

ePulse: Laser Measurement News

The true measurement of laser performance



ePulse: Laser Measurement News September 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](#).



Business Perspective

Overcoming Barriers to Industrial Laser Performance Measurement

By John McCauley, Product Specialist, Ophir-Spiricon

When advances in industrial laser technology are considered as a whole, the applications seem limitless. With these changes comes the need to better understand and characterize the lasers and the need to understand how they are behaving once they are put into service. Yet in many cases, ensuring the system continues to perform as designed once installed doesn't seem to be a high priority for the end user. Is protection of this large investment not a priority? [Overcoming Barriers](#).

Research Paper

Terahertz Spectroscopy with a Holographic Fourier Transform Spectrometer Plus Array Detector Using Coherent Synchrotron Radiation

By Nikolay Agladze, J. Michael Klopff, and Albert Sievers, Laboratory of Atomic and Solid State Physics, Cornell University, and Gwyn Williams, Free Electron Laser Facility, Jefferson Laboratory

Using coherent terahertz synchrotron radiation, we experimentally tested a holographic Fourier transform spectrometer coupled to an array detector to determine its viability as a spectral device. Somewhat surprisingly, the overall performance strongly depends on the absorptivity of the birefringent lithium tantalite pixels in the array detector. From *Applied Optics*. [Terahertz Spectroscopy](#).

Applications

Laser Heat Treatment Process Efficiency Improved by System Measurements

By Dick Rieley, East Coast Regional Sales Manager, Ophir Photonics Group

Over the years, different approaches have been used to heat treat metals, typically relying upon large furnaces where an entire object is subjected to the heating process. The use of lasers to perform this heat treating process has become an accepted approach for several reasons,

Video of the Month

LASER Munich 2015 Highlights

If you missed us at this year's LASER Munich show, follow Christian Dini, Managing Director of Ophir Spiricon Europe, as he presents, "Everything to Measure Your Laser Beam." [Video: LASER Munich](#).



Laser Puzzle

[Try your hand at this month's Laser Puzzle](#). All entries will receive a 1000mAh battery recharger for your mobile devices 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 john.mceldowney@us.ophiropt.com

Here are the [answers to the last issue's puzzle](#). The winner of last issue's puzzle was **Chris Chagaris, Senior Manufacturing Engineer/LSO, Laser Projection Technologies Inc.** "We here at Laser Projection Technologies use both your Ophir Nova II Laser Power Meter and your BeamGage Laser Beam Profiler. Both of these devices are used to test and validate incoming DPSS lasers that we use in our laser projection products. The Beam Profiler is also frequently used in our R&D lab." -- Chris Chagaris

From the Blog

Beginner's Guide to Laser Beam Profiling

Let's be honest. We'd all prefer that our lasers always work exactly as they're supposed to. Who really wants to measure their laser when they can just be using it instead? However, like all

including the selection of specific wavelengths and power levels. As much as a laser can be a product process for heat treatment, understanding the beam shape, the uniformity of its intensity and the cleanliness of the delivery optical all come into play and can significantly affect efficiency. This article discusses the approach to heat treatment taken by a manufacturer of locomotive engine cylinders. [Laser Heat Treatment](#).

Solving a Difficult Military Beam Alignment Task

By Dick Rieley, East Coast Regional Sales Manager, Ophir Photonics Group

The US military often serves as the proving grounds for emerging technologies. With advances in lasers, it is more common today for these military systems to involve lasers. One such example is the use of a laser in the periscope of a nuclear-powered submarine. As you can imagine, the data that this laser provides relies directly on both the quality of the laser and its alignment within the system. So how is the accuracy of this particular system's laser ensured? [Beam Alignment](#).

Technical Tips

Beam Profiling

Locking Out Controls in BeamGage®

BeamGage has the ability to lock out controls and modification of reported results using the Options Privileges feature. Here's how. [Read the Tech Tip](#).

Power/Energy Meters

Zeroing Ophir Meters

For the best accuracy and repeatability, each Ophir meter should be zeroed with no sensor connected periodically. It would not hurt to zero the meter each time it is used, but we recommend to zero the meter at least once a month. [Read the Tech Tip](#).

Mounting Accessories on the FPS-1 Fast Photodetector

The FPS-1 Fast Photodetector is used for displaying temporal pulse shape on an oscilloscope. There are a variety of accessories available, such as attenuators and fiber adapters. Here's how to mount them. [Read the Tech Tip](#).

FAQs

Power/Energy Meters

My meter seems to be charging normally, but it lasts for less than an hour on battery power. Does the battery need to be replaced? [Read the FAQ](#).

Should I measure power in Watts or energy in Joules, and what sensor is best for each method? [Read the FAQ](#).

The sensor I need uses water cooling. Can you recommend a water cooling system? [Read the FAQ](#).

Can I use a PD300 sensor inside a thermal chamber, in which the temperature cycles beyond the recommended operating temperature range? [Read the FAQ](#).

Beam Profiling

The SP300 camera lists a frame rate of 26 fps at full resolution. On my PC, it only runs at 6 fps. Why won't it run faster? [Read the FAQ](#).

processes, a laser must be controlled to be used efficiently, and it must be measured to be controlled (and used) properly. [Beam Profiling](#).

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.

Trade Shows

[Material Science & Technology \(MS&T\)](#)

October 4-8, 2015
Columbus, OH
Booth #771

[ICALEO](#)

October 18-22, 2015
Atlanta, GA
Booth #39

[OSA's Frontiers in Optics](#)

October 21-22, 2015
San Jose, CA
Booth #404

[MD&M Minneapolis](#)

November 4-5, 2015
Minneapolis, MN
Booth #1609

[SME/FMA's FabTech](#)

November 9-12, 2015
Chicago, IL
Booth #C1637

Fast Ship Program

Ophir-Spiricon'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-Spiricon laser measurement equipment. Here's a [sample application article](#) to get you started. We'll showcase your application in our ePulse

Can multiple NanoScans be run from the same PC? [Read the FAQ.](#)

What's New

Knowledge Center

Try out our new Knowledge Center. It's now easier than ever to find the right data sheet, manual, or answer to your question. Search for relevant FAQs, videos, and more. Filter results by laser type, Ophir product, or content type. Give it a try, you'll be amazed at how much technical content is at your fingertips. [Knowledge Center.](#)

BeamWatch® 2.0 Dynamically Measures Industrial Laser Spot Sizes Down to 55µm

BeamWatch® is the only non-contact beam monitoring system for very high power YAG, fiber, and diode lasers used in industrial material processing applications. The new version features high magnification optics that measure beams with spot sizes down to 55µm. This allows for smaller, more precise cuts with less waste of material. BeamWatch also supports dual axis measurement, which lets users see the laser beam from two orthogonal axes. [BeamWatch 2.0.](#)



StarBright Advanced Laser Power/Energy Meter

StarBright is a handheld laser power/energy meter with a brightly lit, 320x240 pixel color display. It measures power, single shot energy, repetitive energy, frequency, and beam size for Ophir's wide range of thermal, pyroelectric, and photodiode laser sensors. In addition, it measures irradiance and dosage for the new PD300RM radiometer sensors. It can also monitor laser beam size and track beam position to fractions of a mm when used with Ophir's BeamTrack power/position/size sensors. [StarBright.](#)

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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