Robe ROBIN MegaPointe

By: Mike Wood

Figure 1: Fixture as tested.

I've already looked at a couple of the next generation of all-purpose beam/spot units in this column over the last year. It's a new category that seems to have good legs in the marketplace. Robe launched its entrant, the ROBIN MegaPointe, at the PLASA Show in London in September, and sent one for me to test immediately after the show ended. This review is based on a test of that unit (Figure 1). Companies don't usually send me product so soon after a launch, so this was very brave of Robe! There's a lot going on in the MegaPointe, so I'll take my usual approach of working through the light path from lamp to final output, describing and measuring what I see as we go.

Lamp and lamp access

The MegaPointe uses a custom Osram Sirius HRI 470W RO lamp with integral reflector. This is a special version of the lamp made for Robe (Figure 2). The use of a packaged, pre-focused lamp ensures that the tiny arc is accurately positioned in exactly the right place in the reflector. You also get a nice, new, clean reflector every time you change the lamp. Where the MegaPointe differs from some of the competitors is that Robe has done an excellent job in designing the lamp access, so it's easy to change the lamp. Just remove two quarter-turn fasteners, give the lamp a 45° turn, and it lifts out. Figure 3 shows the lamp with the cover plate removed.

Figure 2: Lamp.

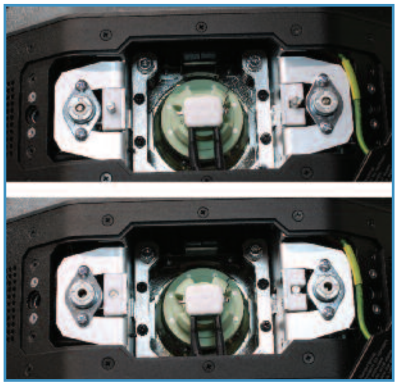

Figure 3: Lamp movement.

This figure also shows another feature of the MegaPointe lamp: It moves! Robe has mounted the lamp and reflector on two linear actuators (visible on either side of Figure 3). These move the lamp back and forward about 10mm and aid in the switchover of the optics from spot to beam mode. You can see that the lamp is fully back in the top image and forward in the bottom. This moves the focus from a spiky beam, with pronounced hot-spot, for beam mode, to one with a flatter distribution, for spot mode. The user can operate the movement manually through a DMX channel, or let the fixture do it automatically by changing modes.

Dimmer and strobe shutters

The lamphouse is capped with a conventional split and angled hot mirror, and is surrounded by fans and cooling ducts to keep the lamp at its correct operating point. Figure 4 shows a view from the lamp's perspective. There's a lot going on in this photo. The horizontally split hot mirror is visible, with the twin blades of an air duct above it, directing air into the reflector and onto the arc tube. This is immediately followed by two textured dimmer/strobe flags. Each one is cut with a V, so that they overlap to form a simple square iris. You can also see that the upper blade has a small piece

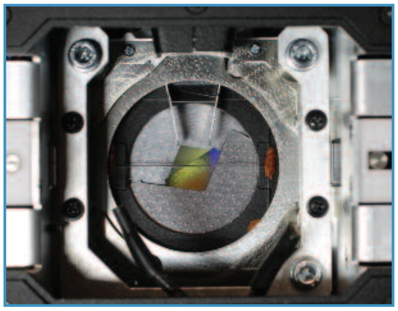

Figure 4: Dimming and homogenizer.

of frosted glass across the V; this presumably softens out the final fade to black. In addition, the mechanical dimmer works together with electronic dimming of the lamp power to provide the final result.

Behind all that you can see a piece of homogenizing glass. This homogenizer is on a motorized arm and is swung into place across the beam. This flag is also part of the systems that switch the unit from beam to spot mode, and, when in spot mode, to help with a flatter field and better gobo projection.

