ArchLight Cinema

Control, Courtesy of Q-SYS

The Battersea Power Station is at the heart of one of central London's largest new developments. The decommissioned power station and its surroundings are being redeveloped as a leisure, accommodation and business center, spearheaded by Apple's announcement that it would locate its new London flagship campus there.

Leisure facilities are incomplete without first-class cinemas, but rapid development made for a dilemma. The traditional structures and flat spaces were quickly taken. Where then to locate cinemas, with the latest in audio and video technology, and easily manage and control them?

Enter Stephen Burdge, owner of the Olympic Studios 3-screen cinema in Barnes, UK, which proved that smaller, well-appointed installations could draw in the crowds. Building on that concept, Burdge hit upon using the empty space in Battersea, underneath railway arches leading from Victoria Station, for a 3-screen complex, consisting of a single 40-seat and two 60-seat rooms. Naming them The Archlight Cinemas was the easy part. But bringing them to fruition would involve creative thinking and sophisticated technology.

London, England

To transform the vision into reality, Burdge called in integrator Sound Associates Ltd., led by Managing Director Graham Lodge, to procure, install and commission a fully-automated projection and sound system. The plan called for Dolby Atmos for every screen and compact Barco laser projectors, with the Q-SYS Ecosystem from QSC to manage audio and control processing, including control of everyday lighting, masking and general theatre operations.

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Graham Lodge, Managing Director, Sound Associates

CHALLENGES

The physical environment, both inside and outside, left a lot to be desired. The arches house relatively small spaces and their solid brick walls would pose unique equipment-placement challenges. Externally, six trains, from four separate railway lines, rumble across the three arches overtop the cinema spaces every ten minutes, bringing noise and vibration to the development. And then there's London's generally humid climate.

Building the utmost flexibility into the cinemas to leverage a variety of content – from traditional Digital Cinema Package (DCP) movies to Blu-ray discs to streaming high-definition cultural and sporting events – also required an easy-to-operate yet sophisticated system.

Sound Associates worked closely with the building contractors to design a unique layout, which included constructing completely isolated steel enclosures placed 150mm (5.9 inches) from the original brick archways. These provided the housing within which Sound Associates could apply its considerable experience and expertise.

1 Demanding Physical Environment

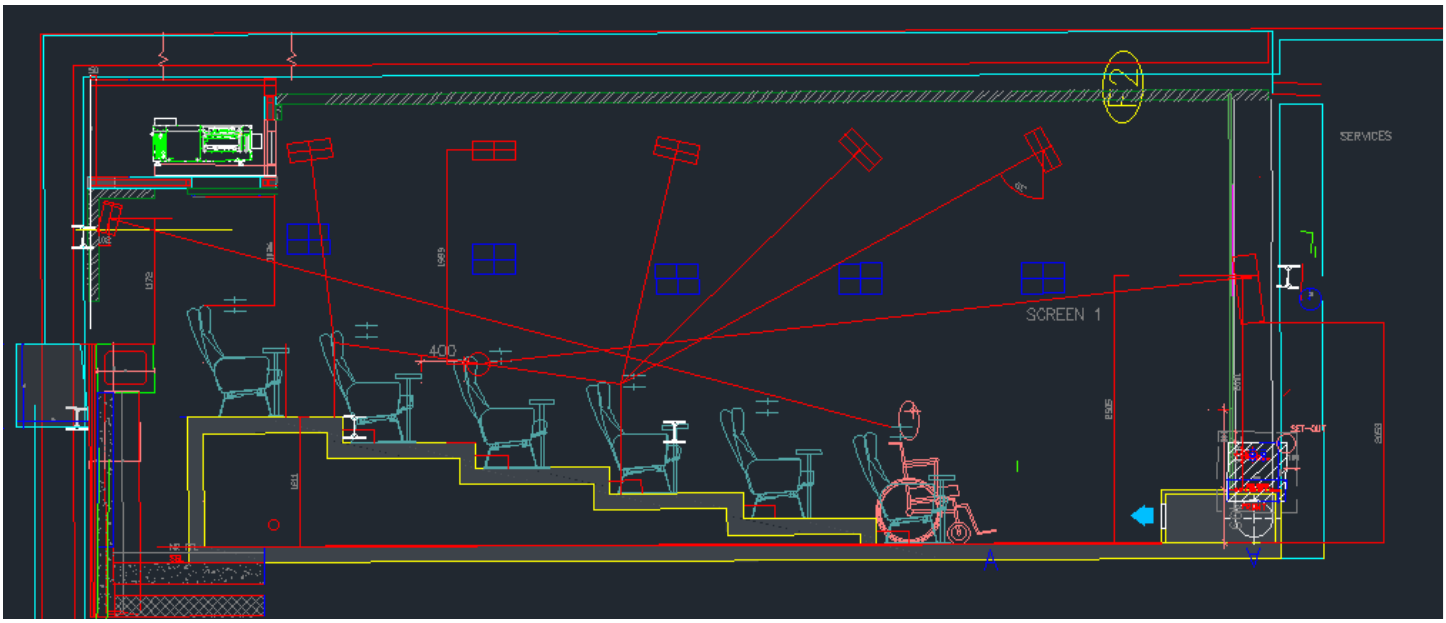
The small spaces to locate AV equipment, seats and screens within, and the brick walls outside these steel frame enclosures were certainly atypical to conventional theatre design. How to string cables and vent hot air, although the laser projectors generate less heat and hot air than conventional xenon-lamp based units, posed a problem.

