THEATRE APPLICATION

Zellerbach Hall

University of California, Berkeley

Project: Zellerbach Hall, University of California, Berkeley

Project Type: Replacement

Challenges: Space constraints and an aggressive schedule

Solution:

- Replaced the fire curtain and all associated rigging
- Complete replacement of 50 counterweight linesets with Brickhouse front loading arbors and rope locks
- Custom head blocks, and mule blocks
- Custom locking rail with LED backlit index strip
- Custom high speed main curtain hoist and controls

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Customer Background

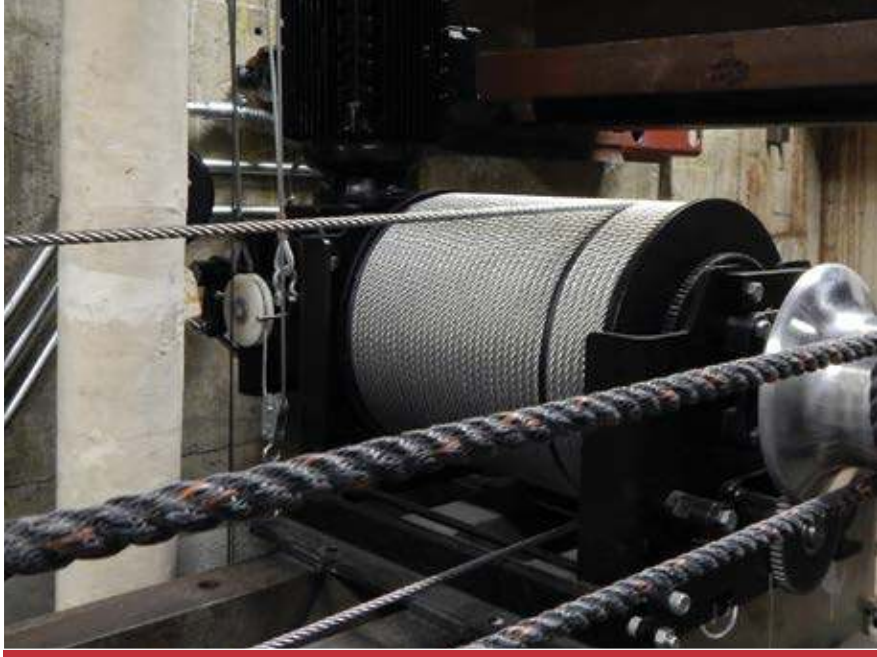
The well-known Zellerbach Hall, located on the University of California, Berkeley campus needed some modernization. With nearly 2,000 seats and a proscenium opening measuring 63 feet wide and 30 feet tall, audiences are treated to a vibrant calendar of national-level touring and Bay Area performance groups presented by Cal Performances. Backstage, however, the equipment was dated and in need of replacement. Following a routine inspection, the equipment, which had been installed in 1968, was found to be nearing the end of its useful life. The old asbestos fire curtain didn't meet current regulations, and the counter-weight rigging sets were old and difficult to work with.

The theatre consultants of The Shalleck Collaborative, working for the University, saw an opportunity to not only replace the old equipment, but to take advantage of new technologies and approaches that would enhance the theatre's capabilities—and the safety and comfort of those using it. Thern Stage Equipment and LVH Entertainment Systems professionals reviewed the specifications and determined they could meet the needs of the project—and offered suggestions about additional, innovative products that would further improve the theatre's setup.

The project posed a challenging timeline: beginning with a request for proposal in May, it needed to be completed by the end of September to be ready for October performances. This aggressive schedule allowed just three months for generating submittals, manufacturing the products, and installation. Thern Stage Equipment and LVH Entertainment Systems were up to the challenge: in addition to being able to meet the installation's custom requirements, they were one of the few teams able to meet the demanding schedule—and what's more, the cost of their products was competitive.

Our Approach

Zellerbach Hall had unique challenges, requiring significant customization. After reviewing the project requirements, and identifying possible constraints, Thern Stage Equipment designers created basic design parameters and developed a concept for the machinery. Thern's in-house mechanical designers were assigned different facets of the project to streamline the time to production.



Custom drum winch allows the main curtain to open at a rate of 500 feet per mi

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Left. Thern Stage Equipment rope locks offer a one-handed release that allows the operator to maintain a constant hold on the handline while releasing the rope lock.

Bottom left. Two color LED electric lighting strip.

Bottom Right: Custom designed mule blocks.

Solution

A number of changes were needed to modernize the Zellerbach Hall theatre. First, UC Berkeley wanted the main curtain to be able to close and open rapidly—far faster than is typical. To achieve this, Thern Stage Equipment developed a custom high-speed motorized drum winch that allowed the curtain to open and close at a rate of 500 feet per minute, significantly faster than the typical 300 feet per minute. Thern Stage Equipment also designed a custom counter-weight assist rigging solution with specially designed hardware to accommodate the high speeds and dynamic forces of the system. The consultant and end user wanted a way to move the main curtain manually in case of power loss or other emergency situations. Thern Stage Equipment designed a manual override system to allow operation with a hand line from the locking rail. The system allows the hand line to be disengaged when not in use.

