

# ePulse: Laser Measurement News

The true measurement of laser performance



## ePulse: Laser Measurement News May 2016

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

#### MKS Instruments Acquires Newport

We are pleased to announce that on April 29, 2016, MKS Instruments completed the acquisition of Newport Corporation, the parent company of Ophir-Spiricon, LLC. MKS is a publicly traded technology leader in vacuum measurement and control, power and plasma, data analytics, and automation and control. What does this mean for you? [MKS Instruments](#).

### Features

#### Measuring Non-Laser Light Sources with Commercial Laser Beam Profiling Systems

*By Kevin Kirkham, Senior Manager, Product Development, Ophir-Spiricon*

High power lasers in excess of 1 kW generate enough Rayleigh scatter, even in the NIR, to be detected by silicon based sensor arrays. A lens and camera system in an off-axis position can be used as a non-contact diagnostic tool for high power lasers. Yet technical challenges remain when creating a measurement system like BeamWatch®. These include reducing background radiation, achieving high signal to noise ratio, reducing saturation events caused by particulates crossing the beam, correcting images to achieve accurate beam width measurements, creating algorithms for the removal of non-uniformities, and creating two simultaneous views of the beam from orthogonal directions. [BeamWatch](#).

#### White Paper: Trends and Keys to Success in Laser Welding

Stan Ream of EWI discusses laser welding, the evolution of the technology and applications: ruby lasers in the 1960's, military CO2 welding projects in the 1970's, automotive assembly lines in the 1980's, tailor welded blanks in the 1990's, and the laser welding problems and solutions of today. [Laser Welding](#).

### Applications

#### Characterizing a Laser Used in Metal Additive Manufacturing Equipment

*By John McCauley, Midwest Region Sales Manager, Ophir-Spiricon*  
A developer of power-bed additive manufacturing systems needed a beam profiling system that could be used by their field technicians for setup and maintenance of customers' lasers. The view of the caustic

### Videos of the Month

#### BeamGage Training Video

Announcing the new BeamGage Training video. Learn from the experts how to use the power of BeamGage to analyze your laser application. To order, contact [sales@us.ophiropt.com](mailto:sales@us.ophiropt.com).



#### Coaligning IR, Near IR, and Visible Laser Beams

At the Defense and Commercial Sensing Conference, Eric Craven discusses the challenges of working with multiple beams of different wavelengths. [Video: Coaligning Beams](#).



#### Radiometer Measures Power Down to Femtowatts

The RM9-PD system measures powers all the way down to 300 fW. Here's how to use it. [Video: Femtowatts](#).



### Laser Puzzle

[Try your hand at this month's Laser Puzzle](#). The first 50 submissions will receive the 2016 Photonics Spectra wall poster, "Photonics Spectrum Reference Chart." 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.mceldowney@us.ophiropt.com](mailto:john.mceldowney@us.ophiropt.com)

Here are the [answers to the last issue's puzzle](#). The winner of last issue's puzzle was **Violin D. Dimitrov, NGWP MTE, Intel**. "The Ophir-Spiricon laser power meters

was not as important as the laser measurement results. The cumbersome water-cooled system they had been using was costly, and lead times for sale and repair were long. Moving to a BeamGage® based system made setup quick and finding the focal spot location easy. [Additive Manufacturing](#).

## Webinars

### Right and Wrong Ways to Manage Laser System Variables in Materials Processing

A primary goal in material processing is to maintain consistency across the many variables introduced into the process. When a laser is being used for the production of parts, the laser system has its own set of variables. How are you managing them? In this on-demand *Industrial Laser Solutions* webcast, John McCauley, Midwest Regional Sales Manager, presents real-world case studies of right and wrong ways to approach material processing when variables change during laser welding, cutting, engraving, drilling, etc. [Laser Variables](#).

### Understanding Photonics: High-Power Fiber Lasers

Advances in active and passive fibers, as well as in pumping techniques, have driven fiber-laser technology to the point where a researcher or industrial engineer can choose from a variety of compact, reliable, low-maintenance systems that produce multiple kilowatts of power -- single- or multimode, depending on the user's choice. In this on-demand webcast, John Wallace, Senior Editor, *Laser Focus World*, reviews the state of the art in high-power fiber lasers, describing their design, active materials, and properties, providing info to help the user find the right laser for the job. [High-Power Fiber Lasers](#).

### Managing Inherent and Environmental Thermal Effects on High-Power Laser Systems

A laser will only perform as designed if it emits the correct amount of power or energy and if the beam size is correct for the intended use. The same is true for high-powered lasers, however, the thermal effects that these lasers have on the system add a level of complexity to the application. In this on-demand *NASA Tech Briefs* webcast, John McCauley, Midwest Region Sales Manager, Ophir-Spirion, discusses the thermal effects that are common to high-power lasers, how to measure them, how to identify when these thermal effects will be a problem in the process, and how they are being managed. [Thermal Effects](#).

