



Case Study

Re-lighting Blackfriars Bridge

How ArmadilloLED replaced a failed installation and enabled hundreds of LEDs to light up the River Thames again.

Few people who watched the London Olympics in 2012 could have failed to be impressed by the setting afforded to the Games by London itself. Perhaps the most instantly recognisable city in the world, this tapestry of rich historical landmarks embellished with iconic examples of modern architecture is threaded through by the River Thames and its spectacular bridges, which gave us some unforgettable moments.

Tower Bridge with the huge Olympic rings is the one everybody remembers, but for the Games, other bridges were illuminated too, including Waterloo Bridge, Millennium Bridge, Southwark Bridge, London Bridge and Blackfriars Bridge, all part of a £1.2 million project funded by the City of London.

London retains many legacies from hosting the Olympics and this included the under lighting scheme at Blackfriars Bridge. Built in 1869, Blackfriars Bridge, which is Grade-II listed, is 923 feet (281 metres) long and carries huge volumes of traffic and pedestrians every day between Blackfriars station, the Inns of Court and

Temple Church at its north end, and the Tate Modern and the Oxo Tower at its south end.

As the 2012 Games themselves became part of London's history, some of the hundreds of luminaires on Blackfriars Bridge stopped working. Time passed and the problem worsened, until almost all were not functioning. The City of London called in civil engineering company, JB Riney, to oversee a re-lighting project, who in turn quickly realised specialist expertise was required and contacted ArmadilloLED.

ArmadilloLED is an LED lighting manufacturer with 25 years' experience in providing LED products and delivering creative LED design solutions for complete projects. Armadillo engineers investigated Blackfriars Bridge and found that the LEDs in the under lighting installation were in fact still functioning, but were not illuminating because no current was reaching them. The connectors used in the installation had failed due to corrosion, water ingress and rust. They all needed to be replaced and the whole under lighting system re-wired completely.



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Armadillo’s Technical Director, Bart Gesner,

takes up the story: “The solution clearly lay in sourcing the correct connectors - we decided to look for top-of-the-range waterproof connectors, certified to IP68, which definitely wouldn’t allow any water across the feed. We were also looking for a clip in type connector and a choice of accessories.”

“It was clear that we would have to tackle renewing the bridge under lighting using technicians who could abseil down from the bridge, supported by boats carrying materials and acting as safety back up.” says Bart. “The time taken for the install was absolutely critical, as the difference between high and low tide on the Thames at that point is nearly 6 metres, which meant that if the tide was really high, we couldn’t get a safety boat under the bridge and there was little room for our technicians to work on the abutments. In addition, the maximum number of hours an abseiler can work in a day is six.

In actual fact, the reality was even worse – by the time ropes were set, safety checks carried out and the boats manoeuvred into position, the average actual working time we had each day was around 4 hours. ”

When it came to choosing connectors for the project, Armadillo chose Hylec-APL as its trusted supplier, selecting a number of products from its proven TeeTubes range. All cables are hydroscopic to some degree and therefore absorb moisture that can collect inside the cable sheath, enabling it to move along its length and even crossing the terminations in the cable.

TeeTube waterproof connectors have a proprietary system that provides total protection against permanent submersion and also blocks moisture transmission across terminals. TeeTube TH392 splitter connectors were used to carry the signal cable for DMX signal controls that handle the colour changing of the LEDs.

TH392 waterproof connectors are IP68-rated and have screw or piercing terminals to accept cables with diameters from 8 to 12mm; maximum cable cross section is 4mm² for screw terminals and 0.5 to 1.5mm² for the piercing clip terminals. The rated current is 17.5A, 450V, and they can handle a wide operating temperature range of -40degC to +125degC.

“To save time, we pre-made lengths of cables and partially pre-wired them. Then we loaded them onto the boat so they could be pulled up to the underside of the bridge structure and the technicians only had to wire the other side. ” continues Gesner. “Thanks to the quick push-pull connection of the TeeTubes, this saved a great deal of time on site and made the job far easier for our technicians who were working in wet and potentially dangerous conditions.


Before



In addition to replacing the connectors, Armadillo had to remove some of the existing luminaire fittings located at the St Paul's Walkway Northern end of the bridge that had also succumbed to the harsh conditions.

These were replaced with Armadillo Lighting Chameleon RGBW™ LED linear bars, which are IP67 rated and have a 160° tilt bracket for flexible mounting on all surfaces, as well as intelligent temperature control and a dedicated DMX channel for white balance.

Gesner concludes: "In all, this was a major and very visible project for us at Armadillo in every sense of the word and we can say with confidence that Blackfriars Bridge will shine brightly for years to come."

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Accessories like the grommet inserts gave us options for splitting cables and using different cable sizes.

We also used TH391 end cap covers, which are an excellent solution if a job has to be stopped at any time.

We had to do this at the end of every working day and these end caps protected the whole line until we could return the following day.

Using Hylec's TeeTube products saved us about 30% on-site time, are very robust against disconnection and cable traction and are also guaranteed to remain watertight at IP68 when flexing.



*It took our team
four weeks to through-
wire the whole bridge
and enable the
hundreds of luminaires
to shine once more"*

After

