The application of the product is more important than the product itself.
Solutions don’t exist in catalogs.

Only the correct application of vibration isolation and noise control products will produce a solution. That’s why picking a product from a catalog leads, all too often, to misapplication – resulting in severe problems and even disaster.

We’re in business to ensure you avoid these scenarios. As opposed to the “catalog approach,” we take an Integrated Systems Approach. It is a proven design methodology involving system analysis, product selection and the application of vibration and noise control. This approach helps you overcome the challenges you face on almost all projects: restricted space, achieving improved indoor air quality, saving energy and, most important, managing total cost.

We carefully consider the totality of your HVAC systems into which our products must fit and function. We execute with the largest and most experienced application engineering team in the industry – professionals who overcome design limitations and provide the right solution for each project.

We guarantee the end result.

Involve us in system analysis, product selection and application, and based on the information provided, we guarantee what matters most to consultants, contractors and owners: that property line dBA criteria and NC/RC levels in the occupied space will be met.
Why noise & vibration control?

Next to complaints about temperature, complaints about excessive HVAC noise are the most common.

Many people associate the need for noise control only with sound-critical facilities such as concert halls or libraries. So one might not realize that HVAC noise control is necessary to avoid problems and complaints in all building environments. Just consider that next to complaints about temperature, complaints about excessive HVAC noise levels are the most common.

Healthcare
Lack of adequate noise control can actually impede patient recovery, which is why it is necessary to apply noise control to recovery rooms and intensive care units. Keep in mind that some sensitive systems, including electron microscopes and MRI equipment, may not perform in the presence of vibration.

What makes noise control appealing are the higher patient approval ratings and LEED points that quieter healthcare spaces ultimately earn. For workers both in hospitals and other healthcare buildings, vibration and noise control is imperative to avoid poor working conditions in all vital spaces: consider how important it is to have quiet in operating rooms, for example.

Education
For schools, colleges and universities, vibration and noise control are crucial: it makes the environment more conducive to learning and avoids speech intelligibility issues. For the consulting engineer, vibration and noise control preempts client complaints – and the damage to reputation and loss of repeat business – that can result. Outside of the classroom, vibration and noise control are necessary for spaces, including gymnasiums, auditoriums and labs, to name just a few. For owners seeking LEED classification, meeting noise control specifications earns points for acoustical quality.

Commercial
Vibration and noise control in commercial buildings are smart business – for a host of reasons. Commercial spaces with HVAC noise problems create a less productive work atmosphere, more noise complaints and more lawsuits. These buildings lose their tenants, struggle to attract new ones and are less profitable as a result. Ultimately, buildings with correctly applied noise control earn a higher resale value for the owner and position the consultant to win more projects from the competition.

In the same way that buildings are not deliberately designed with a poor appearance, they should not be designed with poor sound quality. Just think – the proper application of noise and vibration control will typically add less than 1% cost to the mechanical budget, a small price to pay to avoid an acoustic slum. In manufacturing, lab and pharmaceutical settings, noise and vibration control are indispensable for clear communication between and among employees and management. In retail environments, it is crucial for the retention of customers. Hospital settings need quiet to comfortably accommodate their guests. Correctional and other institutions need quiet for private rooms and interrogation. And if generator sets must be called upon, for example, robust noise control solutions are essential to prevent both occupied space and environmental noise issues.

Hospitality
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The Integrated Systems Approach to avoiding disaster:

This rooftop unit (RTU) is right over the occupied space. Am I going to have a noise problem?

How much noise control do I need?

What paths will the noise take? Will I have a breakout problem on this job?

According to ASHRAE I don’t have enough straight duct for a silencer. What should I do?

I have limited ceiling space. Is there a solution for noise control that will fit?

How much wind/seismic loading is on this RTU? How do I achieve code compliance?

Should I be worried about structure-borne noise?

The architect is limiting the curb height to 24 inches. Is there a noise control solution that will fit in the curb?

Problem

ASHRAE states that there are three primary causes behind all HVAC noise problems: either noise control was not considered at the design stage, it was the victim of "de-value engineering" post-design or system components were not integrated properly despite being considered.

