



CASE STUDY

Launching an explosion of colour at Durham's Apollo Pavillion

Challenge

Projection mapping a grade two listed building that was located in the middle of a residential area, with limited power availability.

Solution

Using four Panasonic PT-RZ21K 20,000 lumens projectors enabled high quality projection with incredibly low power consumption.

"Panasonic projectors were the perfect resolution to a very challenging situation, as they offered incredibly low power consumption without compromising on the quality of the projection, with high brightness and excellent contrast ratio."

Paul Wigfield

Director



Constructed in 1969 by Victor Pasmore, the Apollo Pavilion is one of the UK's most famous brutalist artworks in post-war society, named after the Apollo 11 moon landing of the same year to reflect the optimism of Durham's local community at its time.

Now celebrating its 50th anniversary, the Apollo Pavilion continues to mark a bold position within Peterlee, County Durham, with its statement concrete architecture and block-like structure being a classic example of brutalist architecture in one of Durham's first mining towns.

Although polarising opinions since its development, the building has since been reclaimed, as renewed interests and nostalgia encouraged its listing as a Grade II Heritage Status building in 2011. With its anniversary coinciding with Durham's Year of Culture, Durham County Council were keen to showcase the building and its history, to reignite the community spirit that it had once represented.

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Produced by Artichoke Trust, Berlin-based artists Mader Wiermann and QED Productions were tasked with delivering a 360-degree video projection and soundscaped artwork for the Apollo Pavilion, to be celebrated across two nights with the local community, free of charge.

However, bringing a large scale projection piece into the heart of the residential state presented a number of unique creative and technical challenges, meaning that technical planning considerations and content creation had to be inextricably linked throughout.

Projecting in a residential area

The physical restrictions of the residential site meant that the 25m wide building had to be covered on both sides by only four projectors, from a limited range of positions and with only a low level of mains power. The proximity of the residential housing meant that no generators could be used, and so all the projectors, video control and the PA equipment had to run off the three 16amp power supplies which were available on site.

In order to cover all surfaces and to avoid all obstacles QED Productions used four Panasonic PT-RZ21K 20,000 lumen laser projectors, alongside a disguise 4x4pro media server which was selected for the video playback and for pre-visualising the content.



Paul Wigfield, QED Productions Director, said "Panasonic projectors provided the perfect resolution to a challenging situation, as they offered incredibly low power consumption without compromising on the quality of the projection, with high brightness and excellent contrast ratio. We were so short of power that we had to test the whole rig under full load in advance to precisely measure the amps that we would draw. Sometimes it gets down to the finest margins, and in this situation no other projector could deliver 20K lumens with such a low amount of power.

"The high contrast ratio of the projectors really suited the predominantly black and white content."

In addition, the compact chassis of the RZ21K was ideal for the projection as the structures could be relatively small so as to not obscure the audience viewing positions."

Content Generation

The artists produced a 3D model from old architectural plans, and in the absence of any surrounding topographical data to determine the precise physical projector positions, a baked UV content workflow had to be devised within Cinema 4D.

This provided a fully content-wrapped model so that the virtual projectors could be positioned accurately on-site within the disguise server as soon as the precise real-world projector positions and elevations had been discovered.

QED's Head of Digital Media Harry Ricardo commented "The Apollo Pavilion almost looks as if it was built for a projection mapping, however the deeper we got into the detail the more we discovered how difficult it was, especially when having to work with a model created from unverifiable data. It required both a custom workflow and all the technical tools in our projection-mapping arsenal to pull it off."

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The baked UV workflow was settled upon after the simulations showed the number of surfaces that would be obscured from the four projectors covering the sculpture, allowing Mader Wiermann to adapt and approve the content.

The looping 8 minute video featured an array of perspective illusions, spatial lighting effects and bold animations that utilised the brutalist's sculpture complex shapes. It was incorporated alongside three channels of audio (LCR). The soundscape was designed to follow the movement of the 60fps content across the sculpture, with all assets being played back from within the media server.

"The projectors provided the perfect technical solution in a very limiting situation"

QED's KVM Xtreme™ was used to achieve the accurate 360 degree line-up from both sides of the structure and from either side of the lake. Powered over hybrid-fibre cable this provided direct connection to the server whilst delivering signal and power to the waterproof remote monitor, keyboard and mouse.

Commenting on the impact of the projection technology on the content, Paul Wigfield added, "The high contrast ratio of the projectors really suited the predominantly black and white content. Short sections of colour and sudden geometric effects provided unexpected special moments in addition to a brief appearance of the Apollo Lunar Module."



Positioning the projectors

Another key element to the success of the project was the pre-visualisation and positioning of Panasonic's RZ21K laser projectors. Fly-through and workflow simulations were instrumental in communicating rapidly with the artists, highlighting any potential on-site complications so that they could begin their content rendering process.

QED Project Manager Simon Graham remarked "It was such an interesting project and wonderful to be able to work so closely with Holger and Heike. We really learnt a lot from each other in order to develop an innovative workflow for projection mapping this unique building".

Wigfield added, "The projectors performed perfectly across the event. With only three 16amp feeds we barely had enough power to run the show, and because backing up the projectors was not an option the reliability of the projectors was absolutely paramount."

Bold and Beautiful

With all challenges for the project QED Productions, Artichoke Trust, and Mader Wiermann were delighted to see their combined technical, production and creative skills produce a show stopping event which was extremely well received by the community.

"Although the production and clever content design was key to the success of the event, the technical key was the low power and high brightness of the RZ21Ks. In the end, they provided the perfect technical solution in a very limiting situation."