The dimming provided by this system is excellent—smooth and even, with very little evidence of beam artifacts, just some very slight vignetting at the bottom end. Figure 5 shows the default square-law dimming curve. It's a pretty steep curve, more like a cube law than a square, but very smooth and step-free. The MegaPointe also offers a linear law, if preferred.

The same blades provide strobe functionality. I measured strobe speeds up to 11Hz.

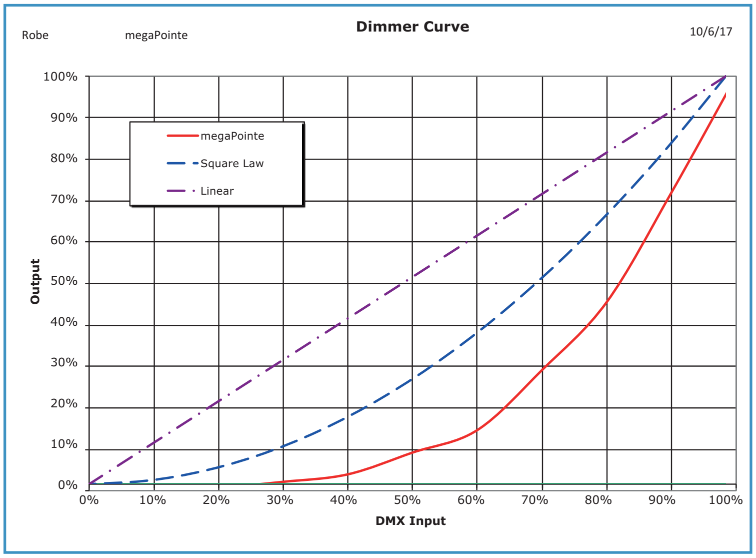

Figure 5: Dimmer curve.

Color systems

Next in line are the color systems. First is a small flag that moves a minus-green dichroic filter across the beam. This effectively reduces some of the energy, spikes around the green, and brings the whole spectrum back a little closer to a black body source. Of course, a filter can only remove energy, not add it, so increasing CRI with a filter inevitably reduces light output. In this case, I found it increased CRI from around 84 to about 89 with a corresponding 30% drop in output. Next, the MegaPointe has a set of conventional CMY color mixing wheels. What's not quite so conventional, though, is how they are positioned: It's a little hard to see in the photographs, but the CMY wheels are all slightly angled so that the glass is not at right angles to the beam. This helps prevent the multiple images of gobos you sometimes see when the light bounces back and forth like a hall of mirrors. I've seen angled color-mixing flags used before, but I can't recall seeing this done with entire wheels. Robe also tells me that it is using a new technique for the wheel patterning that, the company claims, produces a much finer and repeatable pattern. The mixing is certainly one of the best I've seen with CMY dichroics: smooth, with no visible patterning and very slight edge-to-edge color difference.

COLOR MIXING

Color	Cyan	Magenta	Yellow	Red	Green	Blue
Transmission	20%	11%	78%	8.9%	7.9%	0.5%
Color change speed – worst case			0.25 sec			

Immediately after the color mix system is a fixed color wheel with 13 positions plus open hole. This contains hard-to-mix colors, with two different CTO filters. The spokes between the colors are narrow and didn't interfere with split colors too much, as shown in Figure 6. Figure 6 shows split colors both without a gobo, focused back on the color wheel, and with a focused gobo.

Figure 6: Split colors.

