ePulse: Laser Measurement News

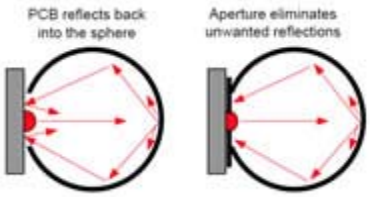
March 2019

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.

Technical Notes

VCSEL Measurement Solutions

By Dr. Efi Rotem, CTO, Ophir Photonics



Vertical Cavity Surface Emitting Lasers (VCSELs) are a type of semiconductor laser diode. Unlike edge emitting laser diodes, VCSELs emit upwards and thus can be easily packaged as emitter arrays containing hundreds of emitters on a single chip. Many VCSEL applications run on batteries and will need to minimize power consumption, therefore, characterization of VCSEL power, beam profile, noise, etc. are critical. This can make VCSEL test and measurement a challenging task. VCSEL Measurement.

Laser Beam Propagation Analysis

Beam propagation analysis is extremely important in that it determines how well a laser focuses and how it interacts with the material being processed. In this video, John McCauley, Automotive Key Accounts Manager at Ophir, walks through a brief tutorial on beam propagation analysis for high powered lasers using the BeamWatch® system. Video: Beam Propagation.

Research News

Coherent Raman Generation Controlled by Wavefront Shaping

Investigation of the possibility of tailoring coherent Raman generated spectra via adaptive wavefront optimization. An algorithm is created for controlling the Raman generation, producing broader spectra and an improved overall efficiency, and increasing the intensity of high-order sidebands. With wavefront optimization, the generated spectra is extended towards the blue spectral region and increases the total power of generated sidebands. The spatial overlap of the pump and Stokes beams in the crystal and the equality of their diameters and intensities is

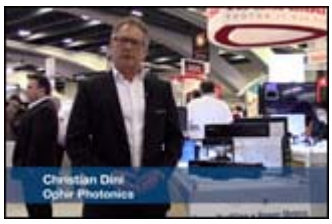
Videos of the Month

Centauri: A New Experience in Laser Measurements

Ophir's new high-end dual channel laser power/energy meter combines a large 7" color touch screen, small form factor, and advanced processing so you have all the functionality of a benchtop instrument in a compact, portable meter. Video: Centauri.

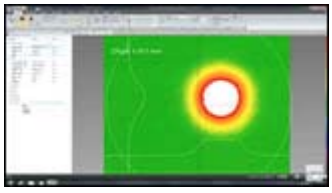
BeamWatch Integrated: Industrial Non-Contact Beam Measurement

BeamWatch Integrated is a non-contact measurement system designed for fully automated manufacturing processes. It can be fully integrated into a system for high quality beam propagation measurements. Video: BeamWatch Integrated.



BeamGage Ultracal Demonstration

See how BeamGage® with UltraCal™ eliminates noise from the measurement of a laser beam, improving the accuracy of your measurements. Video: BeamGage UltraCal.



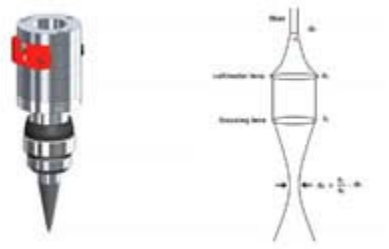
ensured with the Ophir SP620U CCD beam profiling camera. Wavefront Shaping.

Highly Efficient Coherent Conformal Projection System
Design and manufacture of a focused coherent conformal projection system based on an adaptive fiber optics collimator array. This is achieved by introducing controllable spherical aberration through the adaptive fiber optics collimator. A CCD camera with pixel size of 4.4 μm × 4.4 μm from Ophir is used as a two-dimensional detector array for pattern detection of the output combined beam. CCPS.

Webinars

E-Mobility and Laser Welding in Automotive Production
Regardless of the laser welding process involved, the quality of the weld spots or seams exerts a decisive influence on the safety and reliability of the parts produced, which in turn has a significant impact on the overall quality of a vehicle. But how can the manufacturers and operators of such equipment ensure that the laser systems are working correctly when they're often embedded in automated production lines? In this *Laser Focus World* webcast, Ophir's John McCauley explores where the challenges lie and why the quality of the laser beam is so important. April 10, 2019, 12pm eastern. Register here.

How to Get the Most Out of Your 1μm Fiber Lasers
During this webinar, we do a deep-dive into the details of new technologies and optical elements for laser cutting machines. We discuss the design and technology used for annular beams and motorized continuous lenses to provide you with the knowledge that will help you get the best out of your laser system. View on-demand.



