

Lighting fixtures and applications

Do you know your Fresnel from your flood? Your spot from your wash? **John Black** identifies the lighting cast and their featured roles

FRESNELS. ELLIPSOIDALS. MOVING

lights. LED lights. Par cans. Strip lights. Followspots. The list goes on. The array of lighting fixtures available on the market today is vast. With dozens of manufacturers producing fixtures, how do you know which ones you should integrate into your lighting rig? How can the varieties of fixtures be used most effectively? We're going to take a look at some of the most common fixture types, their features and their applications.

Most lighting fixtures can be categorised into a number of broad categories based upon the type of light beam that they project. These categories are: flood, Fresnel, profile, and automated. Regardless whether the light source is a traditional tungsten lamp or new LED technology, most fixtures can fit into one of these categories, regardless of the manufacturer. In recent years, many brands have also been developing hybrid fixtures that are able to fit into a number of categories, which we will also take a look at.

We're going to explore each category of lighting fixture beginning from least amount of control of the projected beam to the most amount of control, with several fixture examples of each category listed.

Flood fixtures

Perhaps the simplest and most basic of fixture types, the sole purpose of flood fixtures is to cover a large area with light. They generally do not feature a lens, but consist of only the lamp and a reflector in the fixture housing. Most flood fixtures use a traditional tungsten lamp and can be coloured by placing a gel in the light beam. Several manufacturers have developed LED source flood fixtures which remove the need for using gel entirely as the LED source is capable of colour-mixing.

Flood fixtures excel at projecting large washes of light, even at short distances. They are used predominately for lighting backdrops and scenery, and can be used flown, on the ground, or by combining both positions to be able to



The Elation Fuze PAR Z60 IP

achieve 'horizon' lighting effects such as sunrises and sunsets. These fixtures are commonly found in most theatre and dance performance spaces to light a cyclorama, but probably less in houses of worship.



Fresnel fixtures

The Fresnel fixture produces a soft-edge beam that gives the user a bit more control of the light beam when compared to a flood fixture. The light features a lens, lamp, and reflector inside of its housing. The beam of a Fresnel can be made narrower or wider by physically moving the



Altman's 65Q Fresnel

ETC Source Four LED profile fixtures

position of the lamp and reflector in the housing closer or farther from the lens. Regardless of position, however, the light beam will always have a soft-edge.

Fresnel fixtures come either with a traditional tungsten lamp or an LED source. The beam can be coloured either by adding a gel or mixing the LED colour diodes, and the beam can further be shaped by adding a barn door accessory to the front of the fixture allowing you to block portions of the light beam from hitting unwanted areas.

Fresnel fixtures are predominantly used as a top or back light in situations with short to medium throw distances (how far the beam travels from the

lens to stage). On the rare occasion they may also be used as a frontlight in a situation with a very short throw distance. They are very effectively used to create washes of colour on the stage as their soft-edge beam allows many fixtures to blend together seamlessly.

