Liquid lens shrinks laser measuring device

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The Arden Photonics BQM-50 is based on an NPL prototype.

Lasers are widely used in many areas of science, industry and medicine and the quality of the beams they produce needs to be measured to make sure they perform correctly. As electronic devices become smaller and

smaller over time, these measurements become ever more important, as laser light needs to be directed onto smaller targets.

There are already commercial measuring devices available, but these can be slow, cumbersome and difficult to set up. The National Physical Laboratory (NPL) developed a prototype to shrink these devices to a more manageable size by using commercially produced liquid lens technology, which eliminates the need to physically move a lens when focusing the laser beam onto a detector. This prototype device has now been taken into production by UK-based Arden Photonics as the 'BQM-50 Beam Propagation Analyser Compact'.

The detector used in the device is a low profile, high pixel-density charge-coupled device (CCD) sensor. The liquid lens is placed as close as possible to the detection array, further minimising the device footprint, and is combined with a traditional lens to optimise the optical power of the system.

During testing it was shown that the commercial liquid lens behaves in a reproducible manner with both an increase and decrease in voltage signal. NPL also calibrated the liquid lens using a series of fixed lenses to check its performance.

Arden Photonics is a UK company that develops, manufactures and sells products for the photonics industry and provides consultancy in the areas of optical fibre technology and optical measurements. The company will launch the device at the LASER World of PHOTONICS event in Munich, Germany, on 13-15 May 2013 (Hall B1, Booth 163). The product comes packaged with simple to use software that gives complete control over the measurement via a USB 2.0 interface for connection to a laptop or desktop computer.

This partnership came about through NPL Technology Applied - a co-

branding scheme for instrumentation and software technology developed by NPL and incorporated into commercial products.

David Robinson, founder and managing director of Arden Photonics, said:

"The partnership with NPL has been a great success for Arden Photonics. It has given us access to patented technology which we believe will allow many more laser users to obtain the information they need to optimise their system's performance."

The initial prototype of the device was developed at NPL by Simon Hall, who said:

"A small footprint device, that has the advantage of an array detection system, can be used to greatly improve the general measurement and characterisation of laser systems without sacrificing accuracy."

The finished product is one of the most compact and capable devices available and will open up new possibilities for laser control.

View a poster that describes the original NPL Laser Beam Propagation Analyser prototype.

Provided by National Physical Laboratory