

ePulse: Laser Measurement News

The true measurement of laser performance



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July 2014

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](#).



Tutorial

High Power Fiber Lasers Drive New Measurement Techniques

More and more applications require fiber laser parameters to be optimized and consistent. Predictable and desired outcomes can be better assured by providing accurate, repeatable laser performance to the workpiece. Traditional diagnostic techniques measure one or two parameters at once, providing a myopic view of laser performance and argue the need for a number of diagnostic tools to be used sequentially or in tandem. [Non-Contact Laser Measurement](#). [Behind the Scenes Presentation](#).

Feature Articles

System Integration of Fiber Lasers and Effect on Laser Quality

The quality of the laser is usually only measured on the laser source. Most laser sources are integrated into a system that consists of optics and mechanical components used to shape, resize, and deliver the laser energy in many different ways. But how a laser source is integrated into the components may affect the overall quality of the laser system. John McCauley discusses characterizing the application of the laser before and after delivery to the customer. [System Integration](#).

Energy Sensors: Response Times, Integration Time...Confusion Time?

There seems to be a good deal of confusion when it comes to the terms "response time" and "integration time" of energy sensors. In this article we clarify the meaning of these terms, as they apply to Ophir's pyroelectric Smart Sensors. [Energy Sensors](#).

Ophir Pyroelectric OEM Sensors: What Options are Available?

Pyroelectric sensors allow measurement of individual pulse energy or pulse-to-pulse variation for rapidly pulsing lasers, something that cannot be done with photodiode or thermal sensors. They also are not limited to visible or near-IR wavelengths like photodiodes, allowing measurements into the deep IR and THz regions. Julian Marsden discusses the options. [Pyroelectric OEM Sensors](#).

Applications

High Power Lasers in Medical Applications

Advances in laser technology have had a tremendous impact on the

Videos of the Month

Laser Measurement PC Interfaces

Learn about the range of power meter PC interfaces from Ophir. [Video: PC Interfaces](#).



Displaying BeamGage Measurements

Eric Craven demonstrates how to configure BeamGage to display the many possible measurement results of a laser under test. [Video: BeamGage Displays](#).



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 answers to sales@us.ophiropt.com. Need a hint? E-mail kevin.kirkham@us.ophiropt.com

Here are the [answers to the last issue's puzzle](#). The winner of last issue's puzzle was **Donald Walko, Argonne National Laboratory**. "We have recently ordered a Pyrocamera IV-C-A from Ophir-Spiricon. As our THz research grows, this will be an important diagnostic for us to use." -- Donald Walko

From the Blog

Do You Know the Power Density of Your Laser?

Lasers can be dangerous...for you, for your workspace, and for your measurement equipment. Some people assume high power

medical industry, especially medical devices, which have allowed us to live longer, healthier, and happier lives. John McCauley looks at the many ways various wavelengths of light can be used in medical procedures in this *Novus Light* article. [Medical Applications](#).

BeamWatch™ Applications Generate Interest at FMA's ALAW

Ophir-Spiricon introduced BeamWatch, a new non-contact beam analysis system, to attendees at the Advanced Laser Applications Workshop (ALAW) hosted by the Fabricators and Manufacturers Association (FMA). Included was a discussion of findings by EWI, a joining technologies applications house, of work with multi-kilowatt fiber and diode lasers, and the development of their own processing head. [FMA ALAW](#).

Webinar

Laser Measurement Techniques for Beam Control in Materials Processing

If you missed this *Industrial Laser Solutions* webinar, now you can watch it on-demand. In a growing number of material process applications – welding, cutting, ablating, even marking and scientific instruments – lasers are an integral part of the production process. The only way to assure the laser is working as expected, and to maintain a consistent, high quality, high throughput process is to measure and monitor key parameters of the laser. This webinar covers the technologies, how they have been applied, and lessons learned. [Materials Processing](#).

Business News

New 3-Day Expedite and 24-Hour Super Expedite Options

Kristen Winterton, Calibration Supervisor at Ophir-Spiricon, discusses our new 3-day Expedite and 24-Hour Super Expedite options for inspection and quote service. These options ensure that your equipment is evaluated, calibrated, and quoted within the stated time periods, allowing you to receive your equipment back faster than standard lead times. [Expedite Options](#).

