# Clay Paky Mythos

By: Mike Wood

Figure 1: Fixture as tested.

Although there were products before it that did similar jobs, going back to the High End Systems Emulator and some of its own disco products from the late 1970s, Clay Paky reinvigorated the very tight aerial beam market with the Sharpy. Suddenly, we began seeing this type of product used in large, coordinated arrays, rather than as one-off special effects. That was a few years ago, and the market has moved on, with other manufacturers putting their own twists on the concept, adding new features and trying to satisfy the industry's never-ending desire for something new.

This month, we are looking at one of the units Clay Paky introduced in late 2014 as a response to the market's apparent desire for more effects within the basic narrow beam spot package. The Mythos builds on the Sharpy and the basic optics, but adds new features.

In prior reviews of this type of luminaire, I've modified my testing to reflect the usage as an effects beam projector, as measurements like lumens don't mean very much for beams in the air. Units like Mythos, however, are also capable of more conventional use as gobo projectors, providing spot effects. In such cases, our usual measurements make sense. You'll therefore see me switch criteria a little as we discuss various aspects of the unit. Whatever the criteria, it's still a light, and I'll try to measure and quantify what I can to give you a feel as to whether the Mythos is a unit you'd like to use. All my tests were run on a nominal 115V 60Hz supply; however, the Clay Paky Mythos is rated to run on 115V/230V 50Hz/60Hz (Figure 1).

## Lamp

The Mythos uses the Philips MSD Platinum 20R lamp (Figure 2), rated to produce 16,900lm from a 1.2mm arc.

Let's get this out of the way early on: The lamp change in the Mythos isn't easy. You have to remove the outer covers, two fans, and two small counterweight baffles to get to it. This means many screws, both captive and non-captive, and loose washers. It's a tricky process and I wouldn't attempt to do it up in the rig; you'll lose parts if you try. It's definitely a job for the bench. On the positive side, the lamp is rated at 1,500 hours, so changing it should be a rare event. The lamp is enclosed in a thermostatically controlled, fan-ventilated lamp house capped with a hot mirror.

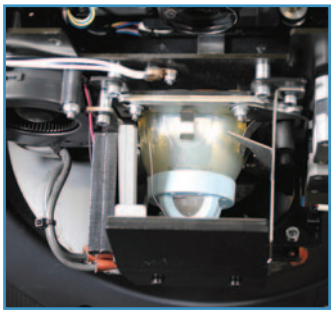

Figure 2: Lamp.

## Dimmer and strobe

Next in line is the combination dimmer-and-shutter system. This is a pair of opposing flags with curved leading edges, each with its own stepper motor, which close like a pair of scissors across the beam (Figure 3). Dimming quality is patchy, as we've seen with other ultra-narrow beam lights of this type. The very specific optics necessary for that very tight beam also make smooth mechanical dimming extremely difficult. The dimming curve is shown in Figure 4 and, in general, follows a

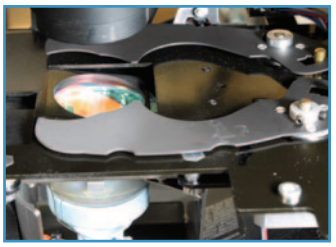

Figure 3: Dimmer flags.

