

SNOW-BRIGHT™

FOR RACING!

Overview –

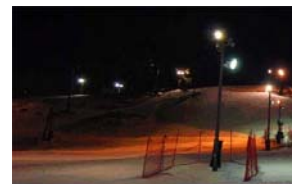
Ski Racing requires optimum visual acuity that includes depth perception, object resolution, color identification, and contrast. Lighting defines all aspects of a racer's visual experience. The development of Snow-Bright™ lighting technology has turned nighttime races and training into premier experiences by providing all elements of visual comprehension on slopes for maximum performance and safety. Now, night racing under Snow-Bright™ lights surpasses the daytime by providing totally consistent and uniform lighting without interference from clouds, haze, or overcast. Each racer enjoys the exact same visual experience, eliminating daytime inconsistencies. At the same time, the Snow-Bright™ spectrum and intensity eliminates the glare associated with traditional metal halide (MH), high pressure sodium (HPS), and new LED lighting.

Race Slope Lighting –

There are several challenges when illuminating ski race courses. The first is creating a balance between lighting intensity and the reflective properties of the snow surface. Excessive lighting creates too much glare while insufficient light leads to lost resolution and depth perception. Racers need to be able to precisely judge distance between gates, angle of attack, gate color, snow conditions, and relative position. When these visual perception requirements are presented to an ophthalmologist, the following specifications invariably result:

- ◆ Full spectrum with emphasis on “visually effective lumens” between 520nm and 690nm
- ◆ Color temperature above 6,500K
- ◆ High “color rendition index” preferably above 90
- ◆ Flicker-free and harmonic-free operation (no strobe effect)
- ◆ Wide dispersion
- ◆ Maximum diffusion

With these in mind, conventional lighting and even new LED fixtures fail to provide the right illumination for race venues. For sure, the monochromatic orange light output of high pressure sodium (HPS) lamps has a narrow spectrum with an extremely low color temperature. This results in very poor color rendition. Sodium fixtures usually have highly defined “V” shaped beams that create voids. Sodium lamps exhibit 60-cycle harmonics from the 60hz AC electrical input. Metal halide (MH) has a more appropriate spectrum, but still



Sodium is monochromatic orange, leaving sharp “V” in snow.

has high output in the ultra-violet, near violet, and infrared ranges. This means that up to 40% of the light from MH lamps cannot be seen by a racer. To compensate, race courses are often over illuminated, creating excessive glare and flattening. MH also suffer from 60-cycle harmonics... particularly as bulbs and ballasts age.

LED floodlights have become popular, but they are not appropriate for slope lighting. LEDs generally have a color rendition index (CRI) of 70 or below. LEDs tend to have a narrow dispersion similar to a flashlight focus and the intensity at the source is dangerous to the eye. LEDs cannot be focused in the upward direction of competition. More importantly, LEDs suffer from flicker that generates a strobe effect. This can disorient a competitor. A skier traveling at 50mph can lose up to half a foot of visual perception under LED lighting. LEDs have extremely high glare that can be blinding. The most common LED spectrums are not correctly matched to the reflective properties of snow, causing flat conditions and poor visual perception.

SNOW-BRIGHT™ The Best Choice for Racing!

Snow-Bright™ lighting is an entirely new and special approach to snow illumination. Using magnetic induction technology (MIL), the Snow-Bright™ spectrum is precisely matched to the reflective properties of *all types of snow*; from powder to granular to hard pack, and even ice. The Snow-Bright™ color rendition index (CRI) exceeds 90 with a full spectrum that emphasizes visually effective lumens. Snow-Bright™ lights are not hot like MH and HPS. There is no wasted light in the ultraviolet or infrared range. This means a 300W Snow-Bright™ fixture can generate more usable light than a 1,000W MH or 1,200W HPS.

Snow-Bright™ lights have absolutely no flicker. Magnetic induction technology is the only lighting that provides a constant and steady light. This adds tremendous control and safety for nighttime training and events. The light remains consistent throughout the evening session. Snow-Bright™ uses full diffusion nano-particle reflectors that evenly disperse light to diminish glare and increase visual perception. Snow-Bright™ is so effective that it passes Dark Sky compliance for some of the strictest light pollution regulations and guidelines. At the same time, voids are eliminated by the diffused output, making any lighting plan more efficient and effective.

The most striking and interesting aspect of Snow-Bright™ illumination is the total lack of glare. This is because the Snow-Bright™ spectrum actually refracts along the snow surface. This gives the appearance of a soft glow and may be mistaken as less light. This effect is precisely what gives Snow-Bright™ the visual advantage over MH, HPS, and LED. Less glare means less eye strain and better visual concentration. Glare looks bright, but is bad for sight.

Save 80% and More in Electricity! –

Snow-Bright™ lights use 70% less electricity to produce 2.77 times more usable light. A typical MH or HPS ballast can range up to 150W while Snow-Bright™ ballasts use only 15W and have a .98 power factor. Most importantly, MH, HPS, and LED lamps use up to 20 times their operating current just to turn on. This is called “in-rush” current. Snow-Bright™ has negligible in-rush current. This can lower demand charges and drop the entire electric bill by thousands of dollars.

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