COLOR WHEEL

Color	Dk Red	Dk Blue	Yellow	Pale Green	Magenta	Lavender
Transmission	2.6%	1.4%	76%	72%	13%	24%
Pink	Dk Green	CTO	Blue	Orange	CTO 3200	Congo/UV
43%	24%	48%	8.7%	36%	59%	0.3%

COLOR WHEEL SPEED

Color change speed – adjacent	0.1 sec
Color change speed – worst case	0.4 sec
Maximum wheel spin speed	.75 sec/rev = 80 rpm
Minimum wheel spin speed	86 sec/rev = 0.7rpm

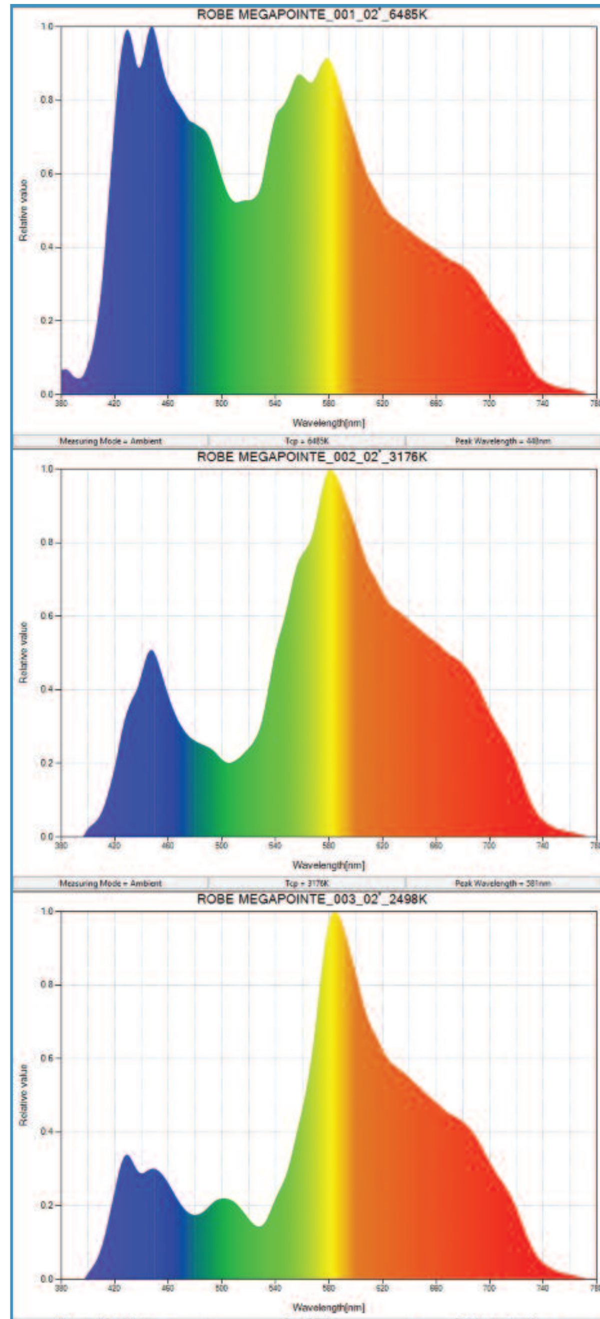

Figure 7: Spectra.

With 13 colors, this is a large wheel; however, movement was snappy and clean.

I measured the color temperature of the MegaPointe with no filters at 6,485K, The CTO 3200 filter reduced it to 3,176K, and the CTO filter took it down to 2,498K. Figure 7 shows the spectra for all three.

Gobo and animation wheels

The MegaPointe has a lot of wheels crammed into a very

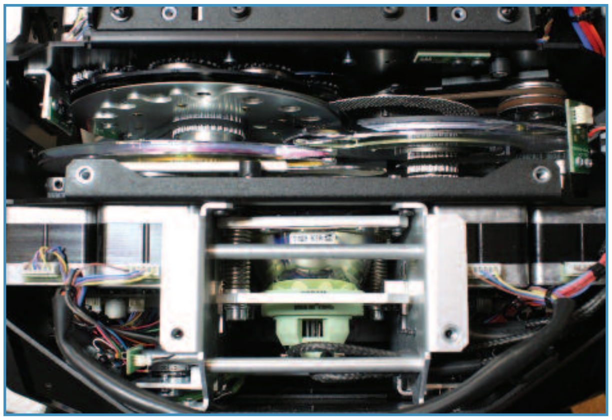

Figure 8: Optical assembly.

small space. Figure 8 shows you the entire module, from color mixing and dim flags at the bottom, to gobo wheels at the top. These very fast optical systems have correspondingly small depth of field, so everything needs to be really close together.