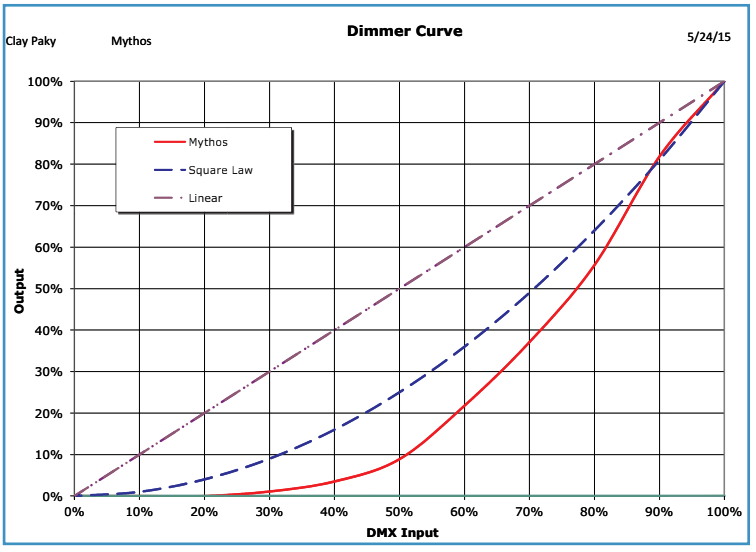


Figure 4: Dimmer law.

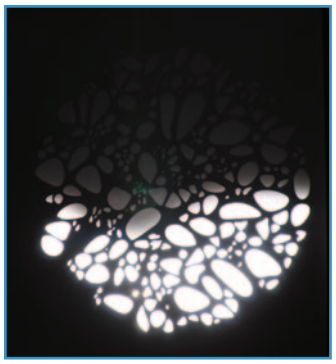

Figure 5: Dimming vignetting.

steep square law. When used as a gobo projector, there is visible vignetting of the beam from 40% down, with a pronounced shuttering at 20% and below (Figure 5). However, these issues are not visible when being used to produce aerial beams. I measured the strobe as providing speeds from 1Hz — 12Hz. I also saw quite a lot of arc flickering in the beam at some points, but that may have been a problem with the specific lamp I was using.

## Color

The Mythos has an interesting color system. There are three wheels, each of which has two operating areas. Half of the circumference of each wheel contains a variable-density color sector in the expected cyan, yellow, and magenta subtractive colors. The other half of each wheel has five slots containing discrete filters. Fourteen of these filters (five each on the yellow and magenta wheels and four on the cyan) are dichroic color filters, including color correction, CTO, and CTB, and there is an additional single homogenizing filter on the cyan wheel. Figure 6 shows a view of the optical module with the color system on the right.

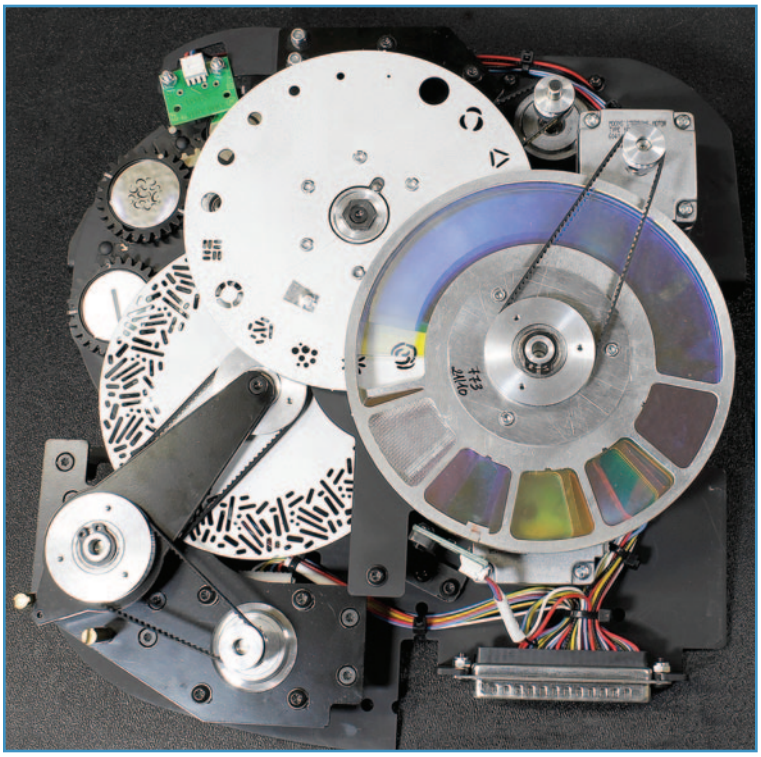

Figure 6: Optical module side 1.

You can see the graduated color filter, as well as the discrete color filters and the homogenizing filter.

