OLDHAM | SETTING THE STANDARD FOR PERFORMANCE AND LONGEVITY: G-SERIES (HALOGEN) LAMPS

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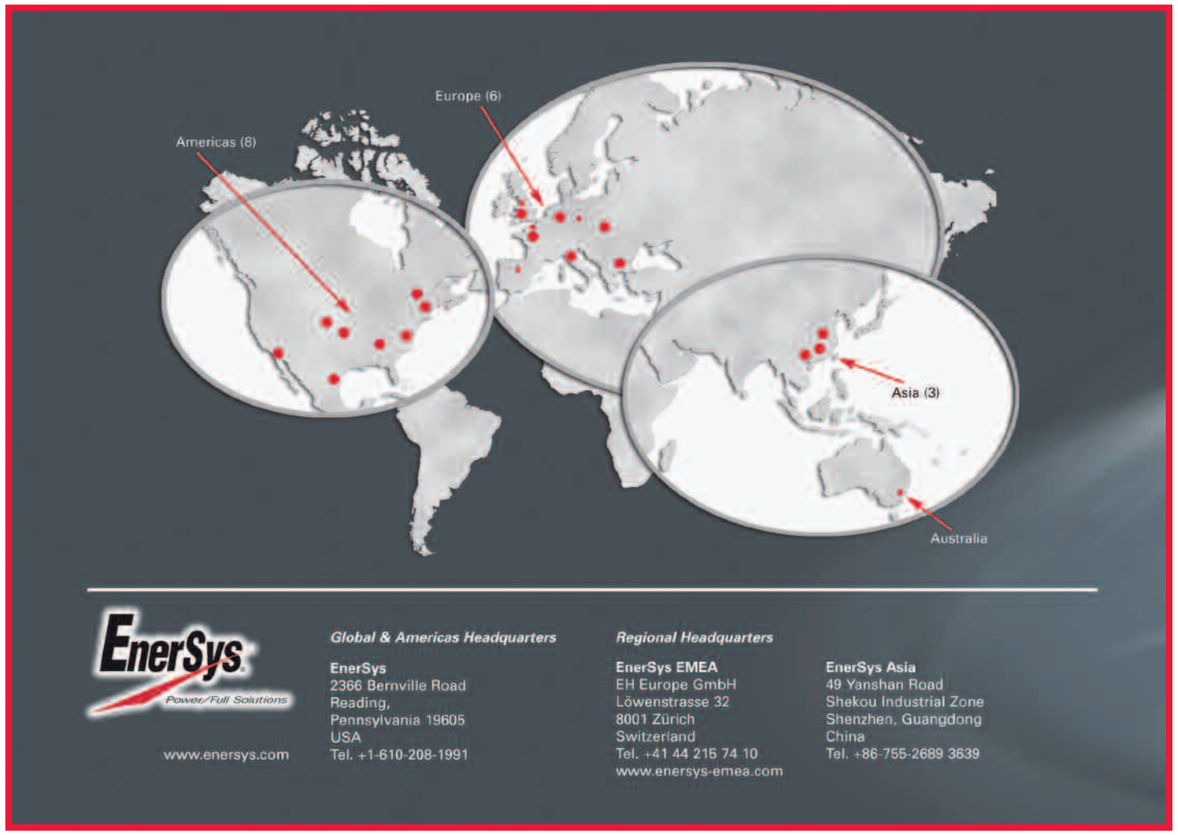

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G-SERIES March 2008

The heart of the G-series mining lamps is the 48 Lumen bulb combined with the unique focussed reflector. The combination of these two elements, designed by, and manufactured specifically for Enersys, produces a light source that is focussed to give a spot of 5000 lumens at 1 metre. These performance levels surpass all conventional competitor lamps, and have helped to establish the robust G-series design as the market-leading mining lamp for the last 50 years.