The first imaging component is the fixed gobo wheel. This has 14 fixed patterns, which include four different aperture sizes for aerial beam effects, effectively taking the place of an iris. Movement was crisp.

FIXED GOBO SPEEDS

Gobo change speed – adjacent	0.1 sec
Gobo change speed – worst case	0.4 sec
Maximum wheel spin speed	0.74 sec/rev = 81 rpm
Minimum wheel spin speed	157 sec/rev = 0.4 rpm

The rotating gobo wheel has nine replaceable patterns.

ROTATING GOBO SPEEDS

Gobo change speed – adjacent	0.2 sec
Gobo change speed – worst case	0.5 sec
Maximum gobo spin speed	0.425 sec/rev = 141 rpm
Minimum gobo spin speed	800 sec/rev = 0.075 rpm
Maximum wheel spin speed	0.6 sec/rev = 97 rpm
Minimum wheel spin speed	136 sec/rev = 0.4 rpm

Rotation and indexing were smooth on the rotating wheel, with a good range of rotation speeds. Movement was clean when changing direction, with low hysteresis. I measured the accuracy at 0.19° of hysteresis error, which equates to 0.8" at a throw of 20' (34mm at 10m). Both wheels use a quick-path algorithm to minimize change times.

Figure 9 shows one of the tiny, 12.5mm image, snap-fit replaceable gobos from the rotating wheel, and Figure 10 shows a focus change morphing from the rotating wheel (left) to the fixed wheel (right). The fixed gobos are quite a bit smaller than the rotating, so you do get some vignetting

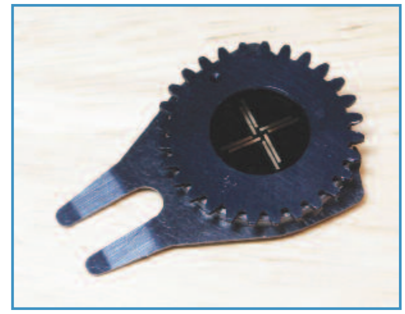

Figure 9: Gobo.

of the rotating image.

Between the two gobo wheels is an animation wheel. This is a single patterned wheel that moves in and across the beam, allowing a change of the apparent rotation angle as it does so. It took approximately 0.2 seconds to insert or remove the wheel. Once in place, it can be rotated at speeds from a maximum of 0.35 sec/rev (171 rpm) down to a glacially slow, almost imperceptible speed.

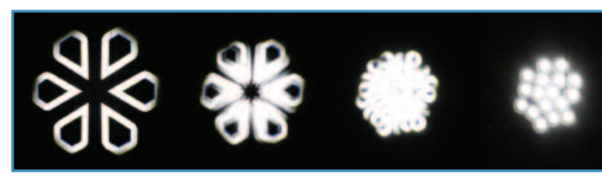

Figure 10: Gobo morph.

Frost and prism

The final elements in the MegaPointe, apart from the lenses, are the frost and prism systems. The MegaPointe has the usual three lens groups, the first two of which move and provide zoom and focus, while the last element is fixed as the large output lens. However, the prism system is far from conventional.

The MegaPointe has two wheels, each with three rotating and indexing prisms. These can be used alone or in combination to produce a very wide range of effects. They are positioned between lens group one and two, so there are some limitations on lens position when in use, but the fixture takes care of that for you. Figure 11 shows one of the wheels with its three prisms, the other is identical but comes in from the other side. I think the prisms are particularly effective when used with the beam mode with many different dynamic effects possible. It's impossible to show those in a photograph, but I hope that Figure 12 gives you some idea. The prisms took a maximum time of one second to insert (this was when a lens had to move out of the way

Figure 11: Prisms.

first) and can then be rotated at speeds from 0.72 sec/rev (83 rpm) down to exceedingly slow. There are control channels, with many pre-programmed effects, for the two prism wheels, which are particularly useful when in aerial beam mode.


