



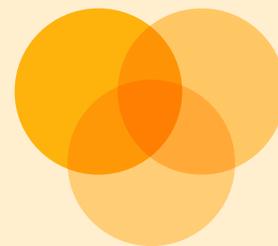
## LIGHTING

### New Ways To Make Your Event Shine

The importance of lighting in any event is so fundamental that it's easy to overlook the details, techniques and technologies that are the difference between average and extraordinary results. Ask anybody what's the most important consideration in lighting their event and the most common answer is that their presenters, performers and content are visible. But beyond this primary goal, lighting can do so much more than simply enabling us to see. Changes in lighting technology in the last decade have seen the tools and palettes available to lighting designers extend far beyond the simple ability to shine a light on a space. A lighting rig can now consist of media servers, video content, architectural elements and dynamic fixtures that are as much a part of your show as your stars.



The greatest agent of change in modern lighting has been the advent of the ultra-bright, digitally controllable LED (light emitting diode). LEDs began their commercial life as tiny replacements for incandescent bulbs, indicating when your consumer electronic device was turned on. They were only available in red and were never expected to get any bigger or brighter. All of that changed in the 1990s, when the first high-powered blue LED was developed. Soon major manufacturers were making higher powered LEDs capable of reproducing varying colours. The theatrical lighting industry quickly adopted the technology and began replacing traditional tungsten and halogen incandescent filaments with the new technology.



### Clean and Green (and red, and blue, and white...)

LEDs are around ten times more efficient than their tungsten equivalent, meaning that it takes around ten times less electricity for an LED to produce the same level of brightness as the older fixture. They can last hundreds of hours longer, emit less heat, and are cheaper to manufacture and replace. Most commercial lighting fixtures are now fitted with what's known as RGBW LED chips. They're a combination of red, green, blue and white light emitting LEDs, controlled electronically to mix their output together to create any desired colour. This technology created a huge change in lighting for shows and events. Previously, if you wanted to create a certain colour light with an incandescent fixture, you needed to put a coloured gel in front of it. If you wanted to use several colours during a show, you needed to set up and rig several fixtures, each with the appropriate gel. Those fixtures were then focused on part of the stage and then set for the show – you couldn't change colour or position.

LED fixtures allow you to change colours at any time, instantly or slowly. If the fixture features a moving (or 'intelligent') head that employs controllable motors on the lamp and its lens, you can also move the light to another part of the stage or programme it to move repetitively in a pattern. All of these changes can be pre-programmed in the lighting desk by the operator and recalled across the entire rig at the press of a button. All of these developments considered together mean that compared to just two decades ago, a lighting system can now use less fixtures, take less time to rig and do more with less labour. When rigged on lighting bars and flown above stages, intelligent LED fixtures do the same job with a lesser requirement for power and lower demand by weight on rigging points.

### The Light Fantastic

LED technology has not only improved traditional lighting fixtures, it has created entirely new types of equipment that produce effects that were impossible barely a decade ago. Because LEDs can be small, digitally controlled, fitted closely together and change the quality of light that they're outputting instantly, they can be sent images and video as source material. A whole new category of lighting fixture has evolved from this ability. The technique is referred to as pixel mapping. LED fixtures designed for pixel mapping are usually a square or rectangular grid, pad or tablet, fitted with anywhere between four to over a thousand individual LEDs. You may recall seeing the opening of the 2012 London Olympics and the video images that moved around the seats of the stadium itself – they were achieved by installing a sixteen LED tile in front of every seat, and treating each square as one pixel of the digital image.

Pixel mapping video on LEDs gets even more creative when you realise that you can set the video to display across many fixtures at once. This means the image canvas could be as simple as a grid that looks like a screen, or dozens of differently shaped fixtures, rigged and set across the performance space, creating a synchronised effect that breaks up the image. The resultant looks of pixel mapping can anywhere from high-clarity, high-definition vision on a wall with thousands of LEDs to a lo-fi, low bitrate effect similar to an old video game. Any content can be mapped, from your company's logo on a loop to a product promotional video. The controllers and software that are used for pixel mapping often come with a generous amount of their own generic content that can be deployed as effects.





### Totally Tubular

The flexibility of LEDs lends them to innovative uses. Another completely new type of fixture that has emerged is the LED tube, sometimes colloquially known as the Happy Tube. Tubular fixtures come in different lengths with varying amounts of LEDs, but around one metre long with somewhere between 96 and 144 LEDs is a common specification. The tubes can be joined together, hung, flown, stacked to form a screen and used to emit light or images. They can be utilised on the outside of buildings to highlight architectural features or hung from ceilings to imitate chandeliers. They're commonly seen on all kinds of live events, from rock concerts to conferences.

LED tubes are perfect for enhancing the physical elements of your staging because they can be easily mounted on the edges of stages, screens, lecterns and just about any other physical structure. Once set-up and addressed from the lighting desk, they can glow softly as an outline, or can pulse and ripple with waves of light. Like the pad, grid, and tablet LED fixtures, images and video can also be mapped across tubes. Unlike square or rectangular fixtures, tubes can be arranged in a circle to form an element that can be viewed from 360 degrees, perfect for a feature at the centre of a gala dinner. Video mapped across tubes can be displayed like a screen if enough tubes are mounted together, or broken up into many vertical and horizontal lines distributed throughout a space. The effect can be as coherent or as abstract as you desire.



