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# Steve Morgan On: Proactive Noise Control Planning a facility with noise in mind

Hindsight is 20-20, even when it comes to noise control. Older facilities may be limited in their ability to accommodate the most efficient noise control solutions, sometimes requiring costly retrofits in order to meet noise regulations.



However, if you are still in the planning phase of a new facility, now is the ideal time to take the noise impact into consideration. Doing so as early as possible will allow you to maximize the value of your noise control investment and minimize risk of noise complaints.

Taking proactive measures prior to a facility's construction can save on costs and logistic challenges in the long run, while demonstrating your company's social mindedness and avoiding the negative community awareness that could hamper future expansion plans.

### Theoretical Noise Impact Assessments

Properly identifying an issue is the crucial first step in determining the most efficient noise control solutions to meet the needs of your facility. One of the most valuable tools for proactive noise control is the Theoretical Noise Impact Assessment (TNIA), a highly detailed, source-order ranked analysis of the expected noise impact of a proposed facility's equipment.

A TNIA can be modelled as soon as the intended location and proposed equipment of a new facility have been identified, including (but not limited to) engine and cooler data, plot plans, receiver locations, and topography. With this information, it is possible to assess how the proposed equipment and the topography of the location can be expected to contribute to the facility's overall noise levels. As such, if you have some flexibility in equipment or location, a TNIA can alert you to potential noise problems before you commit to them, allowing you to address them *before* they cost you in expensive retrofits.

### Equipment

Once the details of the proposed equipment are made available, the next step of the TNIA is to consult a library of measurements and manufacturers' data to create models. Precision is key, which is why TNIA's split

## Thought Leadership

equipment into individual noise sources, so you'll know exactly what needs to be treated.

A TNIA will tell you not only what equipment is likely to be the loudest, but also which of those noise sources poses the highest risk of noise complaints—a task which is far less intuitive than one might expect. The high-pitched fan that sounds so loud up close may not prove to be a significant noise source at nearby residences, while the low-frequency rumble of an engine exhaust could easily be audible over a mile away. Noise is predictable, but never simple.



Every site and equipment arrangement is unique, which is why it is important to model each site with the exact equipment plan you'll be using today, as well as any future development plans, with special consideration of the landscape where you'll be placing it. Those noise sources that seemed insignificant on site can prove to be the biggest issue at a receptor point, and with a TNIA, you can know this before the equipment's even on site.

With this information, a facility can be designed and plotted with noise in mind, eliminating redundant purchases of low-performing acoustic equipment and the equal pitfall of unnecessary investment into

acoustical equipment that addresses the wrong noise sources entirely. Why buy a powerful muffler to silence an engine exhaust when the cooler is twice as loud? It's the equivalent of turning off a nightlight because the sun is too bright—misdirected effort that doesn't fix the problem. A TNIA offers you the certainty that you're addressing the acoustical issues that your site will face—nothing more, and nothing less.

### Topography

An additional benefit of TNIA's is that they take into account how the proposed location can be expected to contribute to your facility's noise levels by analysing the area's topography.

Though too often excluded from the topic of noise contribution, it is imperative to take into consideration how the local topography is likely to affect noise levels. For example, consider a facility located in a valley, surrounded by adjacent hills, and upon one of these hills sits a house about a mile away from the facility. You might not think the noise of the facility could have any impact on this house, but the residence has a direct line of sight to the facility. Without a clear step-by-step noise mitigation plan, costly "noise control" can be applied with little to no benefit to the receiver.

Depending on the area's topography, noise will be enhanced or dampened. Every case is unique, which is why digital elevation maps of the site's proposed location and equipment layout are used to ensure optimum accuracy.

Seasonal or weather conditions can also promote noise complaints. Often, facilities running hot on a summer day will require the opening of doors or windows to allow

## Thought Leadership

sufficient airflow to the equipment, simultaneously allowing noise to escape. Noise issues in summer are compounded by the fact that people tend to be more active outdoors during summer months, meaning that they are in a position to be more adversely affected by and cognizant of industrial noise. An effective TNIA takes into consideration not the typical or ideal operating conditions of a facility but the worst-case conditions that will be most likely to result in noise complaints, whether those conditions involve weather events like inversions or wind in exactly the wrong direction, or operating temperatures that demand open doors and windows. To a nearby residence—and any applicable noise regulations—a facility is as bad as the worst day it'll ever have, not the best.

## Conclusion



If taken into consideration in the early stages of planning a new facility, proactive noise control steps such as a Theoretical Noise Impact Assessment can ensure maximum benefit and minimum risk in meeting noise regulations. A TNIA means you buy once, with confidence—the right muffler, the right building, and the right ventilation package for the unique requirements of your site. Skip the retrofitting, and do it right the first time around so your facility is ready to go the day you fire it up—the way it should be.

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### About Steve Morgan



Steve Morgan is Executive Vice President at Noise Solutions, after serving as the company's Vice President Business Development since 2004. Steve has been part of the speaker rotation at Olds College in Alberta since 2012, specializing in business development and social media. He has written and facilitated a variety of leadership-training courses, and has been a keynote speaker at events for the Canadian Institute of Management and the Lone Star College's Continuing Education of Engineers Program. Steve lives in Alberta, Canada with his wife of 17 years. Article written by Taija Morgan.