Depending on the console you use, and the library in place, the two color systems are somewhat mutually exclusive. Inevitably, because of their physical placement on the same wheel, you can't use a color-mixing color and its associated fixed colors at the same time. I found it was easiest to think about using the CMY color mixing, or using the individual color filters, but not both at the same time. You can superimpose any of the fixed colors on each other as long as they are on separate wheels, but fixed colors override mixed colors. If that sounds complex to get your head around, then it is, at least a little; you need to remember that this is all one system and they aren't separate wheels. The end result is useful and the Mythos combination color system allows the addition of CTO, CTB, and deeply saturated color filters to the color mixing without the cost and complexity of extra motors.

**COLOR WHEELS**

| **Color Mixing** | Cyan | Magenta | Yellow | Red | Green | Blue |
|---|---|---|---|---|---|---|
| **Transmission** | 32% | 15% | 60% | 5.5% | 5.3% | 8.6% |

| **Discrete Colors** | Homogenizing | Lavender | 3200K | 2500K | UV |
|---|---|---|---|---|---|
| **Transmission** | 74% | 29% | 42% | 40% | 0.2% |

| **Discrete Colors** | Aqua | CTB | Dk Blue | Minus Green | Dk Red |
|---|---|---|---|---|---|
| **Transmission** | 12% | 63% | 5.3% | 68% | 4.7% |

| **Discrete Colors** | Dk Green | Pink | Lt Aqua | Amber | Lt Amber |
|---|---|---|---|---|---|
| **Transmission** | 15% | 49% | 34% | 18% | 34% |

I measured the open white color temperature of the Mythos with no color correction at 6,550K. With the 2,500K CTO filter in place it measured 2,440K; with the 3,200K filter, 3,150K; and with the CTB, 11,300K. The range of colors is broad with strong saturates from the discrete colors. Half colors and split colors are possible, albeit with quite a wide band between adjacent colors (Figure 7). The snap color changes are very quick, particularly between the discrete colors.

Figure 7: Half colors.

| COLOR WHEEL | |
|---|---|
| **Color change speed – adjacent** | < 0.1 sec |
| **Color change speed – worst case** | 0.35 sec |

Because the discrete colors are only on one side of each of the three wheels, spinning the wheels makes no sense and isn't offered as an option. If you want rainbow effects, then they'll need to be programmed.

## Gobo wheels

The Mythos has two gobo wheels: a static wheel mounted very close to the color wheel and a rotating gobo wheel spaced further away. Both are clearly visible in Figure 6. The fixed wheel has 18 positions plus the open hole. Twelve of these positions are gobo patterns while the remaining six provide different sizes of apertures to produce the beam effects. You can see the apertures at the top of Figure 6; the smallest of them is only about 1mm in diameter.

The static gobo wheel is manufactured in one piece and thus can move very quickly between positions.

| STATIC GOBO WHEEL | |
|---|---|
| **Gobo change time – adjacent apertures** | < 0.2 sec |
| **Gobo change time – max (Gobo 1 - 9)** | 0.5 sec |
| **Maximum wheel spin speed** | 1.35 sec/rev = 44 rpm |
| **Minimum wheel spin speed** | 27 sec/rev = 2.2 rpm |

The rotating gobo wheel uses a cartridge system for gobo replacement, and gobo change is simple and straightforward.

| ROTATING GOBO WHEEL | |
|---|---|
| **Gobo change time – adjacent apertures** | 0.5 sec |
| **Gobo change time – max (Gobo 1 - 5)** | 0.8 sec |
| **Maximum Gobo spin speed** | 0.57 sec/rev = 105 rpm |
| **Minimum Gobo spin speed** | 1660 sec/rev = 0.04 rpm |

Focus quality on both gobo wheels was good. Figure 8 shows examples of the rotating wheel (left) and fixed wheel (right). You can see a small amount of spherical distortion but very acceptable for projection quality. The rotating gobo wheel showed a positional rotational hysteresis of approximately 0.25°. This equates to 1" at 20' throw (43mm at 10m).

