

The Blueline Metal Halide Electronic Ballast

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By Richard Harker

For several years the IceCap line of electronic ballasts has been the only option for marine hobbyists looking for an alternative to the traditional tar or core and coil ballast for use with metal halide bulbs. At last year's Marine Aquarium Conference of North America a second line of ballasts was introduced, the Blueline series of 175, 250 and 400 watt ballasts for metal halide bulbs. These ballasts, distributed by Champion Supply, differ in several respects from the IceCap series. While the IceCap ballast boasts of higher output than a tar ballast, the Blueline generates no more light than a tar ballast but does so more efficiently. While the IceCap ballast has a low power ratio and therefore draws considerably more current than a tar ballast, the Blueline draws no more current than a traditional tar ballast.

To compare the Blueline ballast to the IceCap and a tar ballast, I mounted a 175-watt 10,000 degree Kelvin Aqualine Bushke metal halide bulb in a Spiderlight reflector with a connector that would enable me to replace the ballast without disturbing the bulb or reflector. A Li-Cor 2pi PAR sensor connected to a Li-Cor Datalogger recorded the light intensity at approximately 2 feet from the bulb. Sixty light readings were logged and then averaged to create the final intensity. To measure ballast temperature I used a thermocouple also connected to the Li-Cor Datalogger.

	IceCap	Tar	PAR (uE/sec/m ²)	64.6	84.9	75.1	Power	Blueline
consumption (watts)	174	197	209	Power factor	0.95	0.60	0.96	

As the table demonstrates, the Blueline consumes less power than either the tar or the IceCap ballast. It generates less light, however. In contrast, the IceCap ballast consumes nearly as much power as the tar ballast, but generates considerably more light.

Power factor is a measure that indicates how much current is drawn at a given rate of power consumption. The Blueline draws only 1.4 amperes whereas the IceCap draws 2.8 amperes. The higher current draw is generally not a problem unless a hobbyist has a number of ballasts on the same circuit breaker.

The Blueline runs considerably cooler than the tar ballast. The following are differences over ambient temperature for the three ballasts:

	Tar	Degrees Fahrenheit Over Ambient	Blueline	IceCap
	15	23	14	

The tar ballast generates considerably more heat than either the Blueline or the IceCap.

One can better compare the three ballasts by calculating the ratio of light intensity to power consumption. This is the light in PAR per 100 watts consumed:

	Tar	PAR/100 watts	Blueline	IceCap
	43	36	37	

The ratio suggests that the IceCap is considerably more efficient than either the Blueline or the tar ballast. This brings up the fundamental philosophical difference between IceCap and other producers of electronic ballasts. Most commercial electronic ballasts are designed to directly replace tar ballasts. They are designed to match the light output and power factor of a tar ballast while potentially extending the useable life of the bulb. This is why the Blueline so closely matches the performance of the tar ballast. IceCap has chosen to "overdrive" the metal halide bulb to generate more light. There are those who believe that the IceCap approach will shorten the usable life of a metal halide bulb, although IceCap argues that it does not. I have begun a long term study that should answer the question in a few months. In the meantime, the hobbyist seeking maximum light will find that the IceCap produces more light. We will have to wait a few months to see whether there is any cost in longevity.