, and air conditioning units all have specific items in their construction that make noise.

- Chillers: compressors, oil separators, compressor piping, cooling fans, and steel casing
- Fans: open intake and exhaust, motor, steel casing
- Cooling towers: large cooling fans and water dropping
- Condensers: multiple fans banked together
- Air handling units: supply and return fan, ductwork, unit casing, sometimes compressors
- Heat pumps and air conditioning units: compressors and cooling fans



HVAC Sound Barrier Wall System

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### Chillers

Noisy components on chillers are well-treated with acoustical blanket wraps. These are excellent for the compressor, compressor piping, and oil separator. The compressor fan noise can be effectively treated with an acoustic silencer. Modular steel sound barrier walls or outdoor noise curtains block the line of sight as well as noise from compressors and fans. If the required sound reduction is very high, steel enclosures with louvers for intake air and silencers for exhaust air creates an effective solution.

### Fans

Fan noise is usually low frequency and can travel long distances. Compressor and casing noise is a higher frequency and although it can be very annoying, it dissipates quickly. If the noise complaints are coming from several hundred feet away from the unit, it is usually the fan discharge noise.

Typical solutions include one or a combination of the following:

- Sound barrier walls
- Silencers
- Acoustical blanket wraps
- Sound enclosures
- Sound curtains

In most cases, noisy fans have an open intake or exhaust. This causes noise from the fan blades to be released into the atmosphere, which can be very loud. The best practice is to duct all air in and out of the fan in a closed loop system. If this is not possible, the fan airflow in CFM and the available pressure loss in the system will determine the silencer design for optimal fan performance. For noise fan casings and motor noise, we suggest sound blanket wraps, curtain enclosures, or steel enclosures.

## Cooling Towers

Cooling towers often contain several large cooling fans on the top of the unit. Depending on the application, you may need to use a sound barrier wall in conjunction with discharge air silencers. The silencers will quiet the noise from the discharge while the barrier wall will quiet the noise from the intake air at the bottom of the unit. Effective sound barrier walls for this application can be outdoor sound curtains or modular steel panels.

## Condensers

Split system condensing units consist of a bank of multiple fans that pull air over coils. This works in conjunction with an indoor liquid chiller. The recommended solution for this is an outdoor sound curtain or steel barrier wall built around the unit, along with silencers above the unit. Acoustical louvers can also be added to the sides and top if space is at a premium.

## Air Handling Units

Roof mounted air handling units have a supply and return fan with ductwork. An acoustical duct silencer is a good solution for the airflow noise. Mounting acoustical panels in the curb or plenum space below the unit can also reduce break out noise from the unit.

## Heat Pumps and Small Air Conditioning Units

The easiest solution for these applications is a fence with outdoor sound curtains attached to the inside. This should take into account the necessary clearance for the units to allow adequate airflow.

Contact eNoise Control and speak with our experts about solutions for your HVAC noise problem!

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