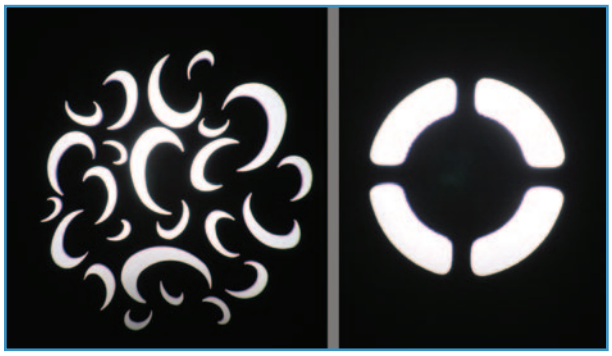

Figure 8: Gobo focus.

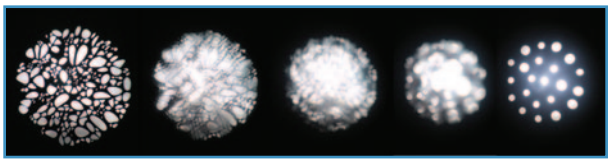

Figure 9: Gobo morph.

Figure 9 shows a gobo morph as I pulled focus from a rotating gobo to a fixed gobo.

## Animation wheel

The Mythos has an animation wheel mounted between the two gobo wheels. As usual with these types of effects, the wheel contains a break-up pattern and can be moved across the aperture from an off-axis position. Once in place, it can be indexed or rotated at the angle you've positioned it.

## Prism and frost

The Clay Paky Mythos has two separate prisms that can be positioned across the beam: an eight-facet circular prism and a linear prism. Both are in the same plane and can be used one at a time. Figure 10 shows the prisms out of the beam.

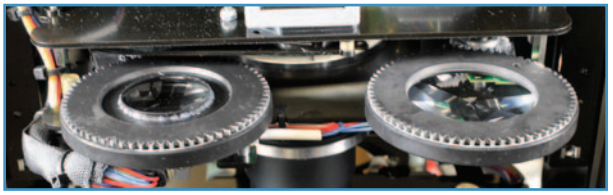

Figure 10: Prisms.

Either prism can be inserted or removed in about 0.8 seconds, and can then be rotated at speeds varying from 0.72sec/rev (83rpm) down to the same, almost imperceptible, slow 1,660sec/rev (0.04 rpm) as the rotating gobo. It took 1.8 seconds to swap from one prism to the other.

The frost filter is a single flag that is moved across the beam as desired. Movement of the frost completely in or out of the beam took 0.2 seconds. Figure 11 shows the

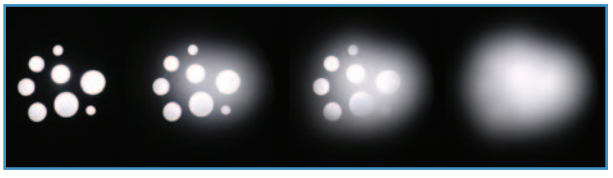

Figure 11: Frost insertion.

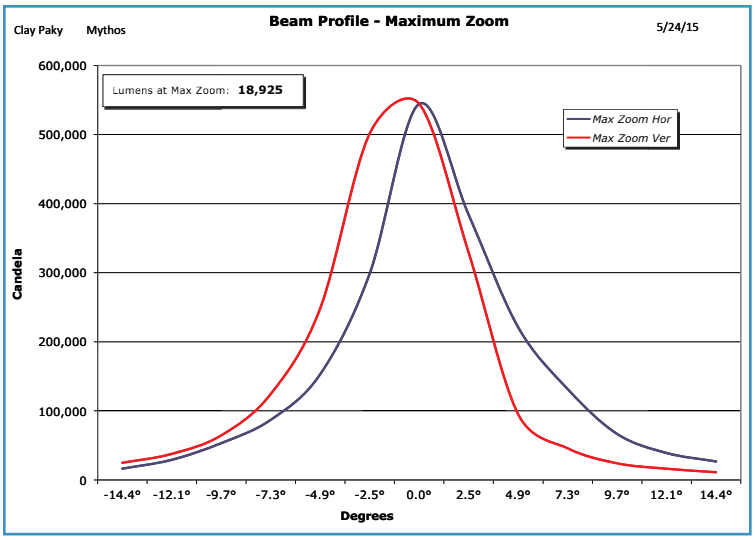


Figure 12: Beam profile - max. fixed gobo.

