

# ePulse: Laser Measurement News

The true measurement of laser performance



## ePulse: Laser Measurement News January 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](#).



### Tutorial

#### Apples to Apples: Which Camera Technologies Work Best for Beam Profiling Applications, Part 1

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](#).

### Features

#### The Challenge of Focus Shift in High-Power Laser Material Processing

By John McCauley, Product Specialist, Ophir-Spiricon

Maintaining high-power industrial lasers at peak performance and optimizing the processes for which they are used will maximize throughput and minimize downtime. Periodic measurement and long-term monitoring of key laser variables, including laser output power, focused spot size, and focus spot temporal location provide the data you need to increase accuracy and optimize your process. [Material Processing](#).

#### What's That Blue Light Coming Out of Your Mouth?

By Chuck Reagan, Southeast Sales Manager, Ophir-Spiricon

There is great variability in the types of lights and light guides used for dental applications. This results in significant differences in uniformity of the emitted beams, which can weaken the material and shorten the life of a dental repair. Here we analyze the beams of various light guides. [Light Guides](#).

### Applications

#### Ensuring High Cutting Speeds Through Accurate Beam Power Measurements in Multi-kW CO<sup>2</sup> Laser Machines

By Derrick Peterman, Northern California Sales Engineer, Ophir-Spiricon

Do you know why your laser takes longer and longer to cut the same part? It's because lasers change over time, resulting in slower cutting, poor cut quality, increased waste, longer delivery times, and unhappy customers. Using diagnostic equipment will reduce on-site service time and improve output. Here we measure the output beam power in multi-kW CO<sup>2</sup> lasers systems to determine the effect on cutting speed. [Improving Cutting Speeds](#).

### Videos of the Month

#### New: Ophir-Spiricon Calibration Portal

Introducing the Ophir-Spiricon Calibration Portal, your online equipment management tool. This video is a short overview about using the portal to manage the calibration and service of your laser measurement equipment. [Video: Calibration Portal](#).



#### A Corrosion-Proof Water-Cooled Laser Sensor

The 1000WP-BB-34 is a water-cooled sensor that can measure up to 1kW. It has only copper and nonmetallic materials coming in contact with the cooling water, eliminating the risk of contamination of the water or corrosion of the sensor. [Video: Corrosion-Proof Water-Cooled Sensor](#).



### 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](mailto:sales@us.ophiropt.com). Need a hint? E-mail [john.mccauley@us.ophiropt.com](mailto:john.mccauley@us.ophiropt.com)

Here are the [answers to the last issue's puzzle](#). The winner of last issue's puzzle was **Steve Klink, Optical Technician in the Production Department, Key Technology, Inc.** "We manufacture Food Processing Equipment. We use the Orion PD Laser Power Meter for insuring proper output of our Laser based measuring scanners." -- Steve Klink, Key Technology, Inc.

## Business

### High Power Lasers in Medical Applications

By John McCauley, Product Specialist, Ophir-Spiricon

Our article on high power lasers in *Novus Light* was named the top article for 2014! Congrats to author John McCauley, who discusses laser use in medical procedures and medical device production, and how to control laser processes. [Medical Lasers](#).

## Technical Tips

### Beam Profiling

#### How Can You Tell if Your NanoScan Has a Bad Slit?

A NanoScan with a damaged slit will sometimes still generate good results. The problem is if the beam wanders onto a damaged area of a slit, the measurements are suddenly no longer valid. [Read the Tech Tip](#).

#### How to Limit the Amount of Data with an Aperture When Exporting from BeamGage

BeamGage does not typically export any value outside of an active aperture to ensure you have the same dataset that was used to compute the results. To export all of the frame data as ASCII then the apertures should be disabled prior to exporting. [Read the Tech Tip](#).

### Power/Energy Meters

#### The Right Tool for the Right Job

How to select the optimum power meter and sensor for your laser application using the Sensor Finder and Laser Fluence Calculator. Also, a tutorial about how to avoid damaging your sensors. [Read the Tech Tip](#).

#### If You Need a New Charger for Your Meter or Post/Stand for Your Sensor

Many common replacement power meter parts can be purchased online. Here's how to find a new charger for your meter or a new post and stand for your sensor. [Read the Tech Tip](#).

#### Zeroing a Pyroelectric Sensor for Improved Accuracy

When using a pyroelectric sensor with a particular meter for the first time, you must zero the sensor to get the most accurate reading. [Read the Tech Tip](#).

