ePulse: Laser Measurement News

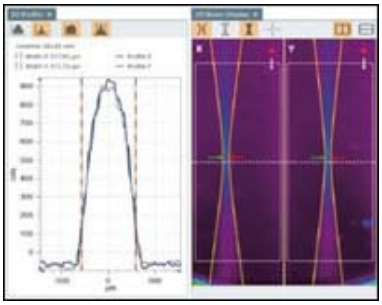
November/December 2018

Welcome to **ePulse: Laser Measurement News**, a review of new developments in laser beam measurements, beam diagnostics, and beam profiling. Each issue contains industry news, product information, and technical tips to help you solve challenging laser measurement and spectral analysis requirements. Please forward to interested colleagues or have them subscribe.

Features

Fast Beam Characterization

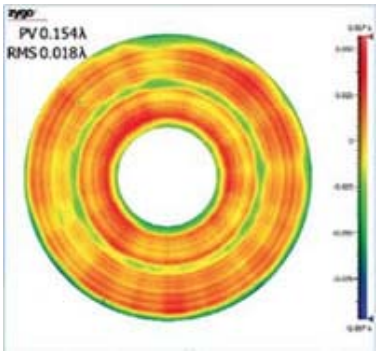
By Christian Dini, Director of Global Business Development, Ophir, Andreas Bünting, Process Developer, Daimler AG, and Mladen Brčina, Process Developer, Daimler AG



The power-to-weight ratio plays a key role in automotive construction: the lighter the powertrain components of the car or truck, the lower the emissions and fuel consumption. It can also lead to fewer parts that are at higher risk of wear and tear. In this *Laser Technik Journal* article, automotive experts at Daimler talk about successfully optimizing the design and assembly of their differential gears, replacing bolted joints with laser welds. Laser Welding.

Manufacturing High-Performance Mirrors

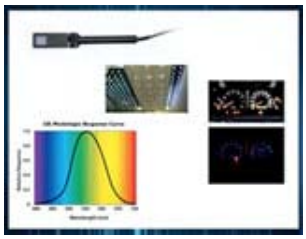
By Nissim Asida, Ph.D., Engineering Director, Eliyahu Bender, Design Engineer, IR Optics, and David Alexander, Senior Optical Engineer, Ophir Optics



When it comes to long-range, multispectral optical systems, large mirrors play an integral role. There are tens of thousands of optical units containing large mirrors around the globe. With minimum diameters starting at 200 mm, the largest mirrors range from 8.2 m in diameter (single mirrors) to over 10 m (segmented). They take many shapes - spherical, aspheric, parabolic, or freeform - and are used for a wide spectrum of light, including visible, UV, and IR. In this *Photonics Spectra* article, we discuss the unique issues large mirrors present for optical manufacturers. Large Mirrors.

Videos of the Month

Photodiode Sensors for Measuring Very Low Powers
In this short "basics" video, we review the use of photodiode sensors for measuring very low laser powers. Video: Photodiode Sensors.



Pyrocam Pyroelectric Camera
The Spiricon Pyrocam pyroelectric camera is the overwhelming choice for laser beam diagnostics of IR and UV lasers and high temperature thermal imaging. Designed for scientific research, industrial high power lasers, safety, and defense applications. Video: Pyrocam pyroelectric camera.

Laser Puzzle

Try your hand at this month's Laser Puzzle. This cryptic crossword involves a mix of straightforward and wordplay clues. All answers are in some way related to lasers and the photonics industry.

All submissions will receive an 8GB USB pen drive. The grand prize winner will receive a 16GB iPad. E-mail answers to sales@us.ophiropt.com. Need a hint? E-mail john.mceldowney@us.ophiropt.com

Here's the answer to last issue's puzzle. Congratulations to the winner of last issue's puzzle - **Jim Griggs, Senior Scientist, American Systems Corp**. "The

Applications

Exact Cuts with a Laser: Recognizing and Compensating for Thermal Focus Shift

Precise cuts, sophisticated component geometries, limited material melt – the advantages of laser cutting are numerous. And due to the steady increases in laser power, these advantages can now benefit a range of new applications: fusion cutting is more attractive for structural steel, and thinner materials can be cut significantly faster and more efficiently than ever. These advancements are also reflected in the Messer Cutting Systems portfolio. As a global provider of products and services for the metalworking industry, the company increasingly relies on high-performance fiber lasers for its cutting systems. Laser Cutting.

Manipulating and Measuring Laser Beams

Companies like Daimler and Volkswagen are pushing laser equipment suppliers to innovate to create new beam delivery technologies that can solve industrial laser problems and increase the speed, quality, and robustness of processes. This *Laser Systems Europe* article discusses how beam monitoring systems ensure welding and cutting lasers are aligned and focal spots are in the correct position. Industrial Beam Monitoring.