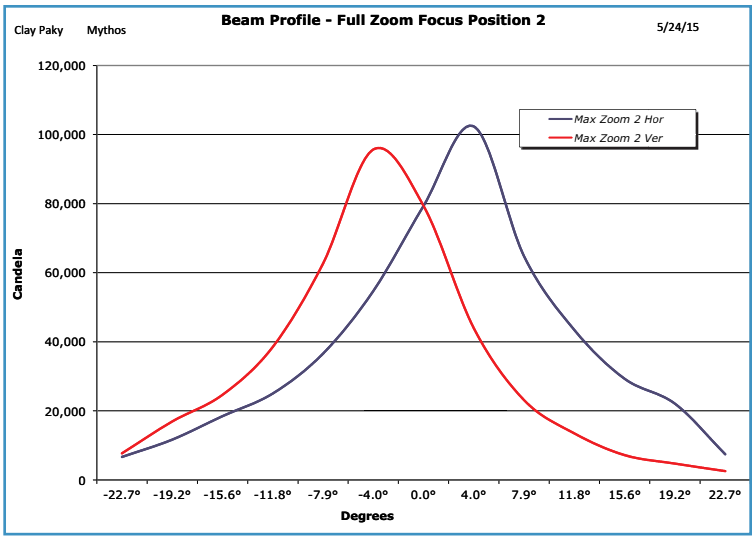


Figure 13: Beam profile - max. rotating gobo.

progressive frost effect as it moves across the beam.

(Note it is the type of "frost" that doesn't affect the edges of a gobo; it leaves those in focus and progressively diffuses light over the rest of the aperture. The other style of frost, the one that is more familiar to theatrical users, is a diffuser that softens the edges of a gobo projection as well as spreading the light. Some moving lights offer one style, some the other, and both have their uses. It's wise to check what is meant by "frost" on any particular unit before making any assumptions.)

## Lenses and output

The Mythos has three lens groups, all of which move independently. The first two lenses are internal and bracket the frost and prisms. The third group includes the external front lens that also moves. The front lens is mounted on a carriage along with the frost and prisms so they all move back and forth together, with the frost and prisms in between the other two lenses. All of this makes for some complex juggling when you insert and remove prisms. Focus time from end to end, which involves all the lens groups, was 2.3 seconds, while zoom, which only needs to move one of the smaller groups, is much quicker at 0.5 seconds. The snappier zoom allows it to be used as a dynamic effect.

The zoom has a wide range, which varies, depending on which gobo wheel you are focusing on. I measured the output in two wide positions, one for each gobo wheel. When focused on the fixed gobo wheel aperture, I measured the output at just under 19,000lm at a field angle of 29°. When using the rotating gobo wheel aperture, the output dropped to 13,200lm but at a wider field angle of 45.5°. Beam distributions for these two modes are shown in Figures 12 and 13.

When running in aerial beam mode using the small apertures on the fixed gobo wheel, I find the measurement of lumens to be pointless. What matters are the beam definition and contrast between the beam brightness and surrounding ambient illumination. With the smallest gobo and minimum zoom, the field angle varied with the zoom from 29° down to an almost parallel 0.8°. Figure 14 shows the measured open white spectrum with no color filters in place.

