ePulse: Laser Measurement News

January 2026

Welcome to **ePulse: Laser Measurement News**, a review of new developments in laser beam measurement, 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.

Join us in celebrating 50 years of innovation and excellence in laser measurement.

Features

Shaping the Future of Laser Measurement: A Conversation with Reuven Silverman

As the laser and photonics industry enters 2026 amid rapid advances in power, speed, and production demands, we sat down with Reuven Silverman, General Manager of Ophir Photonics Products, to reflect on the past year and look ahead. In this conversation, Reuven shares how 2025 reshaped laser measurement requirements across defense, semiconductor, and industrial markets, and how MKS is positioning itself for the next phase of growth, as laser measurement moves deeper into production environments. Reuven Silverman.

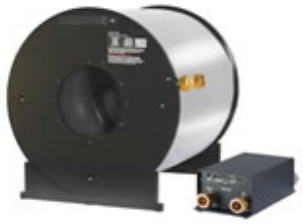
Laser Measurement in Heavy Industry

By Daniel Bonder, OEM Program Manager, Ophir Products, MKS Inc.

From cutting and welding to surface treatment and quality control, lasers bring a host of advantages to industrial applications. However, to achieve optimal results and maintain consistent quality, accurate laser measurement is crucial. Proper laser measurement

Video of the Month

150K-W Ultra High-Power Laser Sensor
Laser beams with powers over 100 kW are increasingly found in industrial and defense applications. As a result, accurately measuring such beams is more critical than ever. Meet the Ophir 150K-W power sensor, for measuring laser beam powers up to 150 kW. Ophir 150K-W Laser Sensor.



Laser Measurement PC Interfaces
If all your laser measurement work involves a laptop or a PC, rather than a stand-alone meter, one of the Ophir direct-to-PC interfaces could be an ideal solution. These are full-fledged laser power and energy meters, but instead of having a separate on-board display, the PC becomes your display. Laser Measurement PC Interfaces.

Solutions for IPL Measurement
Measurement of light in IPL applications presents unique challenges. MKS solutions are specifically designed to meet them. IPL Measurement.

ensures that the laser operates correctly with specified power levels for each specific task, whether it's cutting metal, drilling plastic, or any other material processing. In this article, we discuss the role of laser measurement in heavy industry, covering applications, benefits, challenges, and future trends. Laser Measurement in Heavy Industry.

See What's New at Photonics West 2026

Stop by MKS booth #927 at Photonics West 2026 to see what's new in laser beam profiling, power/energy measurement, and IR optics, Jan 20-22nd.

Featured new products:

- **SP301Q Camera**, high resolution colloidal quantum dot GigE NIR-SWIR-VIS CMOS camera
- **Ring-Core BeamGage Software**, the first commercial software designed to accurately characterize ring core-shaped beams using industry-standard beam profiling methods
- **SP403P Large-Beam Profiler**, SWIR beam profiler designed to analyze large-beam diagnostics across 1440–1650 nm
- **BeamWatch AM-3 Integrated Laser Measurement for Additive Manufacturing**, featuring faster measurements that enable detection of focal shifts, characterization of focal spots down to 35 µm, and operation with lower-power beams
- **SWIR and NIR Zoom Lenses**, including a soon-to-be-released 1000 mm long-range model

Recently released:

- **Ophir 70K-W Ultra-High Power Calorimetric Laser Sensor**, featuring a unique Power from Pulse™ capability that enables accurate power measurements from short-duration laser exposures, extending measurement capacity up to 100 kW
- **Custom High-Energy Laser (HEL) Optics**, built for extreme power and temperature environments
- **SWaP Folded-Optics Solutions for UAVs**
  - FoldIR MWIR 25-275 mm f/5.5
  - SupIR 16-80 mm f/1.2
- **SXGA-optimized Zoom Lenses**
  - SupIR MWIR 10-135 mm f/1.8 (LWIR)
  - SupIR-X 15-300 mm f/4 (MWIR)
  - SupIR 16-80 mm f/1.2 (LWIR)

Applications

Additive Manufacturing

Early AM techniques typically involved polymer materials, and the resulting structures would serve as prototypes and models. Newer techniques, such as Direct Metal SLM (Selective Laser Melting), use lasers to selectively melt metal powders, and the system actually produces functional parts – not just prototypes. Such systems use fiber lasers, with typical powers of several hundred Watts, and often have up to four laser

How to: Use High Power Sensors Correctly and Prevent Problems

When you use high-power laser measurement sensors, there are avoidable problems that tend to come up repeatedly. In this video, you'll learn tips and best practices that can help you avoid such issues. High Power Sensor Best Practices.

Blog Posts

Laser Marking: 30 Years of Innovation and Why Beam Quality (M^2) Is the Hidden KPI

From automotive VINs to medical UDI/GS1 DataMatrix codes, laser marking underpins traceability and compliance across industries. But outcomes still hinge on physics: the beam propagation factor (M^2) is the "times-diffraction-limit" factor that inflates spot size and reduces fluence when the beam deviates from ideal Gaussian behavior. Propagation Factor (M^2).

Choosing the Right Instrument for Industrial High-Power Laser Measurement: Meet the Ophir IPM

The Ophir IPM is a modular industrial laser power sensor for measuring the average power of high-power lasers up to 11 kW. It's ruggedized by design, with all the features needed for reliable, fail-safe operation in a tough operational environment. Ophir IPM.