> *"We were very impressed with Thern/LVH's ability to push the industry standards, engineer and fabricate high quality components in a short time frame to suit the particular nature of the existing structure and collaborate closely with our project consultant, Bruce Veenstra."*
>
> Adam Shalleck,
> Principal Theatre Consultant
> The Shalleck Collaborative, Inc.

Additionally, Thern Stage Equipment provided a fully programmable custom controller that can vary the opening and closing speeds and targets of the curtain.

The fire curtain was designed to be raised and lowered using a traditional line shaft hoist with a hydraulic speed governor and brake for emergency operation. In an emergency, the brake can be released to allow the curtain to descend under its own weight. The hydraulic speed governor built into the hoist controls the decent of the curtain and maintains a steady but gentle rate to help avoid injury.

Based on Zellerbach Hall's unique structural components and system loading, Thern Stage Equipment custom designed a series of mule blocks that meet the geometry requirements of the new system using the existing steel structure. The custom vertical mule blocks are mounted to an existing steel beam, and special side plates extend the multi-line sheaves out over the grid to provide clearance for the loft lines. Four unique custom-designed head blocks were also delivered to meet the demands of the system. Since the existing guide wall was to be reused, the new system had to adapt to six, seven, and eight lift line sets on 5″, 6″ and 8″ centers with some of the systems using eight lift lines on 5″ centers.

UC Berkeley also wanted a custom locking rail with a dimmable LED light index strip. A backlit PLEXIGLAS® cover allows operators to mark notes with an erasable marker, helping them easily keep track of scenery from show to show. This solution offers flexibility, and the LED lights help conserve energy, with an expected lifespan of 50,000 hours before any maintenance is needed.

The loading and unloading of traditional side-loading counterweight arbors has been known to be difficult, and in some instances, unsafe for the operators. Thern Stage Equipment and LVH Entertainment Systems approached the consultant and facility management to discuss the benefits of the Brickhouse front loading arbor over traditional systems. The ability to load from the front of the arbor coupled with fixed shelves provides the user with a faster, easier, and more ergonomic method for loading and unloading counterweight. The loader no longer has to start loading at the base of the arbor, instead they can load weight at the most convenient location with shelves every two feet. The entire system makes

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better use of space, and makes loading and unloading safer and easier. Following the installation, LVH Entertainment Systems provided an on-site demonstration for the operators to familiarize them with the new arbors. Thern Stage Equipment also provided a 1,500 pound capacity mobile capstan winch for use in instances where line sets needed to be overhauled.

Additionally, Thern Stage Equipment designed a custom electric seven-pipe lighting truss to serve the facility. The truss is rated to carry up to 4,000 pounds and includes features to prevent jarring or shocks to the building and lighting equipment. The system posed several challenges, including capacity requirements and a severe space limitation for the hoist. Thern Stage Equipment and LVH Entertainment Systems worked together to configure a hoist able to handle the loading requirements while still maintaining the ability to be squeezed into a tight mounting location. To address space constraints, the hoist was mounted to the wall and then used as an oversized counterweight assist winch. Pre-programmed controls and multiple-user programmable presets, as well as training on how to use them, were provided to UC Berkeley staff for the operation of the main lighting truss. Additionally, Thern Stage Equipment and LVH Entertainment Systems retrofitted a new control station into the old location, taking advantage of the existing wiring for time and cost savings. Now, the main lighting truss, the high speed main curtain, fire curtain, and the existing multi-level pit lift can be operated at one station instead of three, making them much more convenient to operate.

Why Thern Stage Equipment/LVH Entertainment Systems?

Zellerbach Hall is just one of Thern Stage Equipment and LVH Entertainment Systems' successes. The right products, the right processes, and the right people combined to create a truly striking success story.

The manufacturing team and the installation team worked closely together, which was critical to the project's success. Excellent communication and project management processes also helped streamline the process, and kept team members informed. Ron Baran, the onsite supervisor throughout the duration of the installation, provided daily updates to the school's project manager. This served to keep the project team informed about the schedule, anticipated delivery dates, and completion dates. In addition, Sam Michael, the project manager on the manufacturing side of the project also communicated daily with Ron to coordinate the logistics for shipping and receiving products as they were completed. Frequent communication allowed the teams to work efficiently, address problems quickly, and make adjustments to ensure work progressed on-schedule.

This was a challenging installation and its success depended on the teams' ability to design and implement customized solutions. Throughout the project, the teams at Thern Stage Equipment and LVH Entertainment Systems demonstrated innovative thinking, ensuring Zellerbach Hall was equipped with the right products and systems.

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