ePulse: Laser Measurement News

January 2016

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.

Business Perspective

Measuring High Power Lasers
By Jake Wilkinson, AZo Optics
Gary Wagner, President of Ophir-Spiricon, spoke to AZoSensors about how extremely powerful lasers are driving new innovations in manufacturing and the military, the difficulties researchers face when attempting to measure them, and how these measurements are achieved. High Power Lasers.

Overcoming Barriers to Industrial Laser Performance Measurement
By John McCauley, Product Specialist, Ophir-Spiricon
Technological advances in laser sources and the systems in which they are integrated have provided the industrial laser user with higher quality and more consistent laser processes. Yet, ensuring the system continues to perform as designed once installed doesn't seem to be a high priority for the end user. Is protecting this large investment not a priority? Why aren't these measurements important to the end user? The answer involves a variety of barriers, some of which have yet to be fully addressed. Industrial Laser Performance.

Feature

Imaging UV Light with CCD Cameras
By Chuck Reagan, Southeast Sales Manager, Ophir-Spiricon
Is it possible to image a UV laser with a Silicon Sensor CCD camera offered by Ophir-Spiricon? Yes, but the direct UV light ablates Silicon CCD chips over time. The ablation is cumulative and depends on the intensity, the wavelength, and the duration of the light on the sensor. If you don't use an image converter or attenuation, it is possible to introduce aberrations or defects in the beam. Imaging UV Light.

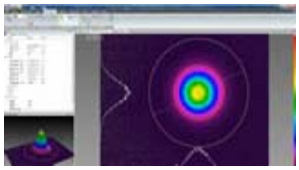
Webinars

Laser Measurement Tools on Your PC: Jan 20
Ophir's StarLab PC application turns your laptop or PC into a full-featured, multi-channel laser measurement workstation. Join our free webinar to get an overview of what StarLab 3.10 enables you to do. You will learn: the range of functions StarLab puts at your disposal, how to easily control the graphics, tools for system integrators, how to measure power/position/size of your laser beam, and more. January 20th, 10:00am Israel time OR 11:00am New York time.

Videos of the Month

Best Practices in Laser Measurement: How to Measure an Unstable Laser
It can be frustrating - trying to measure the power of a laser beam whose power keeps changing. In this video, part of our "Best Practices in Laser Measurement" series, you'll learn how to get good readings even for unstable beams. Video: Measuring an Unstable Laser.

Measuring Large Laser Beams
Here's how to measure the mode, size, and stability of laser beams too large to be directly measured with a camera or scanning slit beam profiler. Video: Large Laser Beams.



Laser Puzzle

Try your hand at this month's Laser Puzzle. The first 50 submissions will receive the 2016 Photonics Spectra wall poster, "Photonics Spectrum Reference Chart". 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 are the answers to the last issue's puzzle. The winner of last issue's puzzle was **Jared Floding, R&D Technician, LSA Laser DBA AdvancedCath, a TE Medical Company.** "I use Ophir power meters on a daily basis to measure energy on our flashlamp lasers to set up the welders as well as document the energy used to weld a product to be able to set it up again. I also use them for taking energy on our eximers at the start of the shift or after we do a fill. These meters help us out

Laser Beam Propagation Analysis in Materials Processing and Additive Manufacturing: Jan 19
Additive manufacturing and direct application of Nd:YAG and fiber lasers require stable, well understood laser sources so the beam that is delivered is the one that has been proven to provide a quality outcome. Join us for this *Laser Focus World* hosted webcast on January 19, 2016 when Kevin Kirkham, Product Manager, discusses the tools that permit these performance characteristics to be monitored, assuring consistent outcome, zero scrap, and no surprises. Beam Propagation.

Technical Tips

Beam Profiling

BeamGage®: Multiple Processes and Local Port Communication
BeamGage is a multiple process application with three process types that run when BeamGage is operating. Here's how. Read the Tech Tip.

How Stray Light Affects Laser Beam Profiling
CCD camera beam profilers are very sensitive to light. What happens when we consider ambient light? How about other light sources in the area, such as laser pumps? There are two issues to address. Read the Tech Tip.

Power/Energy Meters

Using a Power Meter to Detect Unwanted Fluorescence in a Filter
Absorptive glass filters have varying degrees of non-trivial fluorescence, which can be problematic in some applications. Here's a fairly simple way to check if a filter is fluorescing. Read the Tech Tip.

How Can Calibration Help Me?
Many people do not understand the necessity of calibration. They do not understand what the calibration process entails, and how it can save them money, time, and frustration. Here's how. Read the Tech Tip.

Thermal Sensors: What Does the Minimum Measurable Power Spec Mean?
What is the minimum measurable power that appears in our thermal power sensor specifications? What does it mean? Read the Tech Tip.

FAQs

Power/Energy Meters
If a pyroelectric energy sensor is very close to a NIR laser, can it be affected by the heat it emits and by the light emitted? Read the FAQ.