The Role of Laser Measurement in Advancing High Energy/Power Laser Systems (HELS)

beams operating in parallel. Reproducibility is key and that means tight monitoring of the relevant laser parameters. The beam's power, as well as its focal spot location and shape, must be very stable across the full working field, for every layer, across multiple beams and perhaps multiple systems, over time. Additive Manufacturing.

Material Micro Processing
Micro processing refers to manufacturing steps in the SEMI, display, PCB, and other industries where thin and brittle materials such as glass, semiconductors, or ceramics require small scale machining for the removal of material (cutting, drilling), or heating intended to produce a chemical or mechanical effect. In many cases usage of mechanical tools such as drill bits is not possible due to the fragile materials involved and the scales of the processes which can go down to microns. Many micro processing applications utilize lasers to deliver precise amounts of energy in a precisely defined space. Reliable laser power measurement is a key factor. When dealing with lasers capable of drilling through hard materials such as glass and ceramics this becomes a real challenge. Material Micro Processing.

Service & Calibration

Tech Note: How to Prolong the Life of Your Beam Profilers
By Markus Schmiedt, Senior Manager Manufacturing/Operations, MKS Inc.

There are many different types of Ophir beam profilers. In this article, we outline some of the major damage we have encountered in our European Service & Calibration Center. We are confident of the longevity of our measurement systems when used according to specifications. So we want you to be aware of several key points, including use of cameras, best practices, and recertification. Beam Profilers.

FAQ1: How do I perform a custom calculation within BeamGage Professional?
BeamGage Professional has the ability for customers to create their own custom calculation result that will be displayed in the BeamGage Professional Results window as well as being available over the .NET Automation Interface. HTML instructions for performing this are installed on the computer where BeamGage Professional is installed. They can be accessed by clicking on the Windows Start and going to All Programs and Beam Profiler Documentation. Look for the "BeamGage Professional Custom Calculations" web page link.

FAQ2: Does the NanoScan have an Automation Interface like BeamGage?
NanoScan Professional products do have an Automation Interface, but this is an older interface called ActiveX instead of .NET which BeamGage Professional uses. NanoScan Standard Products can easily be upgraded to Professional product by simply purchasing an upgrade license. The ActiveX Automation Interface for NanoScan Professional products is not a replete interface, but basic examples are available for customers to expand for their specific applications. The manual for this interface is available by clicking on the Windows Start and going to the folder called "Photon" and opening the "NanoScan V2 Automation Developer Guide" PDF document.

Calculators & Tools

High Energy Laser Systems (HELS) are rapidly transforming the landscape of defense technology. As the technology behind these lasers' advances, so does the need for precise measurement and control. Here's what you need to know. HELS Measurement.

Laser Measurement Systems: Best Practices for Accurate and Reliable Results
In industrial materials processing, even small variations in beam characteristics can lead to reduced efficiency, lower product quality, or costly downtime. Here we take a look at best practices for measuring, analyzing, and maintaining laser system performance. Laser Measurement Best Practices.

Catalogs: Power Meters, Beam Profiling, IR Optics

The Ophir Photonics 2026 Laser Measurement Catalogs include tutorials and product specifications for laser power meters and beam profiling systems.

The Ophir IR Optics Thermal Imaging Lenses Catalog includes a wide range of LWIR, MWIR, and SWIR continuous zoom lenses compatible with 5 µm, 10 µm SXGA & 15 µm VGA detectors. Also features a wide selection of 1-FOV and multiple FOV IR lenses. Includes new product specs, extended range of lens DRIs, and detailed H-FOVs charts per detector.

MKS Newsletters

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

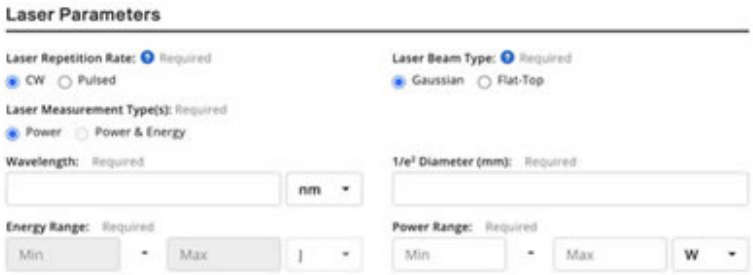
Ophir IR Optics Newsletter for the latest developments in thermal imaging optics.

Center Stage: Newport Motion Newsletter for quarterly spotlights on motion innovation.

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

Power Density Calculator

Laser power density (Watts/cm^2) is a crucial calculation as it determines the intensity of energy on a surface, which dictates if a laser can cut, weld, or process materials effectively. A specific power density is needed to obtain consistent results in a variety of applications, including industrial, medical, and defense. Use the Ophir Power Density Calculator to determine the power density and/or fluence (energy density) of your laser beam. Power Density Calculator.



Webinars

Ring-Core Mode: Revolutionizing Beam Shape Measurement for Welding Difficult Materials in Automotive Applications

On Demand

Speaker: John McCauley, Sr. Business Development Manager, MKS Inc.

Joining new materials in automotive components can be challenging, even with advanced laser technologies. For instance, welding highly reflective materials like copper often requires applying more laser light to achieve the desired penetration depths. However, this approach can introduce issues such as increased weld spatter and porosity. In this webinar, hosted by Laser Focus World, the ring-core laser shape is explored as a solution. This innovative laser mode enables deeper penetration and aesthetically improved welds, overcoming common challenges in high-powered industrial laