

# ePulse: Laser Measurement News

The true measurement of laser performance



## ePulse: Laser Measurement News November 2011

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.



### Tutorials

#### High Power Measurements with NanoScan

Photon's High Power NanoScan is designed to measure "high power" laser beams that were previously impossible to measure with standard BeamScan or NanoScan products. High power is a fairly vague term that means different things in different contexts. [For our purposes, "high power" is defined as between 100W and 5000W.](#)

#### Laser Power/Energy Measurement Today

While the laser industry steady advances with new wavelengths, higher powers and energies, and new applications, the basic technology of laser power/energy measurement has not changed in the last ten years. There are still three basic ways to measure laser power and energy: thermopile detector, photodiode detector, and pyroelectric detector. [Read the NASA Tech Briefs white paper by Dr. Ephraim Greenfield.](#)

#### Effects of Distance on Irradiance and Beam Homogeneity from Four Light-Emitting Diode Curing Units

The light-curing times recommended by dental manufacturers are based on placing the tip end of the curing light as close as possible to the surface of the resin. But in clinical situations, this positioning is often difficult or impossible to achieve. [Find out more in this article by Dr. Richard B. Price, BDS, DDS, MS, PhD, FDS, RCS \(Edin\), FRCD\(C\) and associates.](#)

### Applications

#### Beam Profiling of 1 KW Fiber Laser with Camera-Based Profiling System

A customer was expecting a Gaussian profile, but ended up with more of a flat-top profile. So between the demonstration and the system sale, the customer added the requirement to be able to check focused spot  $\pm 12\text{mm}$ . [Find out more.](#)

#### Using ModeCheck to Compare CO2 Replacement Optics

In a recent test, Ophir's ModeCheck was used to compare CO2 replacement optics quality between the lens of the II-VI MP5 In-Line

### Video of the Month

#### Experiencing Ophir-Spiricon

The only way to know what customers have to say is to ask them. So we did. In this four-minute video, Ophir-Spiricon customers talk about their experiences with the company and its products and services. [Learn how beam profiling products can help ensure you get the best quality output from your lasers.](#)



### From the Blog

#### Measuring High Power Short Pulse Lasers

High power, short pulse lasers cannot be measured using an ordinary surface absorber thermopile sensor. During every pulse, laser energy is deposited on the surface of the absorber over a period of time that is too short for the absorbed heat to dissipate. As a result, heat is concentrated on a very small volume of the surface and this easily damages the sensor. [Get an inside look at how to address this problem.](#)

#### 2011 Power Meter & Beam Profiling Catalogs

Download the 2011 Ophir-Spiricon Laser Measurement Catalogs today. Tutorials and products in [Power Meters](#) and [Beam Profiling](#).

#### Laser Puzzle

[Try your hand at this month's Laser Puzzle.](#) All entries will

Industrial Beam Monitoring system and an Ophir Optics Low Absorption Znse Black Magic™ lens. [Find out more.](#)

## Technical Tips

### Beam Profiling: Attenuation-Induced Error Due to Thermal Lensing in Beam Measurement

Profiling lasers with powers in the 10mW to 1W range is becoming more common. Many such lasers are in the visible spectrum, allowing them to be measured with CCD and CMOS camera systems. As with any laser that is being measured with a camera array, the beam needs to be attenuated. But there are cautions to be observed. [Find out more in this article by Allen Cary and Jeffrey Guttman, PhD.](#)

### Power/Energy Meters: Laser Measurement in Medical Laser Service

The global medical industry incorporates thousands of lasers into its arsenal of treatment tools. Wavelengths from UV to Far-infrared are used for everything from Lasik eye surgery to cosmetic skin resurfacing. Find out how medical personnel can overcome the many measurement obstacles in this article by [Dan Little, Technical Director, Laser Training Institute, Professional Medical Education Association.](#)

## FAQs

### Power/Energy Meters

Why is a special adapter needed for the newer PE-C type sensors to work with the Nova meter? [Read the FAQ.](#)

