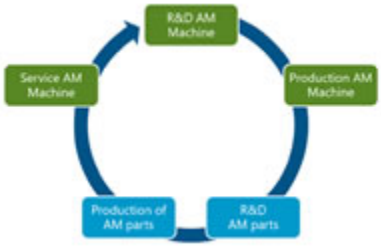
ePulse: Laser Measurement News
February 2022

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.

Features

High Power, Cramped Spaces: Measurement Challenges in Additive Manufacturing

By Nicolas Meunier, Business Development Manager, High Power & Automotive, and Luca Porcelluzzi, Regional Sales Manager, Ophir



Since metals have a high melting point, it takes powerful lasers to melt the powder layers in laser powder bed fusion (LPBF) systems. As a result, the melting process must take place within a protected construction chamber for safety. This presents challenges when adhering to process parameters. Fortunately, new developments in the field of measurement technology now enable rapid measurement, directly in the construction chamber. Additive Manufacturing.

Global Shortage of Semiconductor Chips

By Satya Vaddi, Sr. Manager, Corporate Strategy, MKS Instruments

A global shortage of semiconductors triggered by the surging demand for laptops and computers during the pandemic had a profound impact on global automotive production lines. Here's a look at how some of the key players in the industry, such as Intel and TSMC, are taking measures to expand their capabilities. MKS, as a key supplier of semiconductor components is well positioned to support the ongoing industry-wide efforts to ramp up production. Semiconductor Chips.

Applications

Measuring UV, UV-A LEDs

The use of UV LEDs is increasing rapidly as they show advantages over traditional arc lamps: emitting radiation only at the required wavelength range, reducing unnecessary thermal heating, and having a reduced footprint and lower energy consumption. Moreover, UV-A LED sources are much safer to the human skin and eye compared to arc

Videos of the Month

Laser Power/Energy Meter Features Large Color Touchscreen

The Centauri is a compact, portable laser power/energy meter for precise measurement of laser performance over time. The meter features a large, full-color, 7-inch touch-screen with a wide range of graphical display formats and advanced math functions, including density, scale factor, and normalize against base line. Centauri Dual-Channel.

Measuring High Power Lasers in Industrial Settings

Meet Ophir's Helios Plus family. Designed with factory automation in mind, these power meters have a robust, industrial design for harsh environments and a range of communication interfaces that make them easy to integrate into factory networks. Helios Plus.

Measuring Very Short Pulses

If you need to measure the power of high repetition rate lasers with very short pulses (typical in many micromachining applications) - and you want a sensor that will survive the experience - the new F80(120)A-CM-17 may be exactly what you need. F80(120)A-CM-17 Power Sensor.

lamps, and do not contain hazardous materials. Measuring UV, UV-A LEDs.

Webinars

How to Keep a Tight Leash on High-Power Laser Processes
Speaker: Mark Slutzki, Product Manager, Ophir
On-Demand
Laser beams with powers of many tens of kilowatts are becoming increasingly common in today's industrial applications. However, as the powers increase, the stakes increase as well. In this webinar, Mark Slutzki discusses how to monitor appropriate laser parameters to keep high-power processes stable and predictable. High-Power Laser Processes.

Measurement Challenges of Green and Blue Lasers
Speaker: Nicolas Meunier, Business Development Manager, High Power & Automotive, Ophir
On-Demand
To address the growing need to weld the copper required for electric vehicles, new high-power green and blue laser technologies are emerging. But there are challenges. What are the options with these new wavelengths, and how can you measure in an automated production line? What are best practices for gaining reliable data for troubleshooting, predictive maintenance, and quality documentation? Nicolas Meunier explains these challenges and how to address them in this *Photonics Spectra Conference* webinar. Green and Blue Lasers.

Research News

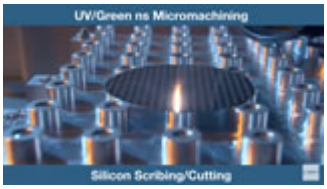
Ultrashort-Pulse Lasers Power Options for Precise Machining
Ultrashort-pulse (USP) lasers are used in industrial manufacturing because of their ability to precisely machine sensitive materials and structures with minimal thermal damage. A recent study by MKS Instruments demonstrated the viability of Bessel beam processing with an infrared picosecond laser. The method successfully allowed ablation cutting of a clear PI-based multilayer stack for foldable display cover window applications. Ultrashort-Pulse Lasers.

Lasing at Nitrogen-Vacancy Centers in Diamonds
For the first time, lasing at NV^- centers in an optically pumped diamond sample is achieved. Spatial profiles of lasing mode were recorded at 200 mm distances from each output coupler using an Ophir SP620U CCD camera. NV^- Diamon Laser.

