Press Release

Ring Automotive Adopts ProMetric™ Imaging Photometer for Automotive Headlamp Testing

August 26th 2008: Pro-Lite Technology LLP (Cranfield, England) today announced that it has delivered a ProMetric™ CCD imaging photometer to Ring Automotive (Leeds, England) to assist in the development and testing of high performance vehicle lamps and lighting.

Ring Automotive Ltd is a market leader in the automotive lighting aftermarket sector. A key market for the company is the supply of performance bulb upgrades as replacements for the original equipment (OE) lamps fitted to car headlights. The company needed a way of comparing the illuminance, chromaticity and colour temperature of their aftermarket bulbs and competitor products against OE lamps in order to establish their performance benefits. In addition, Ring needed a means of qualifying its lighting products and of assessing the performance of their lamps against the requirements specified in the applicable UN ECE R20 vehicle lighting regulations.

Traditionally, the illumination performance of a headlamp has been determined using a specialist device called a goniophotometer. This type of instrument places the headlamp on a motorised stage that rotates and tilts the headlamp with respect to a photometer that views the headlamp along a fixed direction of view. Goniometric headlamp measurements are normally performed in a dark room at a distance of 25m. The photometer records the illuminance from the headlamp one angle at a time. Goniometric measurements of this type achieve high accuracy but have a high capital cost, generally limiting their use to national standards testing and type-approval laboratories. The relatively slow speed of measurement of a traditional goniophotometer also renders comparative testing of light sources to be time consuming and limited in scope.
Peter Harding, Ring’s Commercial Director, recognised that he needed to invest in a photometric system to support their business development efforts in the lighting market. However, the capital investment associated with a traditional goniometer, the need for a large dark room and other technical limitations were obvious deterrents. Peter, keen to explore all options, approached Pro-Lite Technology LLP, the Cranfield-based light measurement specialists. Pro-Lite supplies equipment for almost any light measurement application and was ideally placed to provide a solution to Ring’s needs.

Pro-Lite proposed a novel device called an “imaging photometer” which is a powerful, CCD-based light and colour measurement instrument that provides for vastly increased productivity compared with traditional goniometric and “spot” measurements of lamps. Whereas a goniophotometer can only measure the illuminance and colour from the lamp one direction at a time, a CCD-based imaging photometer can measure millions of angles simultaneously. Moreover, because the imaging photometer views the whole illumination pattern at once, localised illuminance and colour differences can be easily detected – artefacts that goniometric measurements performed at defined angles might easily miss. In addition, the capital cost of an imaging photometer is much less than that required for even the most basic motorised goniophotometer. The case in favour of an imaging photometer was quickly established.

Ring selected a ProMetric model PM-1423F-1 CCD imaging photometer which is manufactured by Seattle-based Radiant Imaging and sold and supported by Pro-Lite in the UK. This is a 1536 x 1024 pixel camera with 16,000:1 photometric sensitivity and spectral response accurately matched to the CIE tristimulus observer functions. This provided the necessary level of illuminance sensitivity, spatial resolution and spectral match to the human visual response. It also comes complete with powerful application software that simplifies and automates routine tasks such as setting exposure times, performing calibrations and reporting the illuminance, chromaticity and colour temperature of user-defined points-of-interest. Its powerful, built-in analysis tools include illuminance and colour analysis, simplified pass/fail reporting and multiple graphing and report capabilities.

Of importance to Ring was the ability of the chosen measurement system to analyse the illuminance pattern from a headlight in accordance with the multi-point test pattern specified in ECE regulation R20. The information necessary to perform this analysis manually was already contained within the standard ProMetric software. However, to further standardise the testing of Ring’s lamps and enhance accuracy, consistency and productivity, Radiant Imaging agreed to develop an additional software application for the ProMetric camera that would automatically determine the datum position (“beam elbow”) in the illumination pattern, align the camera image to this position, measure the illuminance at the ECE R20 specified test points for left or right hand drive and provide for simplified pass/fail type reporting of the device under test. This application is called ProMetric Headlamp Test (PM HL-Test for short) and is now up and running in the photometric laboratory at Ring Automotive in Leeds.
In more detail, the PM HL-Test software includes the following capabilities in addition to those already contained in the standard ProMetric application: the software reports the peak illuminance within defined areas as well as the size of isolux curves and average intensity in an isolux area; the software supports manual "aiming" and provides the ability to software adjust the beam position up or down based on the headlamp low beam cut-off position; in addition, the software provides a “bird’s eye” rendition of the illumination pattern which makes the communication of performance differences between different lamps immediately obvious even to the layperson.

Douglas Kreysar, Radiant Imaging’s CEO commented: “While the ProMetric system has been used in the automotive lighting field for several years, I am extremely pleased that we have developed a product that provides specific solutions for headlamp measurement and analysis. These tools provide further productivity gains for the use of the ProMetric system for automotive lighting”.

Web link: [http://www.pro-lite.co.uk/File/case_study_automotive_headlamps.php](http://www.pro-lite.co.uk/File/case_study_automotive_headlamps.php)

About Pro-Lite: Pro-Lite is a specialist distributor providing value-added service to the laser and optical radiation measurement communities in the UK and Ireland. Pro-Lite supplies lasers, laser safety eyewear, laser power and energy meters, precision opto-mechanics, as well as a complete spectrum of equipment for measuring optical radiation and the optical properties of materials. Pro-Lite also designed and delivers the popular “Practical Light & Colour Measurement” course in association with Birmingham-based Photonics Cluster (UK).

FOR FURTHER INFORMATION:

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