ePulse: Laser Measurement News

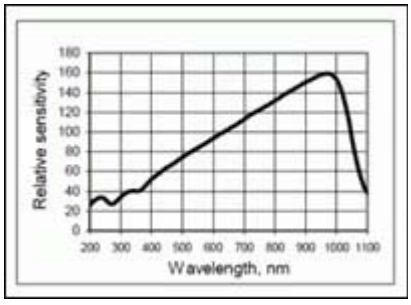
March 2018

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.

Feature

Laser Measurement: What You Need to Know for Accuracy & Reliability

By Dr. Ephraim Greenfield, CTO, Ophir Photonics



New wavelengths, higher powers/energies, and new applications...there is no doubt that the laser industry is advancing steadily. That being said, there are still three basic ways to measure laser power and energy: thermopile detectors, photodiode detectors, and pyroelectric detectors. The choice will depend on a number of factors. Here's what you need to know for accurate and reliable measurement. Measuring Laser Power and Energy.

Webinars

How to Avoid Choosing the Wrong Power/Energy Sensor

Sensors are critical for accurate laser measurement, yet are often selected based on the wrong criteria. Choosing solely on the measurable power range or aperture size is typical but insufficient. In this *Laser Focus World* webinar, Ophir's Dick Rieley focuses on key factors in the selection process, including beam diameter, beam density values, cooling requirements, and exposure duration. **Available On-Demand.** Avoid Choosing the Wrong Power/Energy Sensor.

The Challenges of Laser Additive Manufacturing: Power Density, Focus Shift, and Spot Size

To create consistent, strong structures using laser-based additive manufacturing processes that meet flyable DoD standards or FDA requirements, the metallurgy must be consistent. In addition, a laser beam of known dimension, power density, and focal spot location is

Videos of the Month

Integrated Additive Manufacturing Laser Measurement System

Introducing BeamWatch AM, an integrated laser measurement system designed to measure critical laser beam parameters for laser-based additive manufacturing systems. BeamWatch AM.

High Power Laser Process Monitoring: A Tale of Two Tools

Struggling to keep the quality of your industrial laser process consistently high enough? Meet two Ophir instruments that enable you to keep a close tab on your laser process - without getting in its way - so it can be kept stable, consistent, and...maximally profitable. High Power Laser Monitoring.

Laser Puzzle

Try your hand at this month's Laser Puzzle. All submissions will receive an 8GB USB pen drive. 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's the answer to last issue's puzzle. The winner of last issue's puzzle is Dave Potter, Project Manager, Pratt & Whitney.

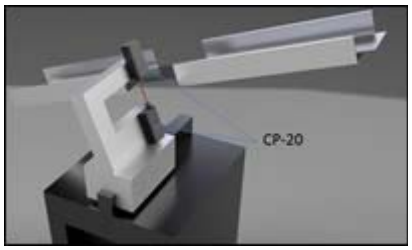
required. In this webinar, Ophir's Dick Rieley discusses additive laser processing and the challenges that arise with high-power laser material processing. This *3D Metal Printing* webcast describes the challenges faced in laser additive manufacturing applications. **Available On-Demand.** Laser Additive Manufacturing.

Technical Tips

Pulsed Power Measurements
Ophir has a number of sensors which utilize pulsed power measurements. This mode enables quick and easy measurements of high power lasers with small air cooled sensors. Sensors include several thermal power sensors, including the advanced Helios for industrial environments. Find out which is right for your application. Pulsed Power.

Preventing Corrosion in Water Cooled Laser Sensors
When needed, our recommendation for cooling water is to use (in a closed circuit) deionized ("DI") water with its pH level kept neutral. Many customers use ordinary tap water and have no problems with corrosion. Still, the level of risk depends on a variety of factors related to local water conditions and is very difficult to predict. Preventing Corrosion.

Thickness Measurement Using Conoscopic Holography Non-Contact Laser Sensors
By Schmulik Barzilay, International Sales Manager, Optimet

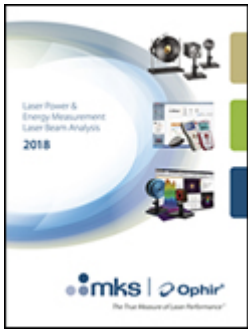


Non-contact laser sensors can provide a variety of parameters to measure and characterize surface features such as flatness, roughness, and displacement. One dominant parameter end users want is to measure is the thickness of metal, plastic, wood, and glass. Here's how. Thickness Measurement.

"Worst Case" Combinations of Laser Parameters...Watch Out!
When looking for a sensor to measure a laser beam whose specs are given as ranges of values (think of the specs in a typical laser system brochure), don't just take those specs at face value. Consider the actual worst-case combinations of parameters that you'll really need to measure and look for a laser measurement device that meets those specs. Laser Parameters.

What's New

2018 Catalog: Laser Power/Energy Measurement & Laser Beam Analysis



If you have a laser, you need to measure it. Ophir's 2018 new catalog covers a wide range of laser power and energy sensors, meters, and laser beam profiling systems for medical, industrial, defense, and research applications. Download your copy today at 2018 Ophir Catalog.