What are the differences between the old pyro sensors and the current PE-C line of pyro sensors? Read the FAQ.

Why won't a BC20 sensor work with the StarLite display? Read the FAQ.

How can I get analog data out of my Ophir hand held display? Read the FAQ.

Beam Profiling
Will the built-in photodiode detector in the SP503-1550/SP620-1550 camera work at 1550nm? Read the FAQ.

Why doesn't the NanoModeScan "ModeScan Configuration" program remember the COM setting? Read the FAQ.

What's New

Pushing the Limits Technology at Photonics West, Booth 1400
At Photonics West, we're going to, once

SPIE. PHOTONICS WEST

a great deal and I thank you for them."

From the Blog

Focusing a Gaussian Laser Beam: Which Formula to Use?
When focusing a laser, or anything for that matter, there's a handy formula that is used to calculate the focus size and position. It is generally called the thin lens formula, and it looks like this. Focusing Gaussian Beam.

Catalogs: Power Meters & Beam Profiling

Download the Ophir-Spiricon 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

MD&M West
February 9-11, 2016
Anaheim, CA
Booth 472

SPIE Photonics West
February 16-18, 2016
San Francisco, CA
Booth 1400

Internationales Laser und Fugesymposium 2016
February 23-24, 2016
Dresden, Germany

Laser Additive Manufacturing
March 2-3, 2016
Orlando, FL

Photonics World of Lasers and Optics
March 14-17, 2016
Moscow, Russia

Laser World of Photonics China
March 15-17, 2016
Shanghai, China

OFC/NFOEC (OSA)
March 22-24, 2016
Anaheim, CA

Fast Ship Program

Ophir-Spiricon's Fast Ship program provides one-day shipment of the most popular power/energy, beam profiling, and M^2 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

again, stretch the limits of laser measurement. Stop by Booth 1400, Feb 16-18, 2016, and see:

- New BeamWatch® non-contact measurement system; dual axis, high magnification
- New Pyrocam® beam profiling camera with M^2 software
- M^2-200s measurement system with clear sides to observe the action
- BeamGage, camera-based beam profiling system, with new cameras

Awards: Top 10 Articles in 2015
PhotonicsOnline.com just published their top 10 list of articles and downloads. Congrats to Dan Ford, Southwest Regional Sales Manager, for another top 10 article, "LIDAR Guns, Accuracy, and Speeding Tickets." Congrats to John McCauley, Product Specialist, for another top 10 download, "High-Power Lasers in Medical Applications." See the complete list here.

BeamWatch Non-Contact Beam Monitoring System
The new version of BeamWatch features 3D views of laser beam caustic and ellipticity for a quick and realistic initial display. All beam measurements are charted over time, allowing users to trace waist width and location during setup to more easily determine when the beam is aligned and in focus. An industry first, the time charts feature is also useful for high power laser users who can now monitor how beam characteristics change as the laser is used over long periods of time. BeamWatch features high magnification optics that dynamically measure beams with spot sizes down to 55µm. BeamWatch.

Laser Sensors Measure High Laser Powers Without Water
Four new thermal laser sensors measure high pulse energies without the need for large, water-cooled devices. Designed for use with high powered lasers, the L40(150)A, L40(150)A-LP1, L50(150)A, and L30C-LP1-26-SH are compact sensors that measure high laser energies up to 8000J. The high power laser irradiates the sensor for a short time, from 0.1 to 1s, and the energy of the pulse is used to calculate laser power. Laser Sensors.

High Damage Threshold Sensor Measures Low Average Power
The 3A-PF-12 is a thermal power/energy laser measurement sensor for short pulsed lasers. It is an ultra sensitive sensor that can measure powers from as low as 15µW up to 3W and energies from as low as 20µJ to 2J. The new sensor replaces the P type absorber with the high damage threshold PF type, giving it the industry's highest energy density damage threshold for repetitive pulses. 3A-PF-12.

with 500 words and a few images. In exchange, we will give you a 15% discount on your Ophir-Spiricon laser measurement equipment. Here's a sample application article to get you started. We'll showcase your application in our ePulse newsletter 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-Spiricon, LLC

With over 35 years of experience, Ophir Photonics, a Newport Corporation company, provides a complete line of instrumentation including power and energy meters, beam profilers, spectrum analyzers, and goniometric radiometers. Dedicated to continuous innovation in laser measurement, the company holds a number of patents, including the R&D 100 award-winning **BeamTrack** power/position/size meters and Spiricon's **Ultracal™**, the baseline correction algorithm that helped establish the ISO 11146-3 standard for beam measurement accuracy. The Photon family of products includes **NanoScan** scanning-slit technology, which is capable of measuring beam size and position to sub-micron resolution. The company's modular, customizable solutions serve manufacturing, medical, military, and research industries throughout the world.

An ISO 9001:2008 Registered Company. ISO/IEC 17025:2005 accredited for calibration of laser measurement instruments.

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