ePulse: Laser Measurement News

October 2012

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.

Tutorials

Attenuation-Induced Error Due to Thermal Lensing in Beam Measurement
The need to profile lasers with powers in the 10mW to 1W range are becoming more common. Many of these 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 some cautions to be observed to avoid erroneous measurements. Thermal Lensing.

Common Causes of Damage to NanoScan Scanheads and Reasons for Out-of-Tolerance Conditions
Problems that might be encountered with a NanoScan scanning-slit beam profiler can be due to either scanhead damage or out-of-tolerance conditions. Scanhead damage can be categorized as laser or mechanical. Laser damage is the most prevalent and results from exposure to lasers with excessive laser power/energy density and/or high average power. In this document, Dell Olsen, Customer Service Manager, discusses the proper care and maintenance of Photon NanoScan Scanheads.

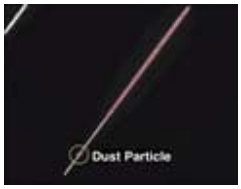
Applications

Measuring Divergence of Custom Optical Fibers
This app note provides guidance for the measurement of divergence angles of custom optical fibers, as well as laser diodes and LEDs. Measurement of the divergence of such sources can be made using either the Goniometric Radiometer or NanoScan family of products. The accuracy and detail of the measurement depends on the divergence and on the instrument used. Measuring Divergence.

Measuring Beam Power from Multi-Kilowatt Lasers
A review of laser measurement in manufacturing by Keng Leong in *Industrial Laser Solutions* magazine. Different laser-specific processes are utilized: cladding, cutting, drilling, marking, and welding. For each process, beam power and intensity are critical parameters for ensuring the quality of the process. Consequently, laser beam power is the primary parameter that is monitored or controlled. Measuring Beam Power.

Video of the Month

NanoScan Scanning-Slit Profilers: Common Causes of Damage and Reasons for Out-of-Tolerance Conditions
With proper care, your NanoScan slit-based beam profiler will provide many years of trouble-free operation. This video provides tips to help you get the most life from your profiler and includes examples of slit damage and how to avoid it. View the video.



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. Need a hint? E-mail kevin.kirkham@us.ophiropt.com

Here are the answers to the last issue's puzzle. The winner of last issue's puzzle was **Michael Ray, Lead Laser Service Technician, FARO** "We use Ophir NOVA laser power meters with a collection of Ophir photodiode sensors for repair, testing, and calibration of Laser measurement systems. At FARO's Wixom office, we predominantly handle service of the company's laser tracker. The FARO laser tracker is a 3D measurement systems that provides much greater accuracy over traditional methods of machine and construction alignment, tool building, reverse engineering, part inspection, assembly, and equipment installation. More info is avaialble at www.faro.com." - Michael Ray

Business News

Spiricon Pyrocam™ III Upgrade Promotion
Due to improvements in the Spiricon Pyrocam™ III manufacturing process, increased yields, and lack of availability of older components, we are pleased to provide our customers a short-term upgrade at an incredible price. Pyrocam III Upgrade.

Quality Repair and Recalibration
After hundreds of hours of value stream mapping and multiple 5S's, the Recalibration and Repair group has taken turnaround time from over three weeks to under five days. Rigorous training ensures that each piece of equipment is calibrated and repaired accurately. Here's what Intel has to say about their experience. Repair and Recalibration.

Technical Tips

Beam Profiling
Outputting Data from Photon Scanning-Slit Profiler
We are frequently asked how to output data from the NanoScan to other programs for additional analysis or publication. NanoScan.

Simple Alignment of MS-1780 Real-Time M^2 Analyzer
Proper alignment of the ModeScan-1780 is essential but can seem difficult to achieve. Here is a simple method for making sure the system is properly aligned to get the "first light" conditions that allow for easy fine-tuning. ModeScan-1780.

Power Meters
Guidelines to Prevent Overheating of Power Sensors
A laser power sensor absorbs laser power while measuring it; if that power is not removed at least as fast as it comes in, the sensor could overheat and fail. Here are guidelines to ensure the sensor has proper heat sinking.

FAQs

Beam Profiling
What is a safe power/energy level that a camera can handle? Read the FAQ.

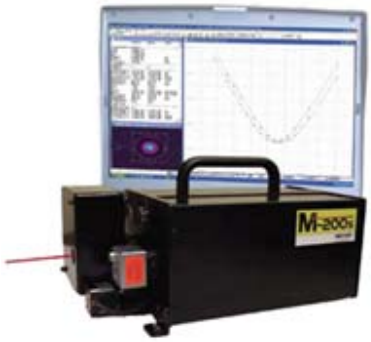
What is the proper way to do an Ultracal in BeamGage? Read the FAQ.

Power/Energy Meters
Can I get a longer cable for the thermal sensor? Read the FAQ.

Integrating spheres are used when you have divergent light sources. How do they work? Read the FAQ.

What's New

M^2-200s Automated M^2 Laser Beam Propagation Analyzer Adds Support for 64-bit Processing
The M^2-200s is an ISO 11146 compliant system that automatically measures laser beam quality. Designed for continuous 24/7 use, the latest version adds support for the 64-bit Windows® 7. This addresses more physical memory, minimizes the time required to



From the Blog

How to Use a Thermal Sensor for a Pulsed Laser Beam
We are often asked, what if the laser has a low pulse energy but its average power is well above the thermal sensor's minimum threshold? Can the power be measured? What about the energy over some time? Pulsed Laser Beams.

2012 Catalogs: Power Meter & Beam Profiling

Download the 2012 Ophir-Spiricon Laser Measurement Catalogs today. Tutorials and products in Power Meters and Beam Profiling.

Trade Shows

Lasers for Manufacturing Event (LME)
October 23-24, 2012
Schaumberg, IL

MD&M Minneapolis
October 31-November 1, 2012
Minneapolis, MN

FABTECH
November 12-14, 2012
Las Vegas, NV

Fast Ship Program

Ophir-Spiricon's Fast Ship program provides one-day shipment of the most popular power/energy, beam profiling, and M^2 laser measurement equipment.

Free Laser Measurement Equipment

If you're an end user of our laser equipment, let's hear about 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
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.

swap processes, and speeds up the measurement cycle to less than two minutes. M^2-200s Analyzer.

RLI Training: Principles of Lasers
Rockwell Laser Industries is providing **Principles of Lasers** training **November 26, 2012**, in Phoenix, AZ. This course provides a solid introduction to lasers and is designed for those who plan to continue their professional development and who have management responsibility for lasers and/or laser safety. RLI Laser Training Course.

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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 Ophir-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.

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