Technical Tips

Going Digital in Manufacturing

All the talk about digitization and 'big data' has made manufacturers aware of the increasing advantages of digitizing their production processes. Not only can it improve the quality of the products themselves, it can also significantly reduce downtimes and optimize production overall. At the heart of the matter is the collection and storage of measurement data during processing. Read the Tech Tip.

How Can Calibration Help Me?

By Kristen Winterton, Calibration Supervisor, Ophir

Our laser measurement products are used throughout the world in many different areas, from medical and scientific processes to defense and industrial applications. With each application there are different usage parameters. However, one thing that remains consistent, no matter the application, is that when your equipment is properly calibrated, you can detect problems before they impact your customers. This translates to higher quality product produced, more accurate results for testing, and increased customer and patient confidence and loyalty. Read the Tech Tip.

What's New

High Performance Optics for 1µm High Power Fiber Lasers

High power lasers are a growing industry with numerous applications. As 1µm fiber laser technology advances and more demanding applications develop, the optics used in such systems must provide superior levels of performance. Enter Ophir's line of 1µm laser optics for high power fiber lasers. Advanced manufacturing techniques provide guaranteed high optical performance with maximum focus stability and

ePulse laser puzzles add an entertaining activity to the articles about new laser measurement techniques and products. We are evaluating an Ophir camera for measuring the extended spot profile reflected from a downrange target after atmospheric distortion of the beam." - *Jim Griggs*

Social Media: Blog

Special Photodiodes for Special Lasers (and Other Sources)

For most cases of laser (or LED) power measurement, selection of a proper sensor is fairly simple - it all depends on power level and wavelength. But for some cases, the application demands a more tailor-made sensor. Photodiodes.

Catalogs: Power Meters & Beam Profiling

Download the 2018 Ophir Laser Measurement Catalogs today. Tutorials and product specifications for Power Meters and Beam Profiling. Beam Profiling Magalog includes application notes, technology articles, and reference algorithms.

Trade Shows

LAF Laser Anwenderforum
November 28-29, 2018
Bremen, Germany

Photonix 2018
December 5-7, 2018
Chiba, Japan

SPIE Photonics West
February 5-7, 2019
San Francisco, CA

Additive Manufacturing Forum
March 14-19, 2019
Berlin, Germany

Fast Ship Program

Ophir's Fast Ship program provides one-day shipment of the most popular power/energy, beam profiling, and M2 laser measurement equipment across the U.S.

How to Get a 15% Discount

If you're an end user of our laser equipment, we'd like to know more about how you use it. Provide us with 500 words and a few images. In exchange, we will give you a 15% discount on your Ophir laser measurement equipment. Here's a sample application article to get you started. We'll showcase your application in our ePulse newsletter

minimum aberrations. High Performance Optics.

FAQs

Beam Profiling
The LBP2, BeamMic, BeamGage installation cannot recognize or connect to the SP300 or SP907/SP928 cameras even after driver installation. What do I do now? Read the FAQ.

Can you still service the SP503U and SP620U cameras? Read the FAQ.

Power Meters
When using a thermal sensor for single-shot energy measurement, the spec says to leave the fan off for energy measurement. However, I measure high enough energy (for long enough at a time) that my sensor heats up if I don't use the fan. What do I do? Read the FAQ.

When I use a BeamTrack PPS type sensor to measure beam size, what definition of beam size is used? Read the FAQ.

and you'll get recognition by the industry for your commitment to providing high quality laser services. And you'll get the discount! E-mail kevin.kirkham@us.ophiropt.com

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About Ophir

Ophir is a brand within the MKS Instruments Light & Motion division. The Ophir product portfolio consists of laser and LED measurement products, including laser power and energy meters, laser beam profilers measuring femto-watt to hundred-kilowatt lasers, high-performance IR and visible optical elements, IR thermal imaging lenses and zoom lenses for defense and commercial applications, and OEM and replacement high-quality optics and sub-assemblies for CO2 and high-power fiber laser material processing applications. Dedicated to continuous innovation in laser measurement, the product portfolio includes the **R&D 100** award-winning **BeamTrack** power/position/size meters and Spiricon **Ultracal™**, the baseline correction algorithm that helped establish the ISO 11146-3 standard for beam measurement accuracy. The company is **ISO/IEC 17025:2005** accredited for calibration of laser measurement instruments. The company's modular, customizable solutions serve semiconductor, industrial, life and health sciences, research, and defense industries throughout the world. An ISO 9001:2008 Registered Company.

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