ePulse: Laser Measurement News

March 2015

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.

Tutorials

Beam Measurements for Successful Laser Marking
By John McCauley, Product Specialist, Ophir-Spiricon
Having worked in laser marking and engraving, I can say that there is a certain mindset when it comes to laser quality that, in come cases, could be dangerous. The mindset is, "If the laser is making a mark, why the need to check the performance of the laser?" Let's see how this relates to several different laser applications and why this mindset is probably causing you to lose time and money. Laser Marking.

Apples to Apples: Which Camera Technologies Work Best for Beam Profiling Applications, Part 2
By Greg Slobodzian, Director of Engineering-Retired, Ophir-Spiricon
This white paper takes an in-depth look at the evolution of today's commercial camera technologies and their use in measuring laser beams. The accuracy of beam width measurements varies depending on signal-to-noise ratios and baseline correction. Laser Beam Width, Pt 2.

Features

How to Find the Perfect Laser Beam Profiler
Is there one super-profiler that will profile any laser with 100% accuracy? Unfortunately, that's a pipe dream as there are tons of laser types and, therefore, many different profilers. Here are the questions you need to ask to find the right laser beam profiler for your laser and application. Beam Profilers.

High-Power Fiber Lasers: Working in the Kilowatt Regime
High-power materials-processing fiber lasers are available in an increasing variety of forms, as well as outputs up to 100 kW and higher. As the technologies behind these lasers and the techniques developed for characterizing their beams, grow ever-more sophisticated, the end user is the big beneficiary. This ***Laser Focus World*** technical digest highlights recent technological developments in the world of high-power fiber lasers, including Raman fiber-laser amplification, large-mode-area fibers, and a beam-characterization tool that works with the highest-power lasers available. Fiber Lasers.

Videos of the Month

Using BeamGage to Display Power/Energy Measurements
In this video, we demonstrate how to configure BeamGage to display power and energy measurements from an attached Ophir sensor. Video: BeamGage.

RM9 Radiometer System: Very Low Powers, Very Broad Spectrum
The RM9 system measures powers down to 100nW over a very broad spectral range, from UV to far IR. This video shows you how to use the RM9. Video: RM9 Radiometer.

New 2015 Catalogs: Power Meters & Beam Profiling

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

Laser Puzzle

Try your hand at this month's Laser Puzzle. All entries will receive a 4GB pen drive and the new Ophir Laser Measurement Poster. The grand prize winner will receive a 16GB iPad. E-mail

Applications

Case Study: What Happens to Your Weld When Welding with High Power Over Long Periods of Time?
By Nicolas Chaise, Regional Sales Manager, Ophir Spiricon Europe
A customer of ours in the shipyard market owns a powerful 12KW fiber laser. The company wants to weld large parts of the boat itself. This kind of welding can last up to 20 minutes over several meters. This generates new challenges. High Power Welding.

Webinars

Live Laser Measurement Q&A: April 15th
We will hold a special webinar on April 15, 2015 where our technical experts will answer all your laser measurement questions. High power lasers in materials processing? Handling THz wavelengths? Measuring beam waist size and focused spot? Differences between CCD and CMOS cameras? Whatever your question, send them to us ahead of time and we'll answer during the webinar. Two sessions available to accommodate time zones: 9:00am GMT (add to your calendar) or 15:00pm GMT (add to your calendar).

Right and Wrong Ways to Manage Laser System Variables in Material Processing
The goal is to maintain consistency among the many variables that are introduced into your process. When a laser is being used in production, the laser system has its own set of variables. How are you managing these variables? In this *Industrial Laser Systems* webcast, John McCauley, Product Specialist, Ophir Photonics Group, discusses real-world case studies illustrating right and wrong ways to approach material processing when variables change during laser welding, cutting, engraving, drilling, and any time a laser is used to produce parts. On-Demand Webcast: Laser Variables.

Technical Tips

Power/Energy Meters

Setting the Default Wavelength on a Nova II
Here's how to set the default wavelength for your sensor on a Nova II handheld display. Read the Tech Tip.

Fine Tuning Laser Power with a Nova II
Here's how to use the Nova II to fine-tune your laser power. Read the Tech Tip.

Measuring Correct Power If Your Laser Beam is in Continuous Slow Scanning Motion
When measuring average power using a thermal sensor, if you move the beam from one place to another on the disc surface, there is a transient change in reading. Here's how to read the correct power. Read the Tech Tip.

