Waveform
Gaussian™

Optimized One Dimensional Curved Gaussian Shapes
From The Acoustical Industry's Leading Innovator

As architecture evolves from rectilinear to curvilinear lines, acoustic surface treatment needs to evolve to meet the aesthetic challenge, while also offering optimal sound diffusion and absorption. To solve this problem and provide curvilinear options, RPG developed a powerful shape optimization software, which optimizes sound diffusion, while providing a given shape motif. The Waveform Gaussian is a veneered or painted, wall or ceiling applied, 1-dimensional sound diffusor, which provides an attractive bell shaped appearance. It is available in both 6" and 12" depths allowing a variety of tiling options, depending on the selection of adjacent panels. The panels are easily mounted with wall or ceiling cleats and are available in a wide variety of veneers and finishes. In the photo, Waveform Gaussian units are applied on the walls and on the ceiling along with RPG's Waveform Bicubic 2-dimensional scattering units fabricated in GRG.


The Sound of Innovation™

Problem and Solution

Problem

Flat panel arrays provide uneven sound pressure across the audience area. Listeners experience sound level minima when the geometrical reflection point for a receiver is between panels and maxima when the geometric reflection point lies on the panels. Coverage can be improved by curving or shaping the panels, but there is no guarantee that optimum results will be obtained, and consequently, uneven response is often still experienced.

Solution

To solve this problem, RPG developed the first Shape Optimization program, which automatically determines the best shape, tilt and arraying to insure uniform coverage. The Shape Optimizer combines the power of the boundary element and multi-dimensional optimization techniques, incorporating the diffusion coefficient as the metric of optimal performance. The Waveform Spline provides optimal ensemble for musicians on stage and uniform coverage in the audience. Each canopy element has the same optimal shape for aesthetic reasons. However, each panel's tilt is independent. This insures optimal coverage on stage and in the audience forestage seating area.

Performance Specifications
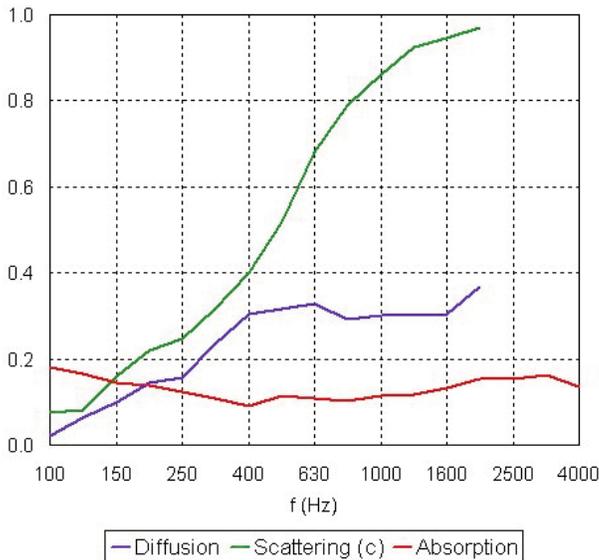
The graph illustrates the random incidence diffusion, scattering and absorption coefficients . The diffusion coefficient measured according to AES-4id-2001 is a measure of how uniform the Waveform Gaussian scatters sound. The correlation scattering coefficient, is less critical than the diffusion coefficient and measures the amount of sound scattered in non-specular directions to only be used in computer modeling programs. Teh random incidence coefficient, measure according to ISO 354 is a measure of how much sound is absorber.

Seamless Spline Arc (4 units)

Installation

Installation is simple using integral metal hair pin connectors. Simply attach suitable supplied engineered cables for dead hung installation. The image to the far right illustrates how the Spline panels can be seamlessly joined end to end forming an arc.