Ophir-Spiricon Receives Frost & Sullivan Manufacturing Leadership Award

Ophir-Spiricon LLC was recently announced as one of 100 world-class manufacturing companies to receive the 2014 Manufacturing Leadership Award from the Frost & Sullivan Manufacturing Leadership Council. Ophir-Spiricon won in the category of Workplace Leadership along with IBM Corp., Merck & Co. Inc, Peterbilt Motors Co., and Ultra Machining Company. [Manufacturing Leadership](#).

Technical Tips

Beam Profiling

Using a Laser Beam Expander: How and When?

There are two reasons that you might want – and need – to expand your laser? [Read the Tech Tip](#).

Upgrading NanoScan 2 Software from Standard to Professional

The NanoScan 2 software is easy to upgrade. You don't need to return the device. Call to purchase the license for the Pro version, and then follow these steps. [Read the Tech Tip](#).

Power/Energy Meters

Measuring Power Out of a Fiber

There are many applications that involve measuring power out of a fiber, where the power is in the range of tens of μW to a few mW. A customer recently found that every time he disconnected the FO connector from the adapter and then reconnected, the power read 50-100 μW higher. We

is the problem and low power is safe. This isn't necessarily the case. What you really want to look at is the power (or energy) density of the laser. [Power Density](#).

2014 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.

Trade Shows

[SPIE Optics + Photonics 2014](#)

August 19-21, 2014
San Diego, CA
Booth 514

[Industrial Automation Exhibition 2014](#)

August 27-30, 2014
Taiwan

[Lasers for Manufacturing Event](#)

September 23-24, 2014
Schaumburg, IL
Booth 3015

[MD&M Minneapolis](#)

October 29-30, 2014
Minneapolis, MN
Booth 1151

[FABTECH 2014](#)

November 11-13, 2014
Atlanta, GA
Booth B1906

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

discovered this is a thermal effect, not a technical flaw. Here's how to avoid this issue. [Read the Tech Tip.](#)

Beam Splitter/Attenuator Measurements

If you have a measurement setup with a beam splitter or attenuator, the Attenuate Function in a Nova II or Vega can be used to measure the laser power or energy before the splitter or attenuator. [Read the Tech Tip.](#)

FAQs

Power/Energy Meters

Why upgrade to StarLab 3 laser measurement software? And when not to upgrade. [Read the FAQ.](#)

Do I need to uninstall StarLab 2.4 when upgrading to StarLab 3? [Read the FAQ.](#)

How long is the mounting post that is included with the thermopile detectors? [Read the FAQ.](#)

I received my order of two Vega meters and two sensors. Which sensor goes with which meter, or are they interchangeable? [Read the FAQ.](#)

Beam Profiling

I just installed the latest M²-200s software on my new computer and I get a message stating Windows can't install the driver for the motor controller. How do I fix this? [Read the FAQ.](#)

When we save/log the Pyrocam III beam image data as ASCII and we open the .csv file using Microsoft Excel, what does each value represent? Are these the beam intensity at that particular pixel of the detector or something else? [Read the FAQ.](#)

What's New

NASA Tech Briefs Picks BeamWatch as Product of the Month

BeamWatch is a non-contact, focus spot size and position monitor for very high power YAG and fiber lasers used in material processing applications. Because there is no contact with the laser beam, the system has no power restriction and has been successfully tested on high power lasers up to 100kW. [BeamWatch.](#)



Automated M² Laser Beam Propagation Analyzer for 24/7 Operation

The new M²-200s, camera-based beam propagation analyzer, is an ISO 11146 compliant system that automatically measures laser beam quality in less than two minutes. It features a robust design that supports continuous, 24/7 operation. The latest version enhances the system's robust packaging with an all new motor controller that decreases noise from motor movement by 30%. [M²-200s.](#)

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 brand, 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 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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3050 North 300 West, North Logan, UT 84341
Tel: +1 435-753-3729
www.ophiropt.com/photonics