Beam Profiling

How to Turn On Statistics in BeamGage
BeamGage can run statistics on any of the computed results being displayed in the white results window. To turn on the statistics for a given result, start with the section heading, such as Power/Energy, Spatial Divergence, Gaussian, TopHat, Frame Info, 1D Gaussian, 1D TopHat. Read the Tech Tip.

answers to sales@us.ophiropt.com. Need a hint? E-mail john.mccauley@us.ophiropt.com

Here are the answers to the last issue's puzzle. The winner of last issue's puzzle was **Rajind Mendis, Rice University.** "My research is related to THz technologies. One method to generate THz radiation is to illuminate a photoconductive emitter with an ultrafast laser. The power of the laser beam is (frequently) monitored using optical power meters to make sure that the power is within typical limits. Beam profilers are not usually used in my work." -- Rajind Mendis, Rice University.

From the Blog

Two Different Ways to Expand Your Laser Beam; Are You Using the Right Method?
Whether your laser beam is too small or too large, you need to add some optics (an expander or reducer). But there are two fundamentally different types: reimaging and Galilean telescope optics. Which one is right? It depends on your application. Expand Your Laser Beam.

Trade Shows

Photonics 2015
March 16-19, 2015
Moscow, Russia

Laser World of Photonics China
March 17-19, 2015
Shanghai, China

AUTOMATICON
March 17-20, 2015
Warsaw, Poland
Booth 1098

DPG Tangung AMOP
March 18-21, 2015
Berlin, Germany

International Laser Safety Conference
March 23-26, 2015
Albuquerque, NM
Booth 1151

OSA's OFC/NFOEC
March 24-26, 2015
Los Angeles, CA

W3+ Optics, Electrics & Mechanics
March 25-26, 2015
Wetzler, Germany

How to Set the Number of Samples Included in the Statistics Calculated by BeamGage
BeamGage can run statistics in several different modes: Continuous, Number of Frames, Running Window, or Time Period. Here's how to change the number of samples in the statistics. Read the Tech Tip.

FAQs

Beam Profiling
Do you have Windows 7 64-bit drivers for the LBA-PC frame grabber card series of beam profilers? Read the FAQ.

My NanoScan system is giving me an error that says, "The selected speed could not be set within 0.01%." What does this mean? Read the FAQ.

Power/Energy Meters
What is the maximum logging time possible with StarLab? Read the FAQ.

What is the absolute energy accuracy for single-shot energy measurement with a thermal sensor? It does not seem to be included in the specs. Read the FAQ.

Why can't I find my display or sensor that starts with a 1Z part number listed on your web site? Read the FAQ.

What is the beam size measurement method and accuracy of the BeamTrack PPS (power, position, and size) sensor? Read the FAQ.

What's New

Power/Energy Meter Measures Very High Powers to 120kW
The 120K-W Laser Power Meter is the only commercial sensor for measuring very high power 120kW lasers. The meter is designed for heavy-duty applications, such as deep penetration welding, drilling and cutting large products in the field, metal forming, and military directed-energy applications. The portable meter features a unique design that allows measurement of very high power, fiber, infrared, and Nd:YAG lasers. 120K-W Laser Power Meter.

OEM Version of Pyroelectric Beam Profiling Camera for 2D/3D Viewing of DUV, Far-IR, THz Sources
Designed for OEM applications, the Pyrocam™ IIIHR camera features a sensitive, 160 x 160 pixel image array that can profile beams up to 1/2 inch (12.8 mm) without the need for reduction optics. The higher resolution, 80µm pixel pitch means it can analyze beams up to 20% smaller. Both pulsed and CW (continuous wave) lasers can be measured, from 13 to 355 nm and 1.06 to >3000 µm. Pyrocam IIIHR.

Low Noise, High Sensitivity Radiometer Measures Very Low Power
The RM9 Radiometer is a sensor for measuring the power of very low level CW or quasi CW sources. It uses a pyroelectric sensor in conjunction with an 18Hz chopper to measure a wide range of radiation, from UV to deep IR. Unlike more expensive radiometers, the RM9 is calibrated over the entire range of wavelengths, from 0.15µm to 12µm, not just a single wavelength. RM9 Radiometer.

Photonix2015
April 8-12, 2015
Tokyo, Japan

AMUG
April 19-23, 2015
Jacksonville, FL

SPIE Defense & Security Show (DSS)
April 21-23, 2015
Baltimore, MD

Laser Expo 2015
April 22-24, 2015
Pacifico Yokohama, Japan

Metalloobrabotka 2015
May 25-29, 2015
Moscow, Russia

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 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 30 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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