Figure 12: Example of prism.

Another trick that the prisms produce is the ability to get a fairly square or rectangular beam by combining a cylindrical barrel prism running north/south on one wheel with another prism running east/west on the other. By using zoom and altering the prisms, you get a form of simple soft-edge beam-shaper control with four combinations of sizes. Again, Robe has given this mode of operation of the prism wheels its own dedicated control channels to make access to it easier: one to set the size, and the other to control the rotation of the rectangle.

As Robe did with the BMFL, the MegaPointe has two separate frost flags, one light and one medium. Either one or both of the filters can be inserted at the same time to give a combined heavy frost effect. Insertion or removal of either of the frost filters took 0.1 seconds. Figure 13 shows the possible frost levels this system gives a fixed gobo.

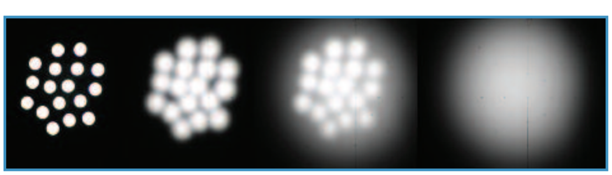
Figure 13: Frost levels.

Figure 14 shows all these systems in place; the two frost flags are opposite one of the prism wheels so they can't be used at the same time. At the top is lens group two, zoom, right next to the fixed output lens while lens group one is off the bottom of the picture.

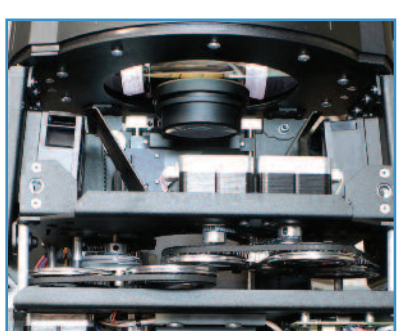
Figure 14: Post imaging optics.

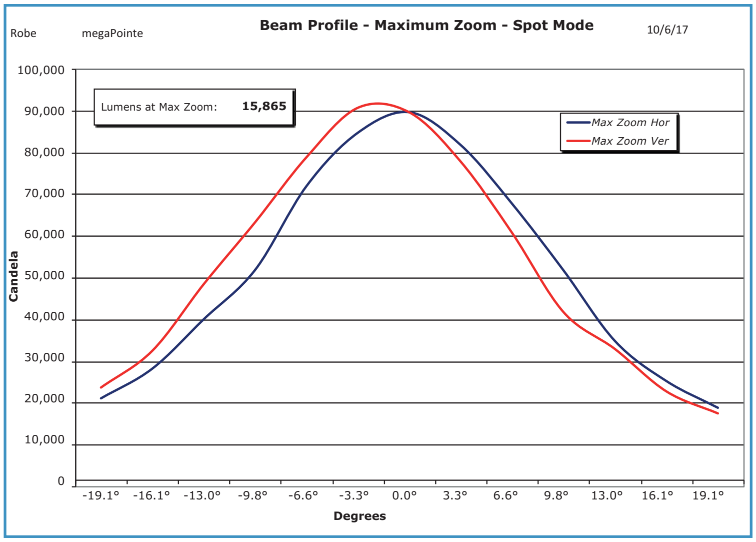

Figure 15: Maximum zoom spot mode.