Catalog noise control products located in less than ideal conditions do not perform to their published ratings. Aerodynamic system effects upstream and downstream can result in airflow that is less than designed – leading to increased fan horsepower and, ultimately, to increased noise. Improperly selected vibration isolators will simply not stop vibration from being transferred to the structure – a common cause of noise issues.

Solution

We utilize an Integrated Systems Approach that avoids these scenarios and results in a practical, complete solution that addresses a designer’s many questions and concerns. Vibration and noise sources and paths should be analyzed at project outset and vibration isolation and noise control solutions looked at together, addressing both airborne and structural-borne noise. This is the only possible way to achieve the sound criterion in a space. By using the Integrated Systems Approach we reduce your risk, because we are able to take sole responsibility for our solutions, giving you a single point of contact for issues that may arise.

The Integrated Systems Approach protects your reputation by ensuring that incorrectly applied product will not be bid, bought and installed on the job site.
Unfortunately, vibration control is often ignored or given scant consideration at the design stage. And although vibration is a common cause of noise complaints post-design, it is often tendered – if at all – with unedited boilerplate language and insufficient technical analysis.

Some HVAC manufacturers provide vibration isolation on their products – be they chillers, cooling towers, AHUs or otherwise. The problem is that the manufacturer is not in the position to analyze your entire HVAC system. Even if their products have vibration isolation options, it is difficult for an appropriate solution to be reached, because they do not have the details on exactly where their equipment will “live.” Product selection and application depends greatly on the roof deflection, the connecting piping and ductwork, and whether the equipment is in close proximity to a boardroom versus a washroom, for example.

In the absence of a proactive approach to vibration isolation, problems will eventually arise, meaning additional cost, needless additional work for the engineer and even damage to the engineer’s reputation.

Vibro-Acoustics can save you time when reviewing submittals and avoid vibration problems post design by helping you write project-specific specifications for vibration isolation. We only select and specify products after the system(s) and necessary variables are reviewed and analyzed. This helps ensure that right product, whether selected from our wide range of standard products or designed specifically to suit your project, will be applied the right way.

Deal with costly and embarrassing problems after the fact or proactively cut the risk and protect your reputation. The choice is yours.
Overcoming Space Restrictions...

Owners need to minimize the room allocated for mechanical systems in order to optimize rentable/usable space. Unfortunately, cataloged noise control products require extensive space to perform, and designers often do not have the required 35 to 40 feet of straight duct (based on ASHRAE guidelines and a 36 inch x 36 inch duct). Elbow silencers with aerodynamically designed internals are a great solution for applications where there is limited straight duct, because they help reduce system effects while providing improved noise reduction.

Energy Savings

Silencers do not have to add significant pressure drop to your system. EX casing silencers are designed with much of the acoustic media out of the airstream and RLP silencers with all of the acoustic media out of the airstream, resulting in noise reduction with minimal added pressure drop or energy consumption. Designs can keep added pressure drop down between 0 and 0.10 inch WG.

Cost Control

Many noise control manufacturers have a limited range of silencer sizes that your duct design must accommodate. In contrast, Vibro-Acoustics offers fit-the-system silencers that fit your duct design precisely, whatever it may be. This means designers spend less time on their duct layout, because they do not have to redesign duct sections. Transitional silencer configurations also reduce the amount of on-site fittings and labor (elbows, transitions, etc.) - a great benefit to both contractors and consultants. These silencers can reduce the total ductwork required, because designers now have a silencer solution that minimizes system effects where straight duct runs of the necessary length are not available.

Sound Quality without Compromising Air Quality...

Uniquely engineered no-media silencers provide noise reduction without fibrous media – ideal for IAQ-critical projects, including operating rooms, isolation rooms and clean rooms. These silencers are available in any shape and size, and are also designed and applied to minimize pressure drop. Film-lined silencers ensure that no fibrous media particles are drawn into the airstream and that nothing in the airstream becomes embedded in the media - a solution often applied to healthcare and laboratory projects. We also offer MoldBlock Media™ silencers, which inhibit the growth of mold – a significant concern in many interior environments, including schools, libraries and noise control in humid climates.