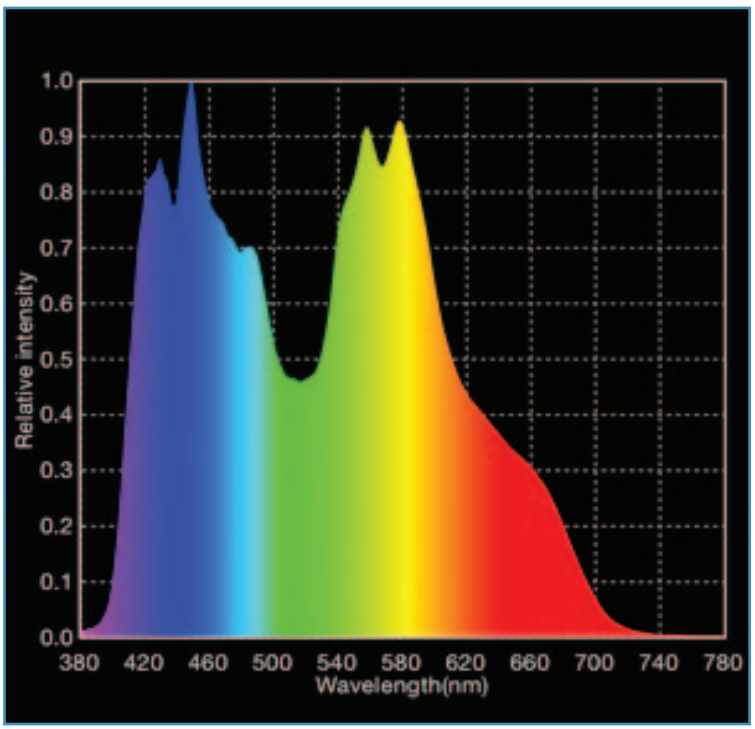


Figure 14: Spectrum.

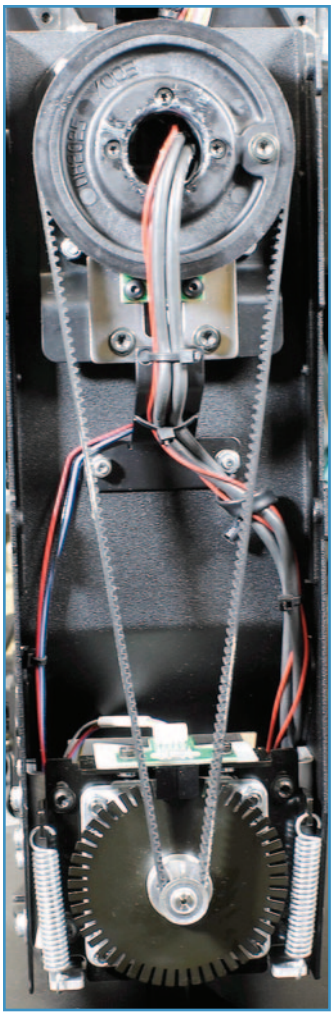

Figure 15: Yoke arm 1.

### Pan and tilt

The Mythos has a full pan range of 540° and tilt of 240°. Pan time at full speed over the total range of 540° was 3.7 seconds and the time for a more normal 180° was 1.8 seconds. Corresponding times for tilt were 2.3 seconds for 240° and two seconds for 180°. The movement on both axes was very smooth, with very little stepping at slow speeds. Hysteresis on both axes was 0.2°. This equates to 0.9" at 20' throw (36mm at 10m). You can see the tilt mechanism with its motor, drive belt, tensioner springs, encoder wheel, and sensor in Figure 15.

### Noise

The thermostatically controlled fan provides the bulk of the noise from the Mythos. I allowed the unit to heat up and stabilize for 30 minutes before taking these readings. Other than pan and tilt, the noisiest effect was, as is often the case, focus.

**SOUND LEVELS**

| | |
|---|---|
| **Ambient** | <35 dBA at 1m |
| **Stationary** | 49.0 dBA at 1m |
| **Homing/Initialization** | 60.4 dBA at 1m |
| **Pan** | 52.5 dBA at 1m |
| **Tilt** | 52.0 dBA at 1m |
| **Color** | 49.8 dBA at 1m |
| **Prism** | 49.3 dBA at 1m |
| **Gobo select** | 49.2 dBA at 1m |
| **Gobo spin** | 49.2 dBA at 1m |
| **Focus** | 52.5 dBA at 1m |
| **Zoom** | 51.0 dBA at 1m |
| **Strobe** | 49.0 dBA at 1m |
| **Frost** | 49.0 dBA at 1m |

## Homing/initialization time

The Mythos took a fairly lengthy 118 seconds to complete a full initialization from power on and 101 seconds from issuing a reset command through DMX512. The unit was well-behaved, as the lamp was dimmed out before movement started and faded up again after all movement had finished.