## Technical Tips

### Beam Profiling

#### The Vocabulary of Laser Beam Measurement

A comprehensive list of laser measurement terms and their definitions. [Read the Tech Tip](#).

#### Optimizing Results Capture in BeamGage

For best performance in BeamGage®, it is recommended to set the Source Rate Control to Results Priority. The difference between Frame Priority and Results Priority is outlined here. [Read the Tech Tip](#).

### Power/Energy Meters

#### How to Measure Large, High Energy Density CO<sup>2</sup> Pulses

You can use the large aperture L100(500)A-PF-120 to measure large, high energy density pulses of CO<sup>2</sup> wavelength. Although that sensor is not defined for, or calibrated at, 10.6 um, the PF absorber's response to 10.6um is exactly the same as at 1064nm. [Read the Tech Tip](#).

#### Using Pyroelectric Sensor Diffusers

Some Ophir pyroelectric sensors have a removable diffuser. When the diffuser is needed, there should be a wavelength to select that has a "D" at the end. [Read the Tech Tip](#).

are integrated in all of our RoFin laser marking tools - red, green and UV - and have worked very accurately and reliably throughout my 5-year experience with those tools. Although we have to order them through RoFin, which I did once only for a tool we had been using 24-7 for 10 years. If any need arises I will not hesitate to order or recommend the Ophir-Spiricon products."

## From the Blog

### No-Hassle Laser Measurement (on Your PC)

To measure the power or energy of your laser, you need three things: a device that can "magically" sense the power, a way to translate that raw analog signal into a usable digital result, and a display for the digital result. [Laser Measurement on PC](#).

### Catalogs: Power Meters & Beam Profiling

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

## Trade Shows

### [Laser EXPO 2016](#)

May 18-20, 2016  
Yokohama, Japan

### [Metalloobrabotka](#)

May 23-27, 2016  
Moscow, Russia

### [Photonics North](#)

May 24-26, 2016  
Quebec, Canada

### [International Engineering Fair](#)

May 24-27, 2016  
Nitra, Slovakia

### [Automotive Engineering Expo](#)

May 25-27, 2016  
Yokohama, Japan

### [LASYS](#)

May 31 – June 2, 2016  
Stuttgart, Germany

### [Photonics 2016](#)

June 1-2, 2016  
Veldhoven, Netherlands

### [Advanced Laser Applications Workshop](#)

June 6-8, 2016  
Plymouth, MI

### [Photonex Road Show](#)

June 8, 2016  
Heriot-Watt University, Edinburgh

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

June 14-16, 2016  
New York, NY

## FAQs

### Power/Energy Meters

When we use a beam splitter to constantly sample a beam (for monitoring purposes), we get fluctuations in the measurements because of instability in the split ratio. Do you have any best practices or tips to prevent this? [Read the FAQ.](#)

I just installed the latest BeamGage and now StarLab is not working. What can I do? [Read the FAQ.](#)

What is the best water to use in the Water Cooled Sensors? [Read the FAQ.](#)

### Beam Profiling

BeamGage won't launch and an error comes up saying that the setup file cannot be loaded. What can I do to get BeamGage running again? [Read the FAQ.](#)

BeamGage just crashed but I don't know what caused this to occur. What can I do? [Read the FAQ.](#)

## What's New

### Photodiode Sensor Measures Power of Laser Bar Code Scanners and Laser Printer Scanners

The BC20-V1 is a photodiode sensor for measuring the power of scanned or intermittent beams. The sensor measures any wavelength over the spectral range of 400 – 1100nm. It is the only product on the market that is capable of measuring the power of laser bar code scanners. It also measures laser printer scanners and the peak power of pulsed mode lasers. [BC20-V1.](#)



### No Hassle Calibration Program

The No Hassle Calibration program is designed to ensure proper operation of laser measurement equipment. The new program evaluates Ophir power meters and beam profilers that have been purchased by customers. Each is compared to NIST-traceable standards. If the equipment is functioning properly, minimal servicing is done. If repair is needed, the equipment is returned to tolerance. All repairs are FREE as long as all the paperwork is completed prior to submission. This ensures a quick and efficient recalibration process. [No Hassle Calibration.](#)

### [Opto Taiwan](#)

June 15-17, 2016  
Taipei, Taiwan

### [Congress Optique](#)

July 4-7, 2016  
Bordeaux, France

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

## About Ophir-Spiricon, LLC

With over 40 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.

You are receiving this newsletter because you have previously expressed an interest in Ophir-Spiricon, LLC. To let a colleague know about ePulse: Laser Measurement News, forward this e-mail to them or have them [subscribe](#). If you do not want to receive *ePulse: Laser Measurement News*, complete our [online unsubscribe request](#).

© 2016, Ophir-Spiricon, LLC  
3050 North 300 West, North Logan, UT 84341  
Tel: +1 435-753-3729  
[www.ophiropt.com/photonics](http://www.ophiropt.com/photonics)