Outstanding lighting performance, ease of maintenance and low cost of ownership have been the major factors influencing the design of this lamp. Every component in this rugged headpiece can be replaced in order to make it the "lowest cost of ownership" caplamp in the world.

The lamp is ATEX and IEC Ex certified for use in Coal mines and other hazardous environments

The main bulb, with its precision reflector assembly, achieves a spot of 9500 Cd over 3 degrees (this is the normal area of focussed sight for the human eye) and more than 10 Cd over 120 degrees. A great deal of research was undertaken by the University of New South Wales (Australia) in the late1980's and the light distribution of the Oldham main light source uses some of this research to provide the optimal working light.

LIGHT OUTPUT GT CAPLAMP

The retina of the human eye plays a critical role in how we see. The retina, located at the back of the eyeball, contains photoreceptors that convert light into electrical impulses that travel through the optic nerve to the brain. There are two types of photoreceptors: cones and rods; rods have greater short-wavelength spectral sensitivity than cones and are more sensitive to light. The cones work in the longer light wavelengths and are more sensitive to colour.

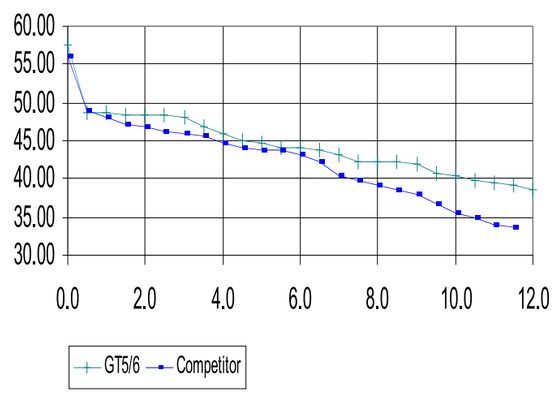
The halogen bulb fitted in the G headpiece has a greater intensity in the long-wave region of the light spectrum when compared with other light sources. This activates the cones and enables the eye to see colour, making the lamp more suitable for seeing detail such as the ore vein in a nickel mine.

With its precisely focussed beam, and high overall average illuminance, the tight beam profile of the G-type caplamp clearly shows the beneficial properties for viewing distant objects or for conducting fine detail work tasks that require high illuminance.

LIGHT OUTPUT

The battery voltage seriously effects the light output from a halogen bulb. A small percentage change in voltage greatly reduces the lumen output of the light source. To show this effect the following graph has been produced. The "Oldham" main bulb is rated at 48 L (Lumens) and has a burning life of more than 1000 hours. A 4v 0.46A krypton bulb provides the auxiliary 'pilot light'. This bulb is rated so as to ensure that if a person becomes trapped in a mine, a reliable low-level light source will be provided for a minimum of 24 hours.

BULB PERFORMANCE



The G Lamp can be married up to the new high performance Lithium-ion battery (type L16) and is also fully compatible with the world-renowned lead-acid T5 battery.

LITHIUM-ION BATTERY, TYPE L16:

This ultra lightweight battery (just 500gms) has a working capacity of 16 Ah to provide high performance lighting for a full 12-hour operational shift. With a dual internal charge control circuit, the battery has higher levels of operational safety during charge and discharge than any other battery offered in the market today. The battery must be recharged on a charger that is specifically programmed for this technology.

LEAD-ACID BATTERY, TYPE T5:

The robust 16 Ah T5 battery has been the mainstay of mining lamps world wide, and has provided miners with consistent and reliable high performance lighting for full 12-hour working shifts since its development from the T2 in 2002. The battery gives a 3-year life and is rugged enough to survive the arduous rigors of the mining environment

BATTERY AND LAMPTOP DESIGN:

Intermodality has been deliberately designed into the Oldham range so that lamptops and batteries from each technology are compatible with all other Oldham products. This means that different battery and lamptop technologies are interchangeable with each other, enabling easier adoption of, and lower cost of transfer between technologies