How do I select the correct wavelength with sensors that have a continual response curve such as silicon photodiode, LP1 thermal, and 3A-IS sensors? [Read the FAQ.](#)

I just received my new Ophir power/energy equipment. What are some tips I can use to keep this equipment at peak performance levels? [Read the FAQ.](#)

### Beam Profiling

How do I get the Pyrocam III to be recognized by BeamGage software? [Read the FAQ.](#)

How do I get the GRAS20 camera to be recognized by BeamGage when using a 1394a/b interface card? [Read the FAQ.](#)

## What's New

### New Perpetual Lifetime Warranty Covers Laser Power Meters & Sensors

A new Perpetual Lifetime Warranty is available for Ophir's laser measurement sensors and power/energy meters, including the new BeamTrack power/energy/position sensors. The new program, available for North and South America, extends the standard one-year manufacturer's warranty an additional year if the product's calibration is kept current. The warranty includes all parts and labor for the next year. [Find out more about the Perpetual Lifetime Warranty.](#)



[Many products available next business day in US](#)

### Online Sensor Finder and Laser Fluence Calculator

The Sensor Finder helps you easily find the laser sensor that best suits

receive a 2GB pen drive. The grand prize winner will receive a Kindle with black leather cover and a \$50 Kindle gift card. E-mail answers to [sales@us.ophiropt.com](mailto:sales@us.ophiropt.com). Need a hint? E-mail [kevin.kirkham@us.ophiropt.com](mailto:kevin.kirkham@us.ophiropt.com)

Here are the [answers to the last issue's puzzle](#). The winner was **Doug Essex, Advanced Systems Northrop Grumman**. "We use Spiricon beam profilers both as in process and final inspection tools to ensure that our systems can deliver the required irradiance in the field." - Doug Essex

## Trade Shows

### FABTECH

November 14-17, 2011  
Chicago, IL  
Booth 1350

### Photonics West

January 24-26, 2012  
San Francisco, CA  
Booth 4021

## 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.

## Free Laser Measurement Equipment

That's right. If you're an end user of our laser equipment, let's hear about it and how you use it in your application. You can write the whole article or you can collaborate with our talented writers. In exchange, we can negotiate you receiving one of our latest innovative instruments, detectors, or profiling cameras and software to use in your lab. E-mail [kevin.kirkham@us.ophiropt.com](mailto:kevin.kirkham@us.ophiropt.com) In a few nanoseconds, you'll be telling the laser world about your application using our equipment and a femtosecond or two later you'll be logging your data on our equipment like the Nova II, Vega, Quasar or BeamGage.

## Follow Us Online

### Social Media

your application. Enter laser measurement type (CW or pulsed, circular or rectangular) and your laser's parameters – diameter, wavelength and power range. The appropriate sensors and % damage threshold are quickly displayed. [Put the Sensor Finder to work.](#)

### **Innovative Developments to be Introduced at Photonics West 2012**

Ophir Photonics Group will be at Photonics West in San Francisco, January 24-26, 2012. The company will showcase the latest in laser beam profiling and power/energy measurement systems as part of the Newport booth 1301 at Moscone Center. Featured products include **BeamTrack**, the first power/position/size sensors, **BeamGage** laser beam analysis software with support for GigE (Ethernet-based cameras) and LAN-based networks, **Photon 1780** and **M2-200s** beam propagation systems, and **NanoScan** for focused spot measurement. [Find out more.](#)



#### **Blog**

[The Ophir Laser Measurement Group](#)

#### **Web**

[www.ophiropt.com/photonics](http://www.ophiropt.com/photonics)

## **About Ophir-Spiricon, LLC**

Ophir-Spiricon is part of the Ophir Photonics Group. With over 30 years of experience, the Photonics Group 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 Ultracal™, the baseline correction algorithm that helped establish the ISO 11146-3 standard for beam measurement accuracy. The recently acquired 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.

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