Applications

Applying Laser Measurement in Real-World Applications
Here's how to put laser measurement to work in real-world applications, from quality control to medical devices to industrial materials processing.

- Materials Processing Applications
- THz Measurement Applications
- VCSEL Applications

What's New

Fully Automated Beam Monitoring System for Industrial Production Environments
Ophir® Beamwatch® Integrated is a fully automated, non-contact laser measurement system designed to measure critical beam parameters in industrial production environments. A rugged, compact, self-contained system, it measures parameters of the focused beam in real-time, including focus spot size, beam caustic, and absolute power readings. The system

Laser Puzzle

Try your hand at this month's Laser Puzzle. How about a road trip with some of the most renowned scientists? Figure out this month's challenge before you get booted from the car.

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@enigmaturge.com.

Here's the answer to last issue's puzzle. Congratulations to the winner of last issue's puzzle - **Stacie Manuel, Lawrence Livermore National Laboratory**.

Social Media: Blog

3 Main Reasons that Lead to Out of Tolerance Conditions in Your Thermal Laser Sensors
When we receive sensors for calibration, we see that misuse can lead to early deterioration. Find out how to avoid problems with surface contamination, overheating of the sensor body, and localized overheating of the coating. Out of Tolerance Conditions.

Catalogs: Power Meters & Beam Profiling

Download the new 2019 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

Amper 2019
March 19-22, 2019
Brno, Czech Republic

Laser World of Photonics China
March 20-22, 2019
Shanghai, China

Additive Manufacturing Users Group
March 31 – April 1, 2019
Chicago, IL

CRN-Ino Symposium 2019

can accommodate different types of welding heads and includes a variety of interfaces, such as PROFINET and Ethernet/IP. Ophir Beamwatch.

Fast Photo Diodes Provide High Speed Measurement of Pulsed Lasers and VCSELs

Ophir® Fast Photo Diodes are high speed, biased PIN photodiode detectors for viewing and measuring pulsed lasers and VCSELs. The detectors use the photovoltaic effect to convert fast optical pulses into electrical signals. They are available in a variety of configurations that cover the spectrum from 190nm to 1700nm. Rise times and fall times are fast, ranging from as low as 25ps. Ophir Fast Photo Diodes.

Integrating Spheres Deliver Accurate, Repeatable Measurement of Optical Power in VCSELs

Ophir® IS6D integrating spheres measure the optical power of widely divergent laser diode sources, such as VCSELs. They can accurately measure light that diverges up to ±85 degrees. Each sphere is delivered as a calibrated unit with a photodiode detector. The IS6D-VIS/UV/IR measures powers from 300nW to 30W over wavelengths from 200nm to 1800nm. The IS6D-IR-170 measures powers from 20µW to 30W over wavelengths from 700nm to 1800nm. Ophir Integrating Spheres.

MKS Instruments Photonics Handbook

An introduction to the basics of photonics and the key products and applications that *Surround the Workpiece*SM, an MKS strategy that serves the needs of Advanced Markets that require laser-based solutions. Our goal is to provide customers with the key components, systems, and services to enable the successful implementation of these solutions. Photonics Handbook.

FAQs

Beam Profiling

I've acquired a same model camera as is used with BeamGage, but it was not purchased with BeamGage. Can I still use it with BeamGage? Read the FAQ.

Why isn't the Pyrocam IIIHR or Pyrocam IV acquiring live data or running in BeamGage when it is first connected and initialized? Read the FAQ.

Power Meters

In the Integrating Sphere specifications, what is the meaning of "sensitivity to beam size/angle?" Read the FAQ.

I purchased a Single Channel Centauri, yet it has an additional sensor input socket labeled Channel B. How do I get this second input to work so that I can attach, measure, and compare with two sensors simultaneously? Read the FAQ.

April 3-5, 2019
Sesto Fiorentino, Italy

5th UKP Workshop
April 10-11, 2019
Aachen, Germany

Defense & Security Show
April 14-18, 2019
Baltimore, MD

CLEO 2019
May 7-9, 2019
San Jose, CA

OPTO Taiwan
May 8-10, 2019
Taipei, Taiwan

MedtecLIVE
May 21-23, 2019
Nurnberg, Germany

Rapid + TCT
May 21-23, 2019
Detroit, MI

Optics & Photonics Days 2019
May 27-29, 2019
Cheos Oy, Finland

ALAW
June 4-6, 2019
Plymouth, MI

Laser World of Photonics 2019
June 24-27, 2019
Messe München

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.

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www.ophiropt.com/photonics

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 CO_2 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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