





# Designing Flexible Performance Spaces with World-Class Acoustics

BY TINA WOOD

Being able to serve a variety of acoustical needs within a single performing arts space is a priority in schools across the country. A single auditorium often hosts class lectures, theatrical performances, choir, band and orchestra concerts, and movie showings. Each type of performance can require vastly different acoustics.

Wenger Corporation has worked with hundreds of schools to provide acoustic solutions that fit their many needs. Here are three examples of Wenger's flexible acoustic solutions.

## **A Shell for All Settings at the College of Holy Cross**

Luth Concert Hall at the Prior Performing Arts Center at the College of Holy Cross was designed to captivate audiences and provide an immersive experience. With its exceptional acoustics, cutting-edge audiovisual technology, and a seating capacity that accommodates a large audience, the hall sets the stage for a wide range of performances including theatre productions, musical concerts, dance recitals, and more.

The custom Diva® acoustical shell by Wenger is a standout feature of this space. This beautiful, full-stage shell creates acoustics for optimum on-stage sound and projection to the audience.

“With our Diva shell, the acoustics in Luth Concert Hall are amazing,” says Rosie Cruz, director of production at Holy Cross. “Touring artists remark how live the space is. Aesthetically, the shell is stunning—matching the hall’s interior and providing a beautiful feeling of being immersed, both visually and aurally.”

In addition to a beautiful look and superior sound quality, the shell also offers versatility and flexibility when it comes to set up and storage. “We can easily strike the shell in less than four hours,” Cruz says. “The towers are relatively easy to move and reconfigure, especially for their 20’ height,  
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and they store in a compact 13' x 7' footprint.”

With three on-stage clouds, sound does not get lost or trapped above the stage or in the loft but is sent toward the spectators. In the front of house, an additional cloud and 10 Transform® motorized acoustical banners were installed to elevate the overall sound quality and enhance projection toward the audience.

These motorized banners offer variable acoustic capabilities, allowing users to adjust sound absorption and reflection levels quickly. With adjustable spacing options, users can customize the distance between the banner and the wall, as well as the gap between fabric layers. This level of control allows users to dial in the exact acoustic resonance needed for each performance.

**A Single Sound Solution for Varying Acoustical Needs**

Curtis Performance Hall at the Tsotsis



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Academic Center at Assumption College in Worcester, Massachusetts was also built to serve multiple needs.

Choral Director Michelle Graveline wanted a space where the acoustics would enhance the sound of her vocal ensembles, but the auditorium would also need to be used as a lecture hall.

“Spoken word is at the low end of reverberation time, and choral performance is at the high end of reverberation,” explains Alex Bagnall, acoustician with Cavanaugh Tocci Associates, the acoustical consultants on the project.

“Early on, they asked about adjustability. We explored using drapes, but the room wasn’t big enough to achieve a reverberation time that would be appropriate for choral music. That’s when the idea of electronically enhanced acoustics came up,” he says.

Wenger’s Transcend active acoustic system turned out to be the perfect solution. The Transcend system includes an array of microphones and speakers that help project sound among musicians on stage, and into the audience.

“What’s great about this system is that it gives facility managers the ability to enhance acoustic environments in virtually any space: performing arts centers, auditoriums, theatres, opera houses, arenas, and worship spaces,” says Matt Hildebrand, senior manager of acoustics at Wenger. “It’s high-performance and offers great flexibility.”

The system’s presets provide a virtual acoustic experience for everything from a small concert venue to a medium-sized lecture hall to a large chapel simulation. Each preset is customizable and can be changed between uses with the touch of a few buttons.

The Wenger acoustics team determined how many speakers and microphones the space would need and where to position them. They opted for two microphones and 60 speakers placed strategically throughout the auditorium. They chose six custom presets, one for each of the most common needs in the space: lecture hall, small recital, medium recital, small-hall setting, large-hall setting, and chapel.

They worked with the architects to get the sound absorption distributed properly so the system could work within the aesthetics of the room to look as good as it sounds.

“Many schools can’t afford to have a different venue for every different acoustical need, so a system like this can satisfy everyone,” Hildebrand says.

As a bonus, they were able to tap into the existing surround sound system in the auditorium. They use this mode when viewing movies for a more immersive sound experience.

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PHOTO COURTESY WENGER CORPORATION

“Ideally, the casual visitor isn’t aware that there’s an acoustic system in the auditorium,” Bagnall says. “We just want them to think that everything they heard that night was amazing.”

**Customization is Key at Villanova**

Villanova University’s John and Joan Mullen Center for the Performing Arts boasted the luxury of having several unique spaces for performance, rehearsal, and education, all together under one roof. Specific acoustic needs for each area included:

- **Topper Theatre:** a proscenium theatre seating 400 with tailored acoustics, including a Wenger Maestro® full-stage acoustical shell with Diva® clouds and custom tormentor doors
- **Court Theatre:** an open-format, variable capacity, 200-seat theatre featuring Wenger portable audience seating with custom fabric
- **Smith Performance Lab:** an intimate and flexible space for classroom use and performances with a custom StageTek® riser system that seats up to 100

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Making these spaces a reality was a large task requiring collaboration, innovation, and customized solutions.

seated risers, Roughneck® music stands, Nota® music posture chairs, and a Preface® conductor's stand.

Making these spaces a reality was a large task requiring collaboration, innovation, and customized solutions.

Wenger worked with several partners in the collective vision, providing innovative solutions, from the acoustical shell, manual control systems, and manual and automated rigging to custom seated risers, audience seating and rehearsal equipment.

“It takes a lot of coordination to bring performing arts spaces to life,” says Ryan Cole, project manager at Wenger. “The ideas and products are just the first step. We collaborate with our partners and engineering teams constantly and think about things like how the cabling and wiring run up the walls or how power is going to get to the step lights.”

### The Wenger Way

Wenger’s engineers, project managers, and acoustics specialists are dedicated to streamlining processes for facilities, providing answers about every aspect of the project. Wenger coordinates the production, construction, and installation schedules while offering guidance along the way.

“We pride ourselves in our ability to hit those quality levels that our theatre consultants require,” Cole says. “That dedication produces a beautiful, fully functional theatre for the students who will use it for years.”

- **Dwyer Family Foundation Choral Room:** a space for up to 50 people designed with functionality and acoustics in mind, including StageTek®



**ABOUT THE AUTHOR:** Dr. David Vinson has a PhD in English with specializations in transatlantic literature and cultural studies. He is a committed scholar, teacher, and dad. If you ever meet David, avoid the subject of soccer. His fandom borders on the truly obnoxious.



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