

BAD EXPO Woodgrain

RPG is proud to announce BAD Expo Woodgrain, an optimized diffuser with an exposed woodgrain. Be BAD! Expose the Hole Truth and Beauty.

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New Full Color BAD, Clearisorber, Overture and Waveform Brochures

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RPG Expands the Shape Optimizer

“Since 1983, RPG has continued to innovate and introduced a wide range of digital acoustic diffusers and diffusers, developed standards for determining scattering coefficients for digital computer simulation and auralization, developed the first digital, computerized Shape Optimizer software and continued to refine the SIAP MKIV electronic enhancement system for true digital architecture.”

For up to the minute information, we invite you to visit RPG's acclaimed web site: <http://www.rpginc.com>.

DIFFUSE NEWS



Dr. Peter D'Antonio
President and CEO

Everything Acoustic!

Digital technology has affected almost every aspect of our lives. In 1983, RPG introduced Digital Acoustics, in the form of the first, quantifiable, sound diffusing surface, the Reflection Phase Grating. Since 1983, RPG has continued to innovate and introduced a wide range of digital acoustic diffusers and diffusers, developed standards for determining scattering coefficients for digital computer simulation and auralization, developed the first digital, computerized Shape Optimizer software and continued to refine the SIAP MKIV electronic enhancement system for true digital architecture. We are proud of this lineage and we are staying true to our mission to continually expand the acoustical palette through a dedication to fundamental acoustics research. We thank you all for your support and encouragement. *This is only the beginning....*



CONTINUALLY EVOLVING.....



NEW BROCHURES

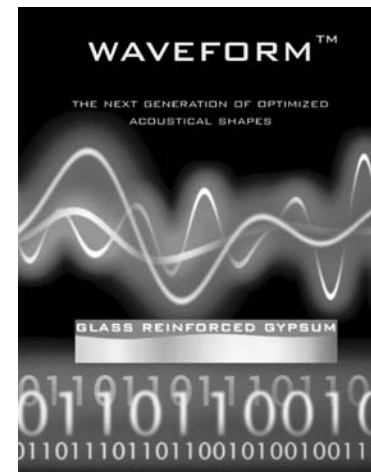
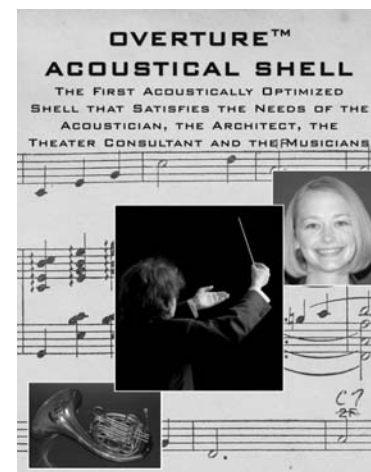


Figure 1. SIAP MKIV Processor

Digital technology has made an impact in almost every aspect of our lives. RPG introduced passive digital acoustics in 1983 and has continued to introduce innovative technology to expand the acoustical palette. While passive architectural acoustics will, in our view, be an important design ingredient for years to come, active acoustics in the form of variable acoustics, electro-acoustic enhancement systems, will grow in usage to the point of being commonplace. In recent years, both performance spaces and audio systems have increased in complexity, due to improved materials and electronics and audiences expect to have clear intelligible speech, tonally balanced music, uniform coverage in the seating area and envelopment. All of this is possible with enhancement. Natural sound is created by a multitude of early decorrelated reflections and reverberation.

Early enhancement systems attempted to use short cuts to simulate natural reflections like resonant systems, small numbers of time-variant recirculated filters, a mix of early reflections and recirculated sound from the reverberant field of a room. Today, the continuously evolving power of DSP processing allows the digital generation of hundreds of FIR filters, containing time-constant (not time varying), decorrelated, frequency dependent, early reflections and reverberation, which can be convolved with the direct sound picked up on stage for a truly natural sound. The basic concept of all electronic architecture systems is that a series of strategically placed microphones pick up sound generated within a space. This sound is then processed (convolved with FIR filters as in a

ELECTRONIC ARCHITECTURE: SIAP MKIV

computer auralization) and fed back into the space as additional reflections and reverberation. Time variance has traditionally been used to minimize feedback by decorrelating the path between microphone and speaker in real time and stabilize the system, but today time-constant decorrelation, with a large number of decorrelated signal paths, can also be used. The processing of the signal and the room locations at which the signal is picked up are what differentiate the various design approaches, all attempting to provide flexibility, while remaining stable and free of coloration. The predominant sound is the acoustic signal from the stage with a system gain of up to 3 dB, depending on the application. High quality hardware is vital and the system must be free of resonances, because there is a continual real time acoustic/enhancement comparison being made by the performers and audience.

In-line Systems:

These systems only pick up the direct sound energy from the stage and convolve the sound with electronically generated early reflections and reverberation (FIR filters). They are independent of the reverberation of the room. Early reflections and reverberation come from the same "softspeaker", i.e. each speaker is inaudible!

Feedback or Non In-line Systems:

These systems use microphones in the room that pick up the reverberant sound energy of the room for recirculation through acoustic feedback. Hence, they rely on the sound energy in the acoustical environment to provide enhancement. If acoustical problems are present, they

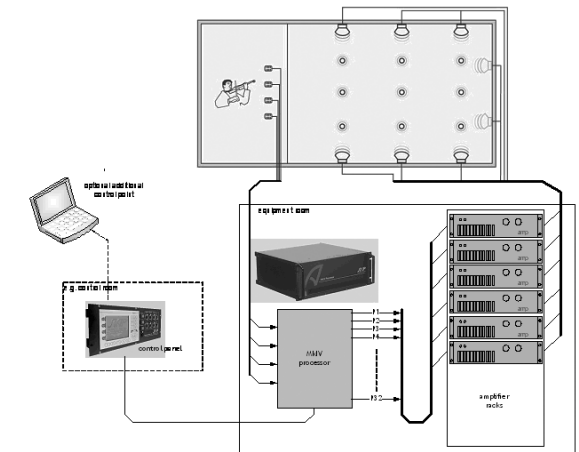


Figure 2. SIAP MKIV Setup

can get magnified

Combination:

These systems use a combination of the in-line approach for early reflection generation and the feedback approach to provide reverberation.

In this issue, we begin a description of the new and powerful SIAP MKIV processor, shown in Figure 1. In Figure 2, we show a typical system setup. The direct sound on stage is picked up with a number of strategically placed microphones. This signal is processed and routed to the amplifiers and speakers. Control of the system normally takes place through a dedicated or commercial control panel, but can also be done from a laptop. The processor is pre-programmed with several musical and speech settings and the operator can simply select an appropriate acoustical environment that suits the performance.

In subsequent issues, we will describe the MKIV processor in detail and describe why its ability to provide hundreds of decorrelated FIR patterns results in unprecedented naturalness in the sound and ease of installation.