2 Exacting Dolby Atmos Standards

Dolby Atmos is a leading audio format for creating and delivering rich, immersive sound, and as such, it comes with strict guidelines for equipment positioning, especially overhead speakers and audio objects generally. With no readily-available schematics for installing cinema equipment (let alone the Dolby Atmos system) in a railroad archway, design and placement of speakers to ensure quality while being safe and practical introduced a new wrinkle to the installation.

3 Need for Comprehensive yet Intuitive Control

Small spaces, multiple content-input possibilities and the onus to maximize the clarity, richness, detail and depth of Dolby Atmos technology necessitated the installation of powerful, seamless control systems (while ensuring user-friendly interfaces and input).



SOLUTIONS

With the physical environment, Sound Associates took power, ventilation, network cables and audio between the three screens through the front of each arch, around and back in again, rather than attempt drilling through brick. Speakers were positioned along the sides and ceiling, working closely with Dolby and 3rd-party designers and acoustic experts.

Technically, Sound Associates decided that technologies from QSC would help realize the potential of Dolby Atmos (whose Dolby IMS3000 media blocks drove the laser projectors) while bringing a high level of automation to almost every aspect of the cinemas' operations.

The QSC Q-SYS Ecosystem was used to manage the 35-plus channel audio streams coming from the IMS3000 as well as switching, equalization, and systems control, with five 4- and 8-channel Q-SYS DPA-Q amplifiers running all the stage, subwoofer, and surround speakers. Each of the three screens relies on a single Q-SYS Cinema Core 110c processor to direct all audio switching and routing.

Not only are the automation commands from the IMS3000 server delivered via Q-SYS to accommodate all the audio needs of the Atmos system, but Q-SYS also controls all the more common automation requirements, such as curtain and masking control, volume levels, and lighting levels, etc. The cinema manager can monitor the sound in each auditorium from a central office and also see sound levels on an iPad tablet display, and control the entire automated operation of the venue from one iPad interface.

Q-SYS controls all non-DCP cinema signal routing as well, allowing a laptop to be connected to any screen and content therein routed to all other screens if needed. Or, for content from a central Blu-ray player audio decoded by the IMS3000 in each projector, Q-SYS can direct playback to any screen. Non-sync music is stored on each Q-SYS Cinema Core processor in MP3 format, allowing management to create playlists for different feature films to ensure the music is appropriate to the feature shown.

And it's all very compact. The entire sound system for each cinema was built into its own, 17-module equipment rack, located beneath each projection pod, to minimize the equipment footprint. Each rack is only 600 mm (23 inches) wide, 600 mm deep, and 1.3 meters (4 feet) high.

