VA ONE

Reduce cost and eliminate delays thanks to effective vibro-acoustic analysis and design for all frequencies

Benefits

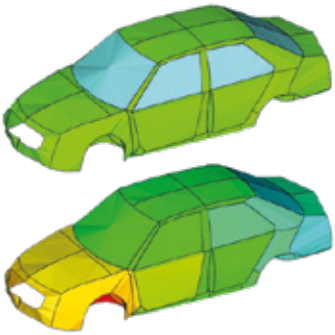
Accurate noise prediction models
Available at an early stage in the design process, it enables engineers to meet operating targets (quality, cost) and secure project milestones

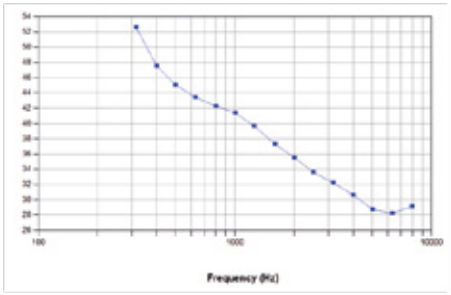
Fast model creation
Integration of noise prediction tools within existing design environments allow rapid prototype design assessments

Low computational overhead
VA One uses an optimal set of seamlessly coupled, fast computational to minimize simulation time.

"There are a large number of problems in the aerospace industry amenable to vibro-acoustic analysis. These include aircraft interior noise, specification of launch vehicle & satellite vibration environments, and detailed stress analysis of lightweight antennas under high intensity acoustic loading, among others. Because of the wide range of frequencies involved, no one method can solve all of these problems. ESI VA One is the only tool that includes solvers that can perform analysis and design studies for low-, mid-, and high-frequency problems. This allows for fast and effective vibro-acoustic analysis and design of aerospace structures, significantly reducing cost and schedule impacts compared to build and test approaches".

Dr. Paul Blelloch
Director of Aerospace Analysis ATA Engineering Inc.





Noise and Vibration has become an important selection criteria not only for consumer goods but also where legislation dictates acceptable levels from machinery operating in a working environment.
In the past, there has been a tendency to perform noise engineering for industrial products late in the design cycle, resulting in additional prototype stages and expensive last-minute intervention. Concurrent engineering processes aimed at 'getting it right the first time', a key competitive factor, require engineering decisions to be made early in the design cycle.
ESI VA One is a single environment for vibro-acoustics analysis and design. It allows engineers to perform accurate predictive noise and vibration design assessments early in the design cycle to meet product performance objectives. The VA One environment is accessed from a common user interface, which covers the full-frequency spectrum through a set of seamlessly coupled and proven modeling methods.

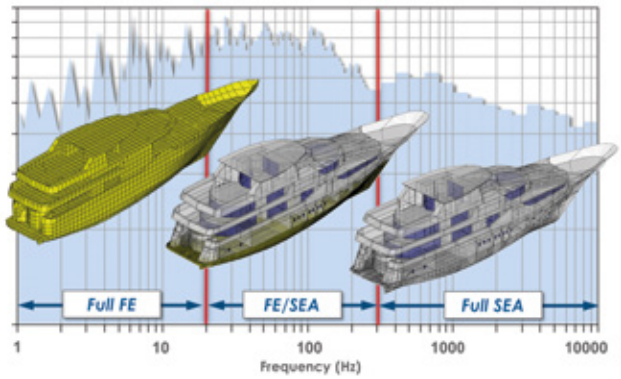
VA One has the tools you need for vibro-acoustic analysis across the full frequency range

Statistical Energy Analysis (SEA) – Predicting and optimizing high-frequency acoustic response to meet noise targets
Boundary Element Analysis (BEM) – Calculating radiation into the far-field incorporating Fast Multipole Methods and parallel computing techniques for effective large model calculations
Coupled FE/SEA Analysis (Hybrid) – Innovative method for coupling low (FEA) and high-frequency methods (SEA) for mid-frequency noise and vibration calculations
Finite Element Analysis (FEA) – Calculating structural response and source contributions in low and mid-frequency range
Fast Multipole BEM – Efficient method for evaluating noise radiation in the far field and for external scattering
Finite Element Acoustics – Calculating acoustic response in low and mid-frequency range.