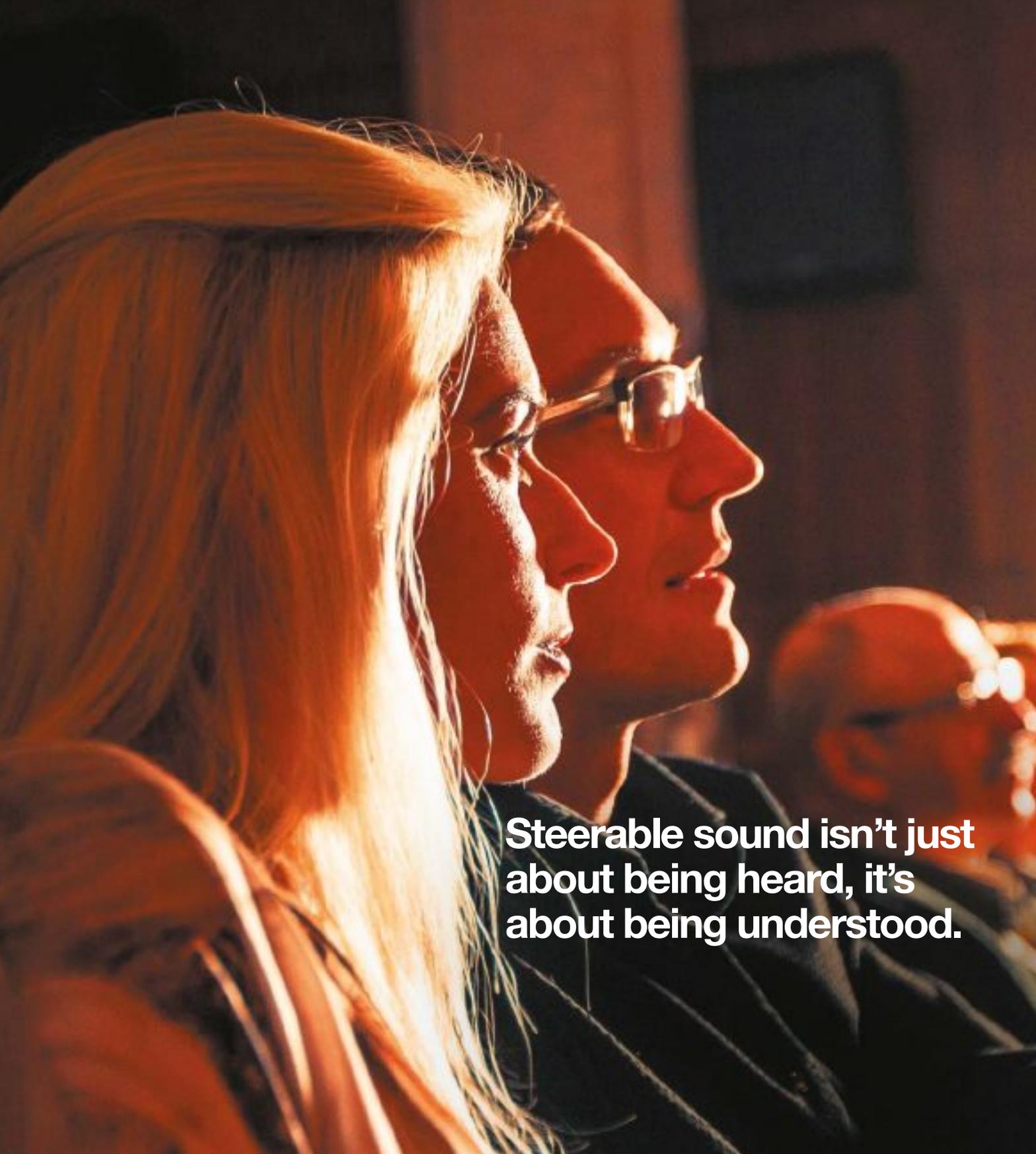
Profile fixtures

The profile fixture produces a hard-edge beam that gives the user even more control of the light beam when compared to a Fresnel. The fixture features a lens, lamp, reflector, shutter and gate inside the housing, all of which work together to allow the user to affect the light beam. Profiles are manufactured with either a fixed beam

angle or a variable beam angle (then utilising several lenses). The smaller the beam angle, the narrower the light beam being projected by the fixture.

Profile fixtures also come either with a traditional tungsten lamp or an LED source. The beam can be coloured either by adding gel or mixing the LED colour diodes. The lens can be adjusted allowing the user to achieve a light beam from very soft-edged to very hard-edged or anything in between. Profile fixtures feature shutters – small handles with metal blades that can be pushed into the pathway of the light beam, allowing the user to shape or cut the beam from hitting unwanted areas.

These fixtures also allow the ability to



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insert accessories into the gate – the area between the lamp and the lens. One accessory, called an iris, consists of shutters oriented in a circle, allowing the user to further narrow the light beam. Patterns – called gobos – can also be inserted into the gate, allowing users to project simple or complex images. Gobos are made out of steel (for 2-dimensional projections) or glass (where the applications can extend to high-resolution, coloured patterns).

Profile fixtures are also referred to as Ellipsoidal fixtures (due to the shape of the reflector) or Lekos (the original model designation, based on the inventors' last names). Profile fixtures are predominantly used as front lights and can be used for any throw distance due to the ability to exchange lens tubes of different degrees. The smaller the beam angle, the farther the fixture will be able to project the light beam. Additionally, profile fixtures are used to add texture to a stage or project scenic or customised images through the use of gobos such as images of leaves, clouds, architectural outlines, high-definition forests, or HOW logos, customised text, and the such like. Profiles are also used as side lights and back lights with gobos to provide further texture on the ground, actors, and in the air when used with a hazer.

Automated fixtures

Automated fixtures can include the beam features of Fresnel or profile fixtures but are otherwise distinguished by all of the additional controllable qualities of the mechanical systems that make up the fixture. In addition to the lens, lamp, and reflector these



Light beam shape and projected patterns can be used to create mood

lights include a wide variety of pattern wheels, colour wheels, shutters, gears to control pan and tilt, and so on. All of these systems are able to be controlled by the user via a lighting controller to create a host of creative and complex looks and effects. Automated fixtures can come with a number of lamp types, with LED sources becoming very common. A 'wash' fixture features a soft-edge, wide beam akin to the beam produced by a Fresnel.

While many automated fixtures either come specifically featuring the beam qualities of a Fresnel or profile, many



Changing up colour can be used to emphasise transitions in event content



High End Systems SolaWash FX 2000

manufacturers are producing hybrid fixtures featuring output qualities of both. These hybrid lights feature a number of lenses allowing for qualities of the beam to be changed. The advantage to these fixtures is that instead of purchasing both profile and wash elements, users can purchase a single model and use it for whatever beam type they need for a given application.

Automated fixtures can be used in just about any situation and have become common in concert, theatre, house of worship and even school lighting rigs. Their versatility and ability to control so many features



Martin's automated Quantum Wash flood

have made them indispensable when looking for a multi-purpose fixture. They can be used in front light positions, but are more commonly placed above, behind and on a stage for use in creating a multitude of effects. Like profile fixtures, profile automated fixtures carry a number of patterns on indexed wheels, enabling use for texturing the stage, actors or air and projecting customised images. Both profile and wash varieties of automated fixtures also allow for multiple colours of light to be projected.

Unlike standard flood, profile, and Fresnel fixtures, automated fixtures include the ability to control pan and tilt, allowing the user to focus a single fixture in nearly any throw position, as well as create complex movement sequences. Having automated fixtures in a house of worship rig allows a programmer to change lighting looks from week to week, between multiple services in a day or even between

events in the same service, without having to be physically present at the fixture to manipulate its parts.

Fixtures as tools

Most lighting fixtures on the market will fit into one of the above categories based on the controllable qualities of its light beam. Specific features and fixture design will vary from manufacturer to manufacturer, as well as the unit's pricing. It is important to remember that all of these fixtures are just tools. The lighting designer or technician must consider the lighting needs, intended purpose, and design goals for the event or situation, and then determine which fixture(s) will best meet those. Finally, it is also important to remember that lighting is a creative process and just because a fixture is designed to have a specific purpose doesn't mean it can't be tasked to perform in a unique way to achieve a desired effect.



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