# VIBRO-ACOUSTICS NOISE CONTROL

**Experts in Environmental Noise Control and HVAC Acoustics/Aerodynamics** 

VIBRO – A COUSTICS<sup>®</sup> A Swegon Group company

## **CONSIDER THE ENVIRONMENTS**

Noise control within a building is vital to maximizing productivity and well-being. Background sound levels and speech privacy are key aspects of the acoustical environment that must be addressed. As one of the major components of Indoor Environmental Quality (IEQ), good acoustics is critical to achieving occupant comfort.

Noise from building systems equipment such as cooling towers, chillers, emergency generators, and exhaust fans can negatively impact both the indoor and outdoor environments. Outdoor noise control is especially important for complying with municipal property line noise ordinances.

## NOISE CONTROL IS IMPORTANT.



## **APPLYING NOISE CONTROL IS** CHALLENGING.

Applying noise control solutions requires thorough analysis to achieve desirable acoustics. Many variables need to be considered when identifying or engineering a noise control solution: aerodynamics, space, energy, Indoor Air Quality (IAQ), property lines, and the impact on systems and equipment. The best engineering practice to meet noise criteria is an integrated systems approach that incorporates all of these.





# The V-A Way: Applied Engineering for Noise Control

## Vibro-Acoustics leverages the Integrated Systems Approach when engineering a noise control solution.

THE INTEGRATED SYSTEMS APPROACH is a design methodology that minimizes noise and vibration problems at the design stage. The entire system is considered, including how each component (fans, duct, silencers, etc.) interacts with the other. In the analysis of the system, both airborne and structure-borne noise are taken into account, as well as project specific requirements such as space, energy (pressure drop with system effects), project cost and time, and IAQ. This enables the user of the Integrated Systems Approach to engineer a solution that not only solves the noise problem but also addresses the specific requirements of the project.

- THE INTEGRATED SYSTEMS APPROACH





**Transitional silencers save space.** Full height baffles minimize pressure drop.





**Sil-Throw air distribution system** for quiet spaces with high occupancy.

# The Lay-in Service



Vibro-Acoustics is dedicated to helping make the built environment a quieter place by offering our complimentary Lay-in Service.

#### WE ARE NOISE CONTROL EXPERTS.

Our acoustic and aerodynamic experts will work as an extension to your design team to help identify noise-related risks and recommend the best solution for the system.

### WE CONSIDER ALL PROJECT VARIABLES.

We will recommend **the optimal solution** for your project's unique requirements, such as time, budget and space constraints, indoor air quality, and energy savings.

### WE GUARANTEE THE END RESULT.

Since our calculations are based on the entire system, we guarantee that our solution will meet the noise criteria in the built environment.

### WE ARE COMMITTED TO GREAT BUILDINGS.

We will start within 24 hours of receipt of complete information. A full Lay-in will be produced within two to three working days (depending on the size and complexity of the job).



## WHY USE THE LAY-IN SERVICE **FOR NOISE CONTROL?**

## Eliminate risk with a guaranteed solution while saving time and money.

Be proactive and lower costs. Quantify noiserelated issues at the design stage and provide solutions that meet project requirements.



Save time and money. We will focus on designing noise control solutions for your project, provide ready-to-use documents to incorporate into your package, and work through every revision—saving your team an average of 16 billable hours per project.



Reduce risk and get a guarantee. Don't absorb the manufacturer's risk by selecting a product without analysis. We guarantee that our proposed solution will perform under any budget, time, energy, space, and IAQ limitations in the built environment.



Improve the entire system. There is a solution for every project, system, and/or equipment. Add credibility and value to your projects by achieving a quiet environment.



Lower operating costs. Do not misapply a standard product and add too much pressure drop. We will provide an applied solution at minimal pressure drop, including system effects.

## **3 STEPS** IN THE LAY-IN **SERVICE**



We will review and perform a complete HVAC system analysis of the acoustics and aerodynamics of the project and determine the level of risk for noise problems.

**Deliverable:** A report that shows the results of the acoustical system analysis and, if needed, how much noise control is required to meet noise level criteria.

## Noise Risk Assessment

## Summary

Based on our analysis there will be noise issues as tabulated below, if effective HVAC noise control measures are not adopted

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Following is a summary of the results of untreated duct-borne noise and breakout calculations:

Indoor Criteria (NC)					Octave Band Center Frequency (H Background Sound Level (dB) without Noise Control						Hz)		
Target	Unsilenced	Break-out	Excess	System	Space	63	125	250	500	1K	2K	4K	8K
45	46	No	1	AHU-1	Atrium	54	55	51	48	46	41	36	28
30	43	Yes	13	AHU-1	Private Office	44	37	36	41	44	37	31	27
30	25	No	0	AHU-1	Teleconferencing	39	34	32	26	23	20	20	20

Outdoor	<sup>-</sup> Criteria (dBA	N)				Octa Back with	ve Ba groui out No	nd Ce nd Sor bise C	enter F und Le ontrol	reque evel (d	ency (I dB)	Hz)	
Target	Unsilenced	Break-in	Excess	System	Receptor	63	125	250	500	1K	2K	4K	8K
45	75	Yes	30	GE-1	50 ft/0 degrees	95	85	80	65	60	55	45	40

Tag	Qty	Fan System	Face Dimension		Length	Flow	Velocity	Silencer P.D.*	P.D. incl. System Effects	Dyna				
			W (in)	H (in)	(in)	(CFM)	ft/min	in wg	in wg	63	125	250	5	
DS-1 Vibar Film ining	1		24	48	60	6,500	+812	0.22	0.29	12	16	17	1	
DS-2 ibar & pacer ining	1		38	24	72	6,500	-1026	0.22	0.28	11	14	25	:	
DS-3	1		10ID	300D	60	400	-733	0.04	0.04	15	17	36		

## **Engineer the Best Solution**

Based on system needs, we select or engineer the best solution to meet the project's sound criteria.

Deliverable: A projectspecific, optimized solution, complete with schedule, specification, and 3D renderings. We detail the acoustic performance, installed pressure drop at system design velocity, and special construction requirements.



## 3 **Application**

We specify where the solution should be located your drawings.



## **Get Started**

with the following information:



## We make every effort to meet timelines. For a quick start, contact your local Vibro-Acoustics sales representative or email info@vibro-acoustics.com

**Optional:** Desired sound criteria for occupied spaces. Otherwise, we can make recommendations

## **VIBRO-ACOUSTICS**

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