VA One for Automotive

Pass-By Noise – Testing performed on a test track is subject to environmental variability, which makes repeatability of test results challenging. Pass-By Noise simulation allows up front analysis of Pass-By Noise performance rather than reliance on prototype testing late in the design cycle.
Aero Acoustics – Recent developments in CFD have resulted in the availability of time domain pressure distributions, which were previously obtained from expensive and time-consuming wind tunnel testing.
VA One provides users the capability to simulate Aero-Vibro-Acoustic phenomena using both experimental and CFD sources across the full frequency range.

Trim Engineering – Trim selection is a critical design function in the automotive industry. The challenge of optimizing weight against cost to meet challenging interior noise targets can cause delays and cost overruns in the design cycle. With VA One, models can be created for trim optimization that are deployed as part of a collaborative effort to identify the right configuration and the right cost.



VA One for Aerospace

Boundary Elements Method (BEM) – models can be used to simulate complex test environments. BEM models offer flexibility to explore the effect of speaker configuration and inputs. The acoustic field can be probed at multiple locations and checked for hotspots or cancellation regions.
Direct Field Acoustic Testing® (DFAT®) – is an alternative to testing in reverberant chambers. The test specimen is positioned in the center of a set of speaker stacks. Several input channels can be independently controlled to obtain an acoustic field as uniform as possible (as measured by a set of control microphones). Ultimately, the goal is to have an acoustic field as close to a Diffuse Acoustic Field (DAF) as possible.

VA One for Marine

Onboard noise is an important aspect of ship design governed by legislation. New challenges, such as underwater noise radiation and composite constructions, are quickly becoming a critical design requirement. VA One provides accurate predictions of noise transmission paths, to meet cabin noise targets, and calculates underwater noise radiation by accounting for new construction techniques and materials.

VA One for Industrial Engineering

Noise Radiation – The cause of noise from industrial and domestic equipment is the result of complex noise paths and dynamics related to the various sources. The flexibility of VA One to work across the frequency range can provide quick answers for strategic design.
Cabin Noise – In a workplace such as an industrial cabin, noise levels can be directly related to productivity and, in some cases, governed by legislation. Interior noise arises from several sources in a cabin that must be quantified to determine noise control strategies.
Numerical Pre-Certification Test – Simulation of the real type loading of the vibrating structures is becoming an important aspect during the product development cycle. By performing numerical certification tests with VA One, the user can identify critical design parts and test different ideas before finalizing the prototype.

myesi
Customer Portal
myesi.esi-group.com

ABOUT ESI GROUP

ESI Group is a leading innovator in Virtual Prototyping software and services. Specialist in material physics, ESI has developed a unique proficiency in helping industrial manufacturers replace physical prototypes by virtual prototypes, allowing them to virtually manufacture, assemble, test and pre-certify their future products. Coupled with the latest technologies, Virtual Prototyping is now anchored in the wider concept of the Product Performance Lifecycle™, which addresses the operational performance of a product during its entire lifecycle, from launch to disposal. The creation of a Hybrid Twin™, leveraging simulation, physics and data analytics, enables manufacturers to deliver smarter and connected products, to predict product performance and to anticipate maintenance needs.
ESI is a French company listed in compartment B of NYSE Euronext Paris. Present in more than 40 countries, and addressing every major industrial sector, ESI Group employs about 1200 high-level specialists around the world and reported annual sales of €141 million in 2016. For more information, please visit www.esi-group.com.

All PAM- and SYS- product names as well as other products belonging to ESI's portfolio are tradenames or trademarks of ESI Group, unless specifically mentioned.
All other trademarks are the property of their respective owners - Specifications are subject to change without notice.

Copyright © ESI Group 2018 - G/OM/18.20/A - DFAT® is a registered trademark of Maryland Sound International