Lenses and output

I measured zoom as taking 0.9 seconds to move end to end, while focus took 0.5 seconds; both move smoothly and quickly. Now we come to output. In spot mode, I measured MegaPointe as providing 15,865 lumens at the wide angle of 38.2°. Narrow angle in spot mode is 3°. The corresponding output in beam mode was 18,842 lumens. Caveat: It's trickier to measure total lumens in beam mode with a very defined hot spot, as the method I use assumes a relatively smooth light distribution, so I may have increased error in my figures. Also, as I've mentioned before, with this kind of unit lumens are not a good measure of performance with aerial effects, the beam sharpness and contrast are just as, if not more, important. As mentioned above, to switch from spot mode (used for gobos and pattern projection) to beam mode (used for aerial effects), the MegaPointe adjusts the lamp and reflector position and removes the homogenizer so that the beam has a much more pronounced central hot spot. You then insert a gobo from the fixed wheel to reduce the aperture size, effectively cropping the beam down to that hot spot. With the smallest gobo in place, the beam size drops to 0.2°. This gives you an almost parallel tight beam that is very visible in any kind of haze. Figures 15 and 16 show the output at wide angle in spot and beam modes. There's more light in beam mode, with a tighter central peak. Note: Switching the unit into beam mode enforces a smaller maximum aperture on the second gobo wheel, thus effectively reducing the maximum beam size by 50%. Nothing has changed optically, but the outer edges of the beam are cut off in this mode. You can still access all possible options, including the larger aperture if you want to, by entering beam mode manually through control of the lamp position via the 'hot-spot' channel.

Pan and tilt

I measured the pan and tilt range of the Robin MegaPointe at 540° and 265°, respectively. A full-range 540° pan move

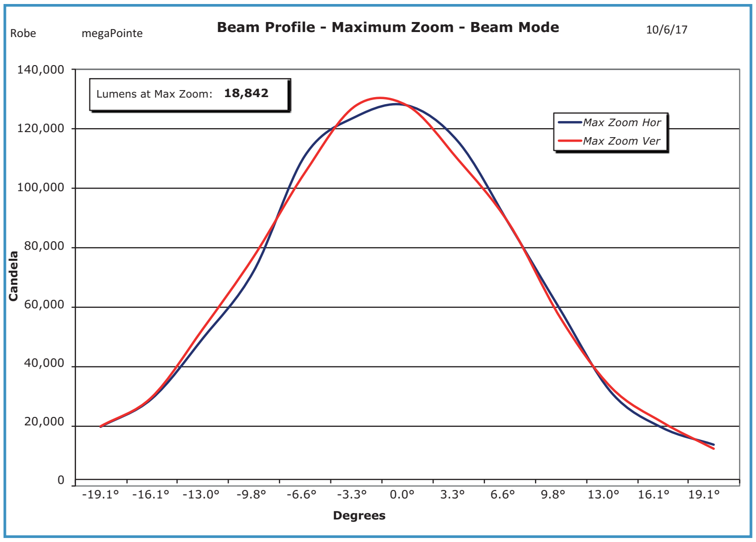

Figure 16: Maximum zoom beam mode.

took 3.4 seconds to complete, while a more typical 180° move finished in 1.75 seconds. Tilt took 2.2 seconds for a full 265° move and 1.7 seconds for 180°. All movements were very smooth, with very little bounce and no visible steppiness. I measured hysteresis on pan at 0.06°, equivalent to 0.2" at 20' (10mm at 10m) while tilt hysteresis was 0.04°, equivalent to 0.2" at 20' (7mm at 10m). Robe is using the same accelerometer-driven pan-and-tilt control it has on its recent products. This gives extremely precise movement with no overshoot or ringing.

Noise

MegaPointe is a small unit and has a 470W short arc lamp, so the bulk of the noise comes from the cooling fans around that lamp. Usually, zoom and focus are the noisiest movement function, but, in this case, it was the prism wheels. They are quite large, heavy wheels being moved quickly.