"It's a pity that so many in the exhibition industry have yet to realize the immense monitoring and control features of Q-SYS. For our part, Sound Associates has leveraged Q-SYS in roughly 45 sites over the past three years, discovering more and more capabilities with every cinema design done. By using Q-SYS, we gain all the capabilities and facilities of a sophisticated network-audio processing system, as well as all the system-control capabilities, all in one Ecosystem. By having everything together in one place, we can make it accomplish the tasks associated with operating a modern cinema as smooth and seamless as possible. Q-SYS is the only platform that can do all this," maintains Lodge.

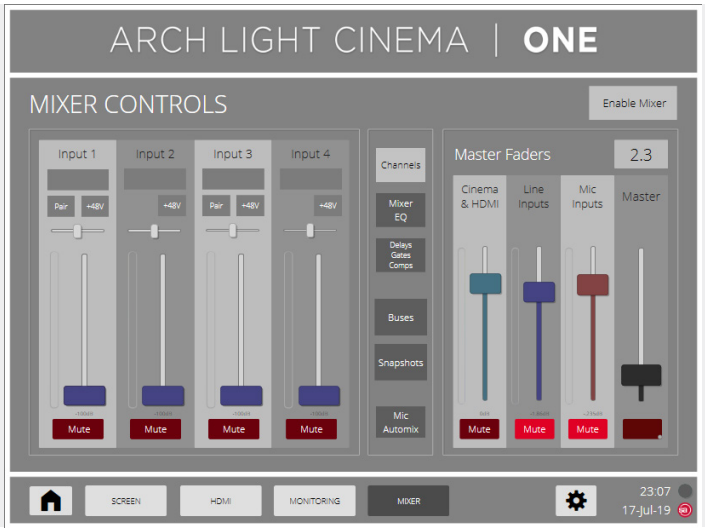
Control takes many forms, and Lodge notes that if an amplifier or speaker goes offline for any reason, Q-SYS sends an instant email with information, and Q-SYS can take action to resolve.

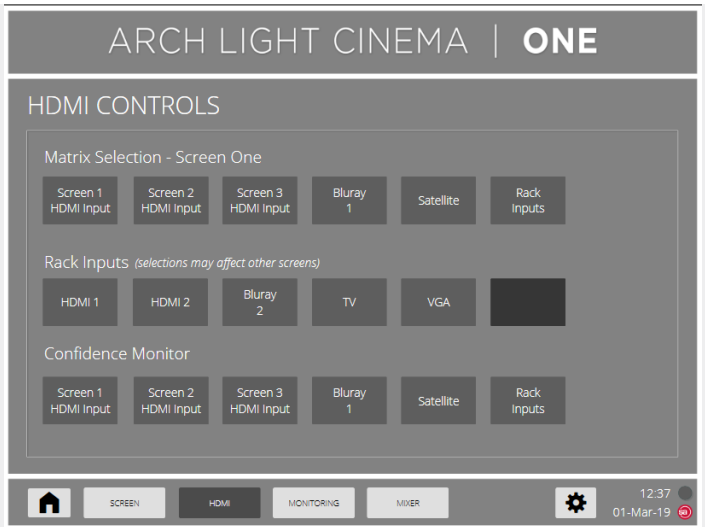
"Q-SYS allows us to move amplifier channels in a pinch. For example, if Q-SYS reports via email to us that a center-channel LF has gone 'open circuit' or short-circuited, Q-SYS provides us with a quick 'emergency bypass' so that the show can go on until the speaker can be examined," said Lodge. "That's facilitated by Q-SYS' capability to make a mix of the left, center and right channels, send that output to all three speakers, and then we simply mute the speaker that was distorted to begin with. We can do that remotely or give that capability to the local theatre manager to do it at the touch of a button on their controlling station. Certainly, it raises the comfort level of the client!"

