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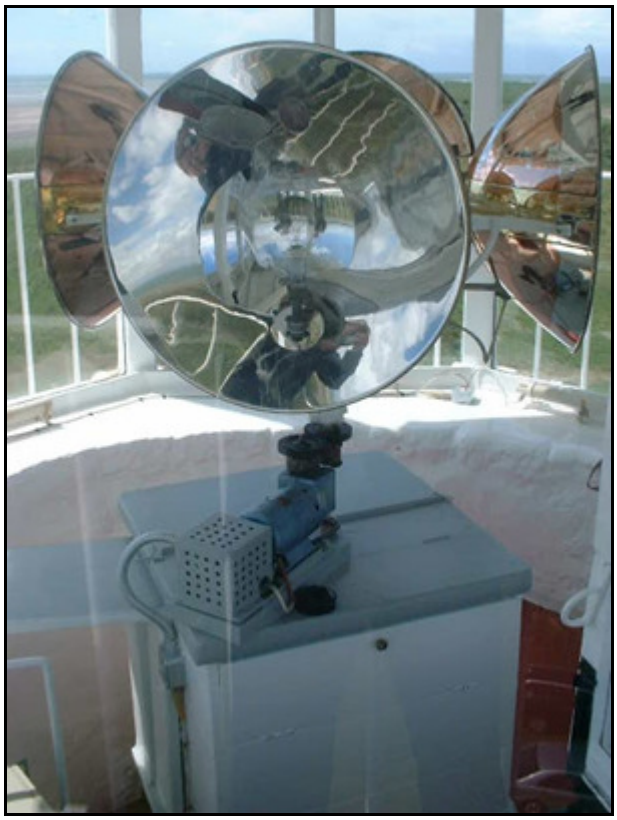
## Application Note 30976 Walney Island Lighthouse

### Lighthouse History :

The lighthouse was established in 1790 with an array of 4 Stevenson parabolic reflectors each lit with whale oil lamps. It revolved by clockwork weights, and had been electrified by Stone Chance in 1953. Electric power came from a manually started diesel generator.



4 x 250 watts lamps were later connected to mains electricity, and the diesels retained as manually started back up power. In 2003 it was decided that the Keepers would be retired, and the site automated, incorporating remote monitoring to the Harbourmasters Office 15 miles away across the Estuary.

### Project Requirement:

The project aim was to retain the existing range of 23 miles and character of FL 15 sec (1.5 sec flash) but install a modern optic, with new main and standby lamp, and an additional 10 mile emergency light which would operate on a stand-alone basis and change over without instruction as the office is not manned 24 hours per day. Savings in power were also considered to be advantageous.

### Our Technical Solution:

1. 23 miles range requires an effective intensity of 400,000cds. In order to achieve this we used a single 70 watt cdmt lamp mounted inside a PRL400 pedestal and revolved @ 1/2 RPM with 8 panels achieving a flash length of 0.53 sec. Being an 8 panel lens assembly a slow rotation was achieved without the use of etched envelope lamps.

2. Since it was decided to retire the diesel generator set, the Client had to further decide whether the Main and Standby lamps were to be powered from mains or battery. Selecting battery meant the use of High efficiency high frequency DC lamp ballast rather than low efficiency mains ballast. The client also decided to have main and standby lamps on same full 23 mile intensity.

3. By floating the complete lighthouse on a 12 volt DC supply of 800 AH capacity, it provided the lighthouse with 5 nights full operation to 50 percent capacity and a further 5 nights in an absolute emergency.

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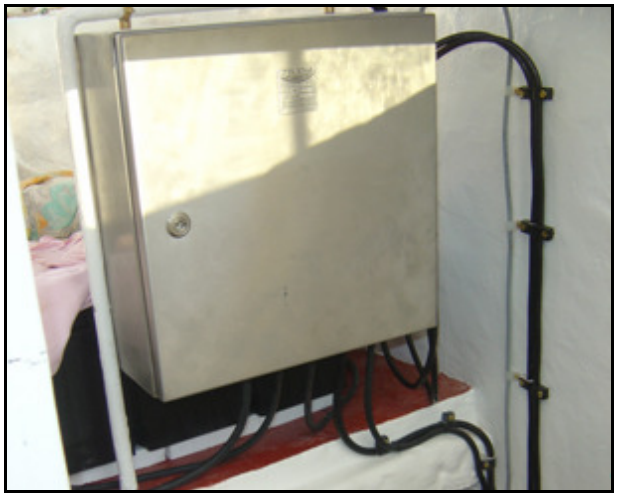
### Our Technical Solution: (Cont)

4. Only in the event of mains failure and rotation failure of the pedestal was the 10 mile PL300 emergency light to operate.

5. It was important to the client to have the status of the light monitored at all times even if the standby battery was exhausted. As a result the power supply to the monitoring and main cubicle power was provided from a separate power supply.



**Telemetry power supply.**

6. The client decided that due to the condition of the interior of the lighthouse and despite the main light being mounted internally that the pedestal should be installed in its own self contained weatherproof enclosure.

The new system was commissioned in 23rd Oct 2003 Capt Rowland of Lancaster Harbour Commissioners, who has been very satisfied with the conversion. In his opinion the new light out performs the old light's published performance - suggesting perhaps that the original light was not achieving its published range.

The new light exceeds the old light's brilliance published range with only 70 watts of power compared to 1000 watts previously burned - a considerable saving in his electricity costs. Since the lighthouse is now automated, he has no keepers wage costs which has offset the automation costs. At a later date due to the remoteness and exposure of the electric supply he now has the option should he desire to power the site from solar since it now only consumes 70 watts of power at 12 volts DC. As the site is also a bird sanctuary with considerable exposure to bird droppings, he also has the alternative to power the entire station via a Methanol Fuel cell.