

Request for Proposals NO. 049-001

Questions & Answers

Issue #8

11 August 2009

Hydrogen Station Acoustic Specification

The following questions were asked:

Questions:

1. Concerning the sound specification – we are finding that the most practical way to assure meeting the 35 dBa spec at 75 meters is a sound barrier around the whole system, consisting of non-combustible walls of specialized materials and construction at least 5 ft above the equipment. If this approach is used, it could also allow for future station expansions as well. It does not seem practical at this spec level to simply insulate the individual components, which would also increase maintenance issues. We have worked many times with well-known and experienced acoustical engineering firms and have contacted them in this case. It will take a full acoustical engineering design based on site conditions to come up with the design and the construction spec necessary to guarantee compliance with the RFP spec, which is a good deal of money and time for a bid. We think the engineering and construction of the necessary sound barrier is logically part of the site improvements provided by others. Would you be willing to make this part of the site improvements to allow the bid process to proceed? If not, what do you suggest?
2. There are 2 types of noise generated by the station equipment: 1) operating noise from compressors and motors, which is more or less consistent when the equipment is running, and 2) very short but loud noise from venting during compressor unloading and other venting situations. For safety, vents need to be elevated, likely at or above the height of what a sound barrier would be. How does your spec address these two sources -- is the spec a time-weighted average or a peak limit? Do we need to design and include silencers on all vents?

Responses

Question #1

It has been postulated that attenuating the sound emitted by the hydrogen station could require the construction of a wall as a sound barrier. Due to many reasons, including the fact that noise sources such as compressors and chillers vary greatly in design characteristics (i.e., noise source height, sound level, and spectrum), noise control engineering work is generally best applied to the source. If target noise levels can

be met by source modifications without the need for distant noise walls, this ensures higher confidence in the results and eliminates the need for site-specific engineering work.

Noise source mitigation options may include enclosures, lined ducts, HVAC silencers, acoustical louvers, and/or quieter fans, for example. When cooling and/or airflow are important considerations, then the manufacturer should be involved in the design to ensure safe/proper operation of the product.

If site-specific noise wall(s) are required, then the following information may be helpful. However, noise source location, height, sound level, and spectrum should be considered, in addition to receiver distance and height, in order to determine wall location, extent, and minimum height.

Noise barriers should be constructed of solid, air-tight materials. Masonry is preferred and most effective. However, in general, any solid material with a surface weight of 4 pounds per square foot or higher should be sufficient to provide a minimum of 5 dB attenuation and more, if correctly designed.

While an acoustic wall is not the preferred remedy, if it is deemed necessary as part of the bidders proposed solution, HNEI would need to consider the cost of the wall in evaluating the bidder's overall solution. In this case, HNEI would seek acoustic engineering design and construction cost estimates based on the bidder's system design and sound-level specifications. The design of an acoustic wall needs to take into account the requirement for maintenance and access.

Question #2

We do not have permission for short, loud bursts of sound. If there is a requirement for venting during compressor unloading and other venting operations, the design will need to address silencers on all vents.