SOUND LEVELS

	Normal Mode
Ambient	<35 dBA at 1m
Stationary	51.1 dBA at 1m
Homing/Initialization	54.0 dBA at 1m
Pan	51.6 dBA at 1m
Tilt	51.8 dBA at 1m
Color	51.2 dBA at 1m
Gobo	51.2 dBA at 1m
Gobo rotate	51.3 dBA at 1m
Zoom	51.5 dBA at 1m
Focus	51.3 dBA at 1m
Strobe	51.2 dBA at 1m
Animation wheel	51.5 dBA at 1m
Frost	51.1 dBA at 1m
Prism	53.1 dBA at 1m

Homing/initialization time

Full initialization took 57 seconds from either a cold start or a DMX512 reset command. Homing is well-behaved in that the fixture fades out smoothly, resets, and keeps its shutter closed before fading up again after all reset movement is finished. The lamp is cold-restrike, and took between five and six minutes to cool down after being doused before it could be re-struck.

Construction

The MegaPointe isn't quite as modular as some of Robe's other products. However, components are easy to access. Lamp change, as mentioned earlier, is straightforward and could be done in the rig; however, changing gobos does require removing an air duct to access the gobo wheel and is still slightly tricky. The lamp ignitor is mounted in the head, close to the lamp.

Figure 17 shows one of the yokes, with the lamp power wires running through past the tilt motor, belt, and position encoder. The other yoke is similar, but contains the motor data bus and motor power.

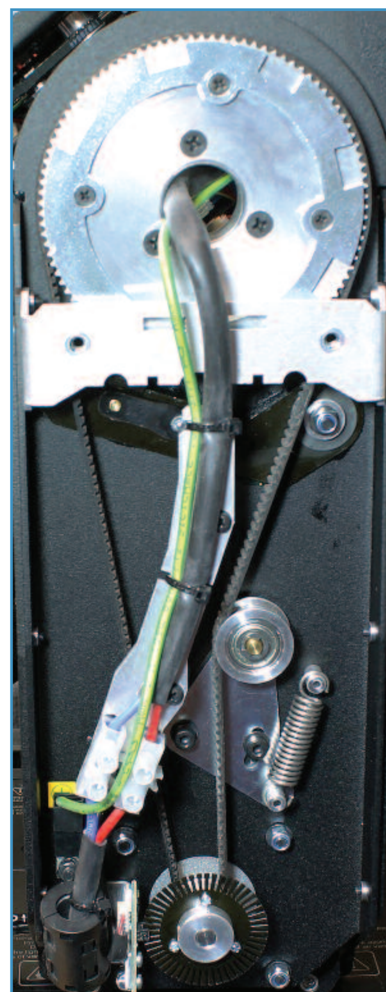

Figure 17: Yoke.

Electronics and control

The Robin MegaPointe uses the now-familiar battery-backed Robe color touch-screen system, providing access to a comprehensive array of setup and service functions (Figure 18). This system also offers RDM, an optional wireless DMX system provided by

Figure 18: Menu.

Figure 19: Connections.

LumenRadio, stand-alone operation, and self-test modes. As well as those I've already mentioned, the DMX control options also provide macro channels and many pre-programmed effects and colors. I tested RDM using the City Theatrical DMXcat and it behaved as expected, giving full access to the unit.

Finally, the connector panel contains a Neutrik powerCON TRUE1 power input, with standard five-pin and three-pin DMX512 connections as well as an RJ45 for Art-Net and a USB socket (next to the display) for diagnostic and service access (Figure 19). As pictured, the MegaPointe will automatically run on any voltage from 100V – 240V, 50Hz/60Hz. When running at full output, I measured power consumption at 5.62A, 661W, 668VA, with a power factor of 0.98.

Well, that's it from end to end for the Robe Robin MegaPointe Spot. As I said at the beginning, it joins a number of others in the second generation of beam/spot units. It has some refinements and some new features, but the decision on how it will look in your venue and whether or not to use it is, as always, completely up to you. Hopefully the information here will aid you in making that decision.

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