



## PROJECT OVERVIEW

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|---------------------|--|
| <b>Application:</b> | Replace traditional light source in 4th Order drum lens  |
| <b>Product:</b>     | LED Light Source   |
| <b>Site:</b>        | Emery Point Lighthouse, Darwin GP3 (1.0) every 15 sec WR |
| <b>Owners:</b>      | Darwin Port Corporation                                  |
| <b>Date:</b>        | November 2013  |
| <b>Location:</b>    | Northern Territory, Australia                            |

## BENEFITS

- 1000W lamp replaced with 40W LED
- Long life LEDs are used, therefore a moving lamp changer is no longer required
- High luminous efficiency generates huge savings in energy and maintenance
- Suitable for use in both revolving and fixed optics
- Capable of continuous or flashing operation
- Retains the historical heritage of the lighthouse
- 4% of original load makes solar power viable

## Sealite's revolutionary LED Light source offers a high efficiency solution to modernise optics.

### Background

Emery Point is an active Lighthouse, established in 1915 – Built during the “Golden Age of Australian Lighthouses”. The structure is a robust square metal skeletal tower and was the only navigational aid to remain functional in the path of the Cyclone Tracy when it hit Darwin in 1974. The traditional lantern house was equipped with a 4th order prismatic drum lens fitted with a red sector, which was originally powered by acetylene gas and then converted to a 120 volt 1000 Watt electric lamp changer.

### Solution

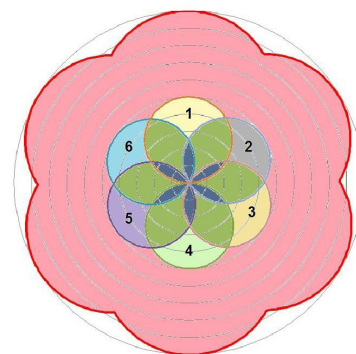
The tungsten-halogen light source comprised of two 1,000W lamps mounted on a mechanical lamp changer that required regular maintenance. The flash character electronics had become unreliable, and a larger battery bank was needed as a back up to the mains power. Existing customer, Darwin Port Corporation chose Sealite's LED Light Source as it is the most optically efficient method of lighting a 4th Order lens. The light source would retain the traditional historical value, provide a reliable high luminous efficiency, single back up battery and require less maintenance and significantly lower installation costs. This ensured a major cost saving to the Port.

## LED Light Source Northern Territory, Australia



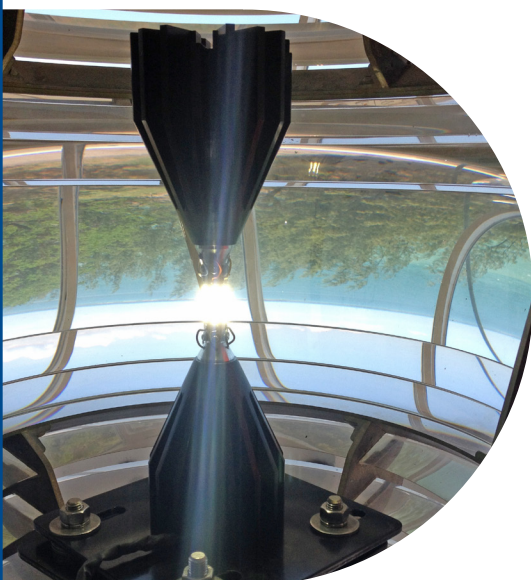
### LED benefits

The LED Light Source uses 6 surface-emitting LEDs with an overall power level of 40W. To provide additional optical standby coverage two controllers were provided driving LED numbers 1, 3 and 5 in the diagram from controller 1 and LED's 2, 4 and 6 from controller 2. Due to the layout of the LED's should one LED fail the light from the adjacent LED's will offer standby light at reduced range. Surface emitting LEDs used in the LED Light Source are around eight times more efficient than the previously installed tungsten filament lamp. Four or six of these devices are mounted on a heat sink to provide an omni-directional light output and to keep the LEDs cool.



Typical light distribution.

Old style tungsten-halogen light source



### Expected Lifetime

Filament lamps have an expected life of about 2000 hours at best, but on average 500 hours. Since the expected lifetime of the LED is around 10 years, there is no longer a need to provide a lamp changer with moving parts, reducing the need of service visits.

### Design

The design originated from a manufacturing agreement with Trinity House to produce a LED light source, developed by the General Lighthouse Authorities Research and Radionavigation Directorate. The light source is designed for modernisation of large lighthouse prismatic lenses, increasing their efficiency and reducing maintenance.

**The innovative Sealite LED Light Source delivers long life, high luminous efficiency and reduced energy and maintenance costs - It offers a simple and economical solution for conversion of most stationary or rotating lighthouse optics.**

Sealite's LED Lighthouse Optic

Darwin Port Corporation recently welcomed the installation of Sealite LED technology to the historic Emery Point Lighthouse. Praising its impressive functionality, Marine Pilot, Captain Alistair Logan, said that **"the Sealite LED light has an impressive clarity and range. It was able to be installed without disruption to the historic structure, maintaining the integrity and antique character of the original glass lens."**



Emery Point Lighthouse