What's New

Wide Beam Imager for Measuring Large and Divergent SWIR Beams
The Ophir® Wide Beam Imager SWIR is a compact, calibrated optical system for measuring the size and power distribution of large and divergent beams of VCSELs and LEDs in the SWIR range (900 - 1700nm). When combined with Ophir BeamGage software and an InGaAs camera, the WB-I SWIR is capable of imaging any beam shape (round, line, square, or doughnut) that is too large for a camera sensor. It features a 45mm diameter aperture and can accurately measure beams with an angle of incidence up to 70 degrees. Wide Beam Imager SWIR.

Beam Profiler with Improved Accuracy at NIR, Nd:YAG



Social Media: Blog

Enhanced Flexibility in Industrial Laser Power Measurement with Helios Plus
Measuring laser power is the first step to ensure the quality of laser-based processes. The good news is that our Helios Plus industrial measurement device can easily check laser power within the process. And now the device is even more flexible. Helios Plus.

Ensure Quality Laser Welds for High Pressure Vessels
We recently had a customer testing welds in high pressure vessels using sacrificial sectioning of the welds to ensure the welds could stand the pressure. They found a better way when they switched to Ophir's BeamWatch non-contact beam profiling system and 5kW water-cooled power sensor to monitor the laser's properties. BeamWatch.

New Catalogs: Power Meters, Beam Profiling, IR Optics

The new 2022 Ophir Laser Measurement Catalogs include tutorials and product specifications for laser power meters and beam profiling systems.

The new 2022 Ophir IR Optics Thermal Imaging Lenses Catalog includes a wide range of LWIR and MWIR 1-FOV, Multiple FOV, and continuous zoom lenses.

MKS Newsletters

TECHinnovations Newsletter for the latest on vacuum, power solutions, gas delivery and analysis, plasma generation, and ozone solutions for semiconductor and advanced markets from MKS Instruments.

Focus on Photonics Newsletter for innovations in lasers, opto-mechanical components, vibration and motion control, and laser characterization from Newport Corp.

Wavelengths
The Ophir® SP932U USB 3.0 High Resolution Beam Profiler is a compact, CMOS camera-based beam profiler for UV, VIS, NIR, and Nd:YAG wavelengths that delivers the most accurate laser intensity distribution measurements. It combines wide dynamic range, high sensitivity, linearity, and high resolution. The SP932U profiler includes the industry's most sophisticated beam profiling software, BeamGage, which features a new, optimized Blooming Correction algorithm designed specifically for NIR and Nd:YAG wavelengths. SP932U Beam Profiler.

FAQs

Beam Profiling
Can I use my new SP932U camera on an existing installation of BeamGage? Read the FAQ.

What is the distance from the front aperture of the SP932U camera to the CCD surface? Read the FAQ.

Power Meters
I cannot have battery operated units in my facility. Can I use my Centauri meter without the battery installed? Read the FAQ.

What is the repeatability of power sensors? Read the FAQ.

Can I use my IS6-D Integrating Sphere, which is normally used to measure divergent beams, to measure a collimated beam? I know that normally one would use an IS6-C for collimated beams, but can I manage with my –D sphere on a one-time basis? Read the FAQ.

Trade Shows

Quantum Australia 2022
February 23-25, 2022
Sydney, Australia

Defense Expo, India
March 10-13, 2022
Gandhinagar Gujarat, India

SPIE Defense + Commercial Sensing
April 3-7
Orlando, Florida, USA

LASER World of Photonics
April 26-29, 2022
Munich, Germany

AKL: International Laser Technology Conference
May 4-6, 2022
Aachen, Germany

LASER World of Photonics
July 13-15, 2022
Shanghai, China

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About Ophir

Ophir is a brand within the MKS Instruments Light & Motion division. The Ophir product portfolio consists of laser and LED measurement products, including laser power and energy meters, laser beam profilers measuring femto-watt to hundred-kilowatt lasers, high-performance IR and visible optical elements, IR thermal imaging lenses for defense and commercial applications, and OEM and replacement high-quality optics and sub-assemblies for CO_2 and high-power fiber laser material processing applications. Dedicated to continuous innovation in laser measurement, the product portfolio includes the **R&D 100** award-winning **BeamTrack** power/position/size meters and Spiricon **Ultracal™**, the baseline correction algorithm that helped establish the ISO 11146-3 standard for beam measurement accuracy. The company is **ISO/IEC 17025:2005** accredited for calibration of laser measurement instruments. The company's modular, customizable solutions serve semiconductor, industrial, life and health sciences, research, and defense 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