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reporting from
San Francisco.**

Last year I described the revolution that HB LEDs brought to the navigational buoy industry. Since then, HB-LEDs have been used as sealed units in marker buoys by the local fishermen in New England and now they are being extended to the boating

public. The latest benefit being provided by the ever improving LED is that of navigational safety in the form of LED based watertight housings and snap-in replacements for prior generations of marine navigational bulbs.

From buoys to boats HB-LED for navigation

This boating utility is derived from established LED benefits such as improved brightness, long lifetime, convenience and the lower power consumption. In some markets this also leads to lower costs. According to the founders of Orca Green Marine Technology Corp (OGM), Otto (Hobie) Caldwell and Meg Littlefield, the Argo Navis series of lighting products were conceived during a Harvest Moon regatta in the fall of 2002 – idyllic sounding circumstances that turned out to be in reality a grueling race.

The company, based in Kemah, Texas and founded in November 2002, has wasted little time in bringing a range of navigational lighting products to market, starting with a low power, bi-colour LED nav-light (0.1 amp at 12V DC) in June 2003.

These navigational products are very versatile from the user point of view, since they can be powered by either a 12V battery, or relatively low cost AA, C or D battery packs and still meet Coast Guard regulations of horizontal and vertical sector visibilities that exceed 2 nautical miles. The almost 100% one colour output of LEDs of the correct wavelength, plus strict criteria for LED brightness and viewing angle, allows the lamps to easily meet the Coast Guard '72 COLREGS' (without the use of filters, therefore no filter deterioration – darkening, cracking or clouding – occurs with age).

The latest OGM products include complete LED-based lights, such as the Argo Navis unit, in a waterproof housing (see

Figure 1). Designed as a bow light, it can mount at the front of a boat for years at a time. Its rugged, waterproof housing will take countless waves in rough seas (a resistance to 3 feet of salt water for one hour is specified!).

Also included in the Argo Navis Series are snap-in LED bulb-replacement boards to convert older bulb serviced navigational lamps into long-life LED fixtures (see Figure 2.) and stern lights that meet specifications for power and sail boats up to 65 feet in length.

The typical sailor's response has been very positive (and sounds a little like last month's Amish story) with such comments as 'the energy to run two 25W nav-light incandescent bulbs (at



Pelicans on the Phoenix - boats such as these in San Diego are likely to take new navigational LED lights with alacrity
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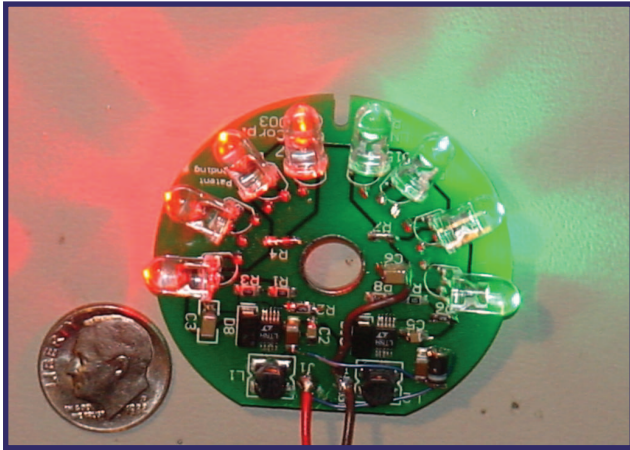


Figure 1 The Argo Navis Series uses a patent-pending design for power regulation, which ensures the lights burn at full brightness as battery voltage drops from 16V down to 3V

12V) for 10 hours uses as much energy as my on-board refrigerator uses for the day'.

Needing about 3 volts to operate, LEDs draw much less power and greatly increase the safety factor by extending battery life between charges by solar, diesel or other sources — a benefit that is really valuable for long distance sailing — such as a month without charging!

One of the key features of the New Orca Green product line is the flexibility of their novel, constant current LED power supplies for which patent protection has been applied.

Using small surface mount components, these switching regulators occupy a dime-sized area and are integrated into the lighting fixture, one for each colour in the bi-colour bow light. They can make possible a constant current of 20 milliamps and give a constant LED brightness across a 3 to 18V input voltage range.

This feature, the Company believes, will provide the best marine lighting-market options and a distinct market advantage in the near term. This power regulator also makes the ability to use standard and relatively inexpensive 1.5V battery packs in an emergency an added safety feature.

The next product in line will be the TriAnchor light, a weatherproof tri-colour/anchor light (red, white and green), which is expected to be released in November or early December.

In addition to providing the red and green (port and starboard) and white (stern) navigational identification, it gives the required all around white lighting for riding at anchor.

When anchored, the low power drain of the white LEDs (only 2.16 watts or 0.18 amp compared with 25W for bulb operated lamps) provides a time benefit by reducing the frequent need to run the engine to recharge the battery.

It also makes solar recharging of the battery a realistic option especially for long distance sailing. The TriAnchor unit is designed to sit at the masthead for years at a time unattended, instead of someone having to climb a 40 or 50ft (11m) mast, every year or two to replace a bulb.

Its small size (only 4" high) will also be an advantage for masthead mounting.

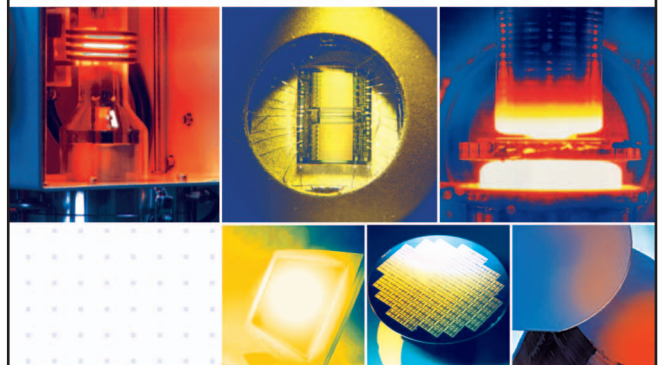
With the number of small boats around the world that could benefit from the introduction of the Argo Navis LED navigation lights



Figure 2 Bulb replacement inserts give 'Snap-In' LED power efficiencies without having to replace their existing housings.

being in the millions, this market must surely become a significant demand segment of the future for high brightness LEDs and add another growth market to the HB-LED holster. So all you boating enthusiasts check out the benefits of LED marine lighting at www.orcagreen.com and help in the growth of another power conserving and user-friendly HB-LED market.

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