We look at the specific requirements and design criteria of your project. HVAC noise paths and possible vibration sources are taken into account, as well as the location of occupied spaces and possible receivers. In addition, we consider material selection, space restrictions, IAQ concerns, pressure drop limitations and, of course, total cost. We propose a tailored solution, greatly reducing the risk of noise problems and costly reworking after the building is erected.

Further, in contrast to what you might expect, the Integrated Systems Approach to noise control can help keep your project under budget. Because of the products and expertise we provide, you may be able to use louder, potentially less expensive HVAC equipment, locate rooftop units closer to occupied space, position solutions in less ceiling space, and reduce ductwork and site labor. Whether at the original design or redesign stage, you can use our expertise to bring your project in under budget, without compromising the required sound criteria.

Unfortunately, in the absence of the Integrated Systems Approach, improper product application is commonplace. Even if the correct component is picked from a catalog or by selection software, the No. 1 problem of breakout noise (noise transmitted through ductwork walls into an occupied space) will likely result. The cause is application of that component without the required technical analysis, which is needed, without exception, to determine where and how much breakout will occur.
Seismic and wind events can induce damage from a building’s non-structural components, creating life-safety issues, rendering the building unusable and resulting in a devastating loss of revenue. Since the design and installation communities may not have specialized expertise in this area, an unnecessarily high degree of risk and liability is being assumed. However, we have the knowledge, product and experience to help you navigate your legal obligations. In fact, we deliver an education program that makes consultants and contractors aware of their responsibilities and provides them with risk-minimizing and time-saving methodologies.

Our building code experts help dilute risk for consulting engineers and ensure building code compliance. We do this by assisting with writing better specifications, providing our restraint products with the necessary design calculations and PE/P.Eng. stamping of designs. Our team facilitates trade coordination and site inspections to improve the efficiency of the process and limit your risk. We also provide a single sign-off letter for the entire building, decreasing time-to-occupancy for the owner.
Lay-in service... working together at the design stage.

Our free Lay-in (design assist) service is the execution of the Integrated Systems Approach. Your risk is uniquely minimized, because we take ultimate responsibility for the performance of noise, vibration and seismic/wind control in your HVAC system.

As an extension of your design team, we add value through the time and money you save on billable hours. On average, consultants save 16 hours per project when working with Vibro-Acoustics. We work with you through all project deliverables, regardless of the number of revisions, and provide ready-to-use material for incorporation with your construction documents.

Our Lay-in service is a step-by-step process that includes:

• Performing a complete system analysis – Vibro-Acoustics will analyze acoustics, aerodynamics, vibration, seismic/wind requirements and project-specific limitations (cost, space, IAQ requirements, etc.).
• Selecting the appropriate solution – based on the specific system requirements, Vibro-Acoustics will select the best possible solution for the project.
• Recommending product locations – the location of the product is often as important as the product itself. Vibro-Acoustics will specify exact product locations.
• Solution Evaluation – based on the system analysis and the project limitations, Vibro-Acoustics’ Application Engineering team will provide an evaluation and, if needed, other recommendations on how to meet the desired design criteria.

Our deliverables to you are:

• An acoustical system analysis printout: the calculations and steps to determine how much noise control or vibration isolation is needed.
• A complete product schedule.
• Project drawings, marked-up to illustrate the noise control locations we recommend.
• Detailed specifications – tailored to your project – in rich text format.

Put us to the test with your unique situation.

We’ll work with you from the cocktail napkin to the ultimate solution. All we need are:

1. Equipment sound power levels (e.g. AHUs, fans, VAV boxes).
2. Drawings or sketches of system layout (BIM and CAD drawings welcome).
3. Desired sound criteria for occupied spaces.
4. For Seismic Projects: The Seismic Design Category (page 1 of the structural drawings) and the Component Importance Factors (Ip) for the HVAC equipment (USA only).

For more information on our Lay-in service, please visit our website (vibro-acoustics.com) or send us an email (SASS@vibro-acoustics.com).
Vibro-Acoustics bridges the gap between the solutions our customers require and the mere products found in a catalog. Utilize our Lay-in service on your next project to help save you time and reduce project risk.