

Air Cooled Chiller Noise Control – Case Study

Unger has been involved with several outdoor HVAC Chiller noise applications. Air cooled chillers with rotary screw compressors present the largest challenge because of the multiple sound sources and the tonal quality of the noise. Below are some actual case histories of Unger's involvement with outdoor environmental noise control dealing with air cooled chillers.

The following is actual excerpts from a City Hall Meeting Regarding Chiller Noise from a McQuay Air Cooled Screw Chiller

-“He spoke of mitigation analysis measures dealing with localization and definition of noise source, state and federal noise guidelines, noise annoyance survey and mitigation procedures. The noise emanates from the screws.”

-“Peterson wants community involvement. He wants the neighbors to know something is being done and that they have an idea of what is going on. He has sent surveys out to 70 households selected by distance from the chiller.”

-“Peterson showed a structure which contained the chiller which was nonreflective and all perforated and about 4 inches thick. It is very modular. It can be two, three or four sided. The weight will not be a problem but wind shear is the biggest concern.”



Sound Barrier Wall – two Trane Screw Chillers

Photo #1 was an application of two Trane air cooled chillers located outside of a hospital. Disturbing tonal noise was being produced to the adjacent neighbors 2 blocks away. The chiller produced a distinct tone measured at 125Hz. A city noise ordinance was in place. Unger performed field sound measurements with a 1/3rd octave band sound level meter both near/far field along with property line sound measurements. It was determined that the chiller was indeed exceeding both day and night time noise ordinances from the City. Unger Technologies provided an acoustic noise survey and feasibility report. The conclusion was to design and construct an

outdoor sound barrier wall. Our report concluded and recommended the appropriate modular sound control panels with design on height and dimensions of the wall. Sound readings were conducted after construction when the chiller was fully loaded and sound values were determined below the city code ordinance.



Sound Barrier Wall – McQuay Chiller

Photo #2 was an application of one McQuay air cooled chiller located outside of a public recreation center building. Disturbing noise was being produced to the adjacent neighbors 800' away at a slight change in elevation to the chiller location. No noise ordinance was in place at the city/state level. Unger Technologies was retained by the Architect and City to perform a noise survey and recommended noise abatement strategies. Unger took field sound measurements with a 1/3rd octave band sound level meter both near/far field along with property line sound measurements. Unger Technologies provided an acoustic noise survey and feasibility report. The conclusion was to design and construct an outdoor sound barrier wall with acoustic louvers to improve airflow into the HVAC chiller. Our report concluded and recommended the appropriate modular sound control panels and acoustic louvers with design on height and dimensions of the wall. Sound readings were conducted after construction. Our noise control results met and exceeded our acoustic goals for the project

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