### The Power of Movement

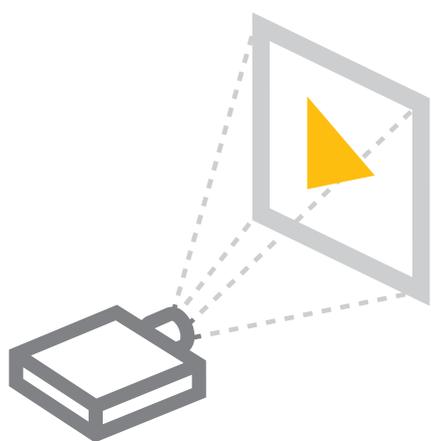
Lighting fixtures with moving heads pre-date the LED revolution, but were previously only found on extremely large and expensive lights aimed at the top of the theatrical and concert market. Moving head fixtures use digitally controlled motors that enable the light to spin continuously, move back and forth in a pre-programmed pattern, or simply change focus instantly to another part of the stage. As the manufacturing know-how becomes widespread and the cost of components decreases, moving lights have become common even at the low end of lighting budgets. In combination with LEDs, rotating lenses, and other new technologies, moving lights can even add a new dimension to that oldest of lighting techniques, the humble gobo.

A gobo was originally a piece of metal with a pattern of holes cut into it that you placed in front of a light. They could be used for simple diffusion or to create a recognisable pattern, such as geometric shapes or leaves. As technology progressed, glass gobos were developed that could incorporate colours and detailed imagery. These are still in use in traditional fixtures, and can be custom-made to display a logo or any other imagery. LED fixtures now use plastic gobos, which are less delicate and easier to manufacture. A moving head fixture can often hold multiple gobos, and sometimes use more than one at a time, creating detailed textural effects. Like other digitally controlled features of lights, the gobos in use and the effect they're creating can be changed at any time.

### Roll The Video

There are now varieties of moving head LED fixtures that can even be used as a type of projector. Unlike a traditional projector, a moving head fixture can vary the focus, angle, width, brightness and colour of the video dynamically in real-time. Projecting video from a moving head is almost like having an animated gobo. Most often, video projected from moving heads is used as an effect. Often the content will be a loop with a strong texture and colour, such as a shot of a forest. This can be used as a subtle but dynamic wash on a stage or wall.

With all of this video being deployable across lighting fixtures, the control hardware and software used by lighting operators has evolved accordingly. Whereas older lighting desks sent control signals to lighting fixtures and lighting fixtures only, most modern desks are designed to integrate with servers that host video files, fixtures that have video inputs and software that controls and edits video in real-time. On a complex production that involves video being projection mapped to screens and surfaces as well as utilised in lighting equipment, there will most likely be two sets of video infrastructure and operators to cope with the complexity.





### Content By Design

With all of these new lighting technologies at your disposal, the question is now what to use, how to use it, and what content you need to make to get the most out of it. In the past, decisions about lighting were mainly of mood and colour palette. Now your organisation's existing video content can be used to enhance your event, or completely original content created for a one-of-a-kind look. Staging Connections employ dedicated content creators and video experts that can guide you through the process of achieving your creative vision. Working with the lighting team, they'll make sure that existing content is in the right file format and resolution and new content fits the aesthetic of your event.

Working closely with a Staging Connections lighting designer in the planning stages of your event will help you get maximum impact for your investment. With new products and techniques emerging in LED technology almost weekly, Staging Connections staff pride themselves on keeping up-to-date in order to provide the best solutions at their events. A creative designer will suggest and demonstrate lighting effects and techniques that you may not have seen before, while maintaining sensitivity to your brief.

### No School Like Old School

Technology is always best used when it supports creative endeavours, letting them shine on their merits. If the technology becomes the main attraction on an event, then you've lost the impact of your content. As they say in theatre "If the audience is looking at the set, there's a problem with your show". This is important to keep in mind when seeking out new lighting effects and eye-catching displays. An array of Happy Tubes and masses of moving, pixel mapped content may look fantastic, but if it's too bright and too busy, it will detract from the message of your star speaker. Fast changing LEDs, moving heads and projection are all exciting, but they're not always the right tool for the job.

Theatrical and concert lighting designers still use and specify fixed, analogue tungsten and halogen lighting with gels. LED, they argue, isn't always a direct replacement. The quality of light can be perceived differently, with many designers preferring the white light of a traditional source to an LED. In many venues, the installed lighting rig will still contain many traditional fixtures. Many prestigious venues, especially theatres, use only tungsten and halogen lighting. What you'll find most often on events is that a combination of both old and new technology will be used for the best results. Incorporating traditional fixtures with new expands your palette as well as making your budget go further.

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Interested in adding extra dimensions to your next event? Contact your Staging Connections representative or call us on **1800 209 099** or email [marketing@stagingconnections.com](mailto:marketing@stagingconnections.com)