## Power, electronics, and control

Running on a 119V 60Hz supply, the Mythos consumed 5.5A through its powerCON True-1 connector. This corresponded to a power consumption of 632W with a power factor of 0.95.

The main motor control electronics are on two circuit boards in the head of the unit, and a board in one of the yoke arms. Figures 16 and 17 show these boards. Figure 17 also shows the large motor that moves the main lens carriage along with the frost and prism systems. Power supplies for the lamp and electronics are in the unit base.

The Mythos offers control through Art-Net via an etherCON connector as well as DMX-512 through five-pin

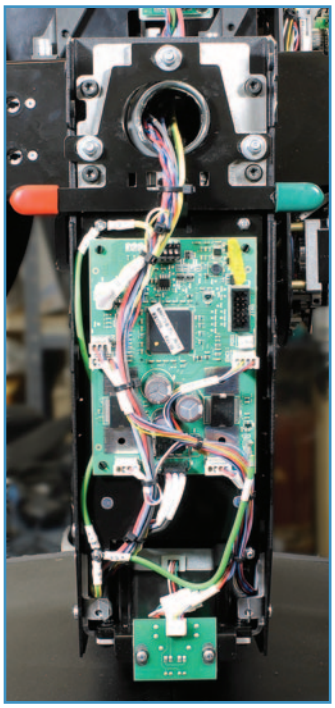

Figure 16: Yoke arm 2.

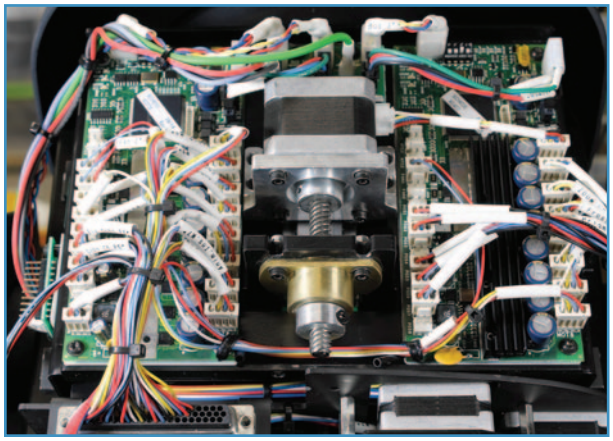

Figure 17: Main board and lens motor.


Figure 18: Connectors.


Figure 19: Display.

XLRs. Figure 18 shows these along with the power input. It uses the standard Clay Paky LCD and control interface for setting address, testing, and maintenance. There is an internal battery to power this, so you can set the DMX address while the unit is unpowered.

## Construction and serviceability

Apart from the lamp change, everything in the Mythos is easy to remove and maintain. In particular, it's very simple to remove the entire optical module as seen in Figure 6. The construction follows current standard practice with lightweight external covers over an aluminum chassis with optical modules attached.

There you have it: the Clay Paky Mythos. It's a second-generation beam product, which adds extra projection and spot-like features to the intense narrow beam effects of the previous Sharpy model. The Sharpy had the market to itself, at least for a while, but that isn't true of Mythos. It enters a busy marketplace with a lot of competition. Hopefully, I've provided some useful data to help you decide what's right for your venue and your show. As with all units, I encourage you to treat my comments as a guide only. If the Clay Paky Mythos looks interesting, then contact your dealer, get hold of a demo unit and try it.

*Mike Wood provides technical, design, and intellectual property consulting services to the entertainment technology industry. He can be contacted at mike@mikewoodconsulting.com.*