## FAQs

### Power/Energy Meters

Can I perform a firmware upgrade of my StarLite using a USB 3.0 port? [Read the FAQ](#).

My StarLite meter seems to have lost its programming during the firmware upgrade procedure. How can I get the functionality back? [Read the FAQ](#).

What happens if I use a pyroelectric sensor with a beam whose pulse repetition rate is higher than the sensor's rated maximum rep rate? [Read the FAQ](#).

When replacing a power meter battery, should it be recalibrated? [Read the FAQ](#).

Sometimes water-cooled sensors get corrosion damage inside. How can this be prevented? [Read the FAQ](#).

### Beam Profiling

Why doesn't the green light on the SP620U and SP503U cameras illuminate when it is connected through the USB connection? [Read the FAQ](#).

How does BeamGage produce higher resolution pointing stability than the size of one pixel in a camera? [Read the FAQ](#).

## From the Blog

### A Quick Guide to Optical Measurement Devices

So you want to measure light. Should you use a light meter, lux meter, laser power meter, optical power meter, radiometer, photometer, spectrometer, or something else? Here's a de-jumbler of what's what in optical measurement. [Optical Measurement](#).

### Facebook Competition: Win an iPad!

The best laser beam profile wins an iPad. [Find out more](#).

### 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.

### Play the Google Glass Game at Photonics West

Stop by Booth 1401 at Photonics West and play "Align the Laser with Google Glass" for a chance for an iPad! First 50 players receive a gift.

## Trade Shows

### [Photonics West](#)

February 10-12, 2015  
San Francisco, CA  
Booth 1401

### [MD&M West](#)

February 10-12, 2015  
Anaheim, CA  
Booth 472

### [LIA's Laser Additive Manufacturing](#)

March 4-5, 2015  
Orlando, FL

### [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

## What's New

### Pushing the Limits of Power & Energy Sensors at Photonics West, Booth 1401



At this year's Photonics West, we're going to stretch the limits of laser measurement...more than ever before. Stop by Booth 1401 and play "Align the Laser with Google Glass" for a chance for an iPad! First 50 players receive a gift. In addition, you will see:

- IR and THz power sensors that measure below 100nW
- Very high power sensors up to 120kW...yes, that's **120 KILOWATTS**
- High power pulsed laser sensors for measuring laser energy to 200 W (average power)
- New sensors for measuring LED power and irradiance

### Facebook Competition: Win an iPad!

Our annual beam profile contest begins on January 19th. Want to participate? Just follow these steps:

- Step 1: Upload a picture of your laser's beam profile to our [Facebook page](#).
- Step 2: Include the story behind the picture: What type of laser are you using? What are you using it for? What did you learn from taking the measurements?
- Step 3: Send us your address (in a private Facebook message) so we can send you a free USB drive.
- Step 4: The best post wins an iPad! (Read our [terms & conditions](#).)

### Compact, Low-Cost Integrating Sphere and Photodiode Detector System for Optical Power Measurement

The 3A-IS Optical Power Sensor is a compact, easy-to-use integrating sphere and photodiode sensor system. It is designed to measure the optical power of divergent, narrowband light sources from 350nm – 1100nm, such as lasers and LEDs. The AUX-LED Accessory for the 3A-IS corrects the effects of self-absorption. [Integrating Sphere](#).

### Enhanced Camera and Optics for BeamWatch, Non-Contact Industrial Beam Monitoring System

BeamWatch is the industry's first non-contact, focus spot size and position monitor for very high power YAG and fiber lasers. Designed for material processing applications, BeamWatch 1.2 features a new, higher sensitivity camera that allows for increased accuracy at lower power levels. In addition, a new telecentric lens provides a larger depth of field; this means the system provides the same accurate measurements while being more forgiving of beam position. [BeamWatch 1.2](#).

### [International Laser Safety Conference](#)

March 23-26, 2015  
Albuquerque, NM  
Booth 1151

### [Optical Fiber Communication Conference](#)

March 24-26, 2015  
Los Angeles, CA

## Fast Ship Program

Ophir-Spiricon's [Fast Ship program](#) provides one-day shipment of the most popular power/energy, beam profiling, and M<sup>2</sup> 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](mailto:kevin.kirkham@us.ophiropt.com)

## Follow Us Online

### Social Media



### Blog

[The Ophir Laser Measurement Group](#)

### Web

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

## 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 R&D 100 award-winning **BeamTrack** power/position/size meters and Spiricon's **Ultracal**<sup>™</sup>, 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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