Focus Spot Monitor for Material Processing
The Focal Spot Analyzer is a laser beam monitoring system that measures the focus spot and power of high power lasers in real time. It measures focal spot size down to 35µm and laser power from <1 to 400 watts for wavelengths from 266 –

Social Media: Blog

Four Ways Ophir's LP2 Laser Sensors Can Help You Beat Measurement Challenges
In many laser applications, you can find yourself facing challenges: high power and energy, high power density and energy density, spectrally wideband sources, and divergent beams. Ophir's new LP2 sensors are designed to meet these difficulties. Here's how. Laser Measurement.

Catalogs: Power Meters & Beam Profiling

Download the new 2018 Ophir 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

LME
March 28-29, 2018
Schaumburg, IL

DOC 2018
April 6-7, 2018
Riga, Latvia

4th Conference: 3D Printing, Additive Manufacturing in the Automotive Industry
April 11-12, 2018
Bamberg, Germany

AMUG
April 12-18, 2018
St. Louis, MO

SPIE Defense & Security
April 15-19, 2018
Orlando, FL

Laser Expo (OPIE 18)
April 25-27, 2018
Yokohama, Japan

AKL 18: International Laser Technology Congress
May 2-4, 2018
Aachen, Germany

CLEO
May 13-18, 2018
San Jose, CA

International Engineering Fair 2018
May 22-25, 2018
Nitra, Slovakia

Optics & Photonics Days
May 28-30 2018
Jyvaskyla, Finland

1100nm. Designed for laser applications with shorter working distances, the system monitors power density distribution of the focal spot and shifts in the focal plane location, and provides a well understood location of the laser caustic. Find out more at Focus Spot Monitor.

BeamWatch for Additive Manufacturing

Featured at Photonics West, Ophir® BeamWatch® AM is the industry's first non-contact laser beam monitoring system for additive manufacturing. It's a lightweight, compact system for real-time measurement of focal shift during laser startup of powder bed fusion manufacturing processes. It measures key beam size, position, and quality parameters, including focus spot size and beam caustic, for more consistent metallurgy. BeamWatch AM.

Laser Sensor for Measuring IPL Pulses

Hair removal, skin rejuvenation, even non-medical unregulated cosmetic applications - there is a real need to regularly monitor the IPL's source performance. Ophir's L40(150)A-IPL sensor is specifically designed for measuring IPL pulses. It can measure pulse energies as high as 2000 J and safely withstand fluences of up to 400 J/cm^2 for pulse widths typical of IPL sources. Based on Ophir's innovative LP2 absorber, the new sensor provides the highest damage threshold in the industry. L40(150)A-IPL.

BeamWatch Non-Contact Beam Monitoring System for Industrial Lasers Now ISO 11146 Compliant

Ophir® BeamWatch®, the first non-contact beam monitoring system for very high power lasers, is ISO 11146 compliant. BeamWatch provides real-time beam measurements of lasers that are typically too powerful for direct readings. It measures the Rayleigh scatter of a substantial length of the beam all at once. As a result, there is no contact between the instrument and the beam, and the initial determination of focal spot size, beam waist location, divergence angles, and beam propagation ratios (M^2) are easily and almost instantly obtained. ISO 11146 compliance ensures the accuracy and reproducibility of all measurements. Find out more at BeamWatch ISO.

FAQs

Beam Profiling

Why is the BeamGage® camera system requesting a license key after new software is loaded? Read the FAQ.

What is the difference between Frame Priority and Results Priority in the BeamGage Source Rate Control menu? Or, how can BeamGage be set up in order to acquire data frames at the maximum rate possible? Read the FAQ.

Power Meters

What is the "NIRS" wavelength setting in the 10K-W and 15K-W laser sensors? Read the FAQ.

How do I upgrade the StarBright or StarLite firmware? Read the FAQ.

How does a power meter measure accurately with sensors that have varied sensitivity depending on wavelength? Read the FAQ.

Lasys
June 5-6, 2018
Stuttgart, Germany

Photonex London
June 14, 2018
London, UK

a.ivela
June 19-22, 2018
Ancona, Italy

Photonex Scotland
June 19, 2018
Edinburgh, Scotland

Photonics Event 2018
June 19, 2018
Enschede, Netherlands

OptecNet Jahrestagung
June 20-21, 2018
Berlin, Germany

Lees
June 24-29, 2018
Ancona, Italy

Laser Korea
June 26-28, 2018
Nano, Korea

Fast Ship Program

Ophir'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 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

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The Ophir Laser Measurement Group

How do you save the selected settings on a power meter so it will default to those settings each time it is powered on? Read the FAQ.

Web
www.ophiropt.com/photonics

About Ophir

MKS Instruments, Inc. is a global provider of instruments, subsystems and process control solutions that measure, control, power, monitor, and analyze critical parameters of advanced manufacturing processes to improve process performance and productivity. With over 40 years of experience, the Ophir brand comprises a complete line of instrumentation, including power and energy meters and beam profilers. 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 is **ISO/IEC 17025:2005** accredited for calibration of laser measurement instruments. The company's modular, customizable solutions serve manufacturing, medical, military, and research industries throughout the world. An ISO 9001:2008 Registered Company.

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