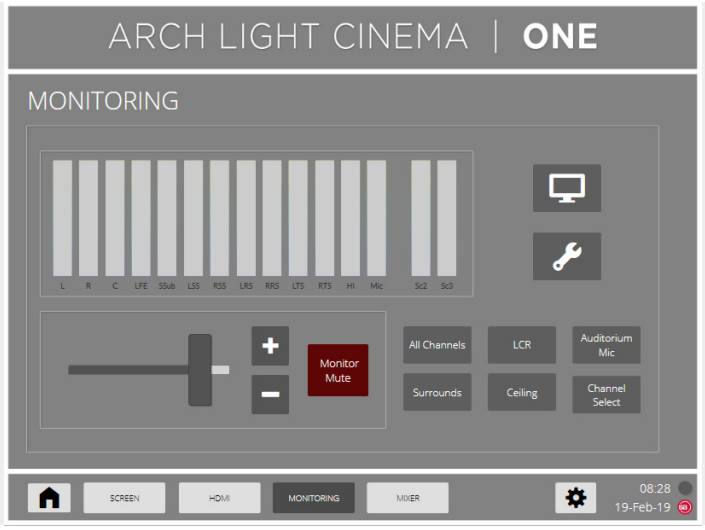
EQUIPMENT LIST

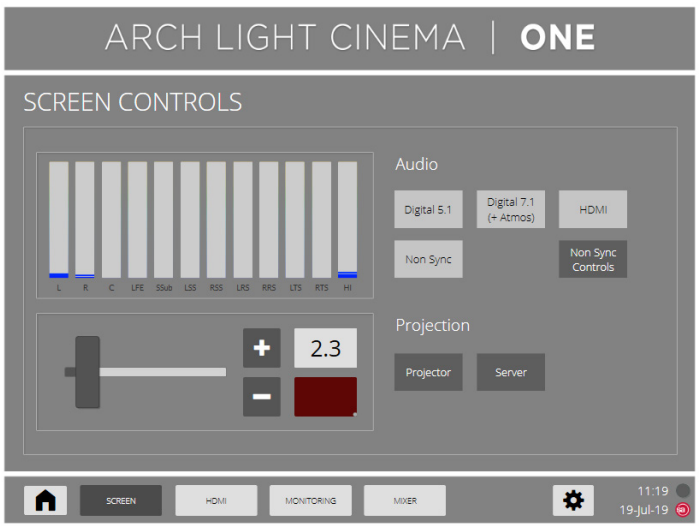
QSC equipment per screen

Model	Pcs Used	Description	
Core 110c	1	Cinema Processor	
DPA4.2Q	1	4-channel Q-SYS Network Amplifier, 700 W/ch at 4Ω	
DPA8.4Qn	3	8-channel Q-SYS Network Amplifier, 500 W/ch at 4Ω	
DPA4.3Q	3	4-channel Q-SYS Network Amplifier, 900 W/ch at 4Ω	









RESULTS

The cinemas with their advanced audio and projection systems are very busy on weekends since the “on” switch was flipped in mid-2019. One of the first movies to test the overall system’s capabilities was Bohemian Rhapsody, the winner of Academy Awards for Best Sound Mixing and Best Sound Editing, and Sound Associates – and the client – were pleased that it passed with flying colors. Audiences marveled at the sights and sounds that these unique, custom-cinemas delivered.

The client was specific about his needs and Sound Associates brought its decades of experience and considerable expertise to meet and exceed expectations.

“We are very pleased with the immersive sound environment that Sound Associates crafted for us, combining the best of Dolby and QSC solutions,” said Burdge, Managing Director, Olympic Studios. “How happy? So much so that we commissioned Sound Associates to repeat their success using entirely Dolby and QSC audio and control gear in our next project, ‘The Cinema at Selfridges’ London flagship store. This permanent film complex, the first in a department store, will have three auditoriums, with world-class sound technology. We are eagerly anticipating another top-notch project.”

ABOUT QSC

Founded over five decades ago, QSC is a globally-recognized leader in the design, engineering and manufacture of award-winning high-performance loudspeakers, digital mixers, power amplifiers, audio processors, digital cinema solutions, and the Q-SYS™ software-based audio, video and control platform. Offering reliable, scalable and flexible solutions for professional installed, portable, production, corporate and cinema applications, QSC puts customers first with its highly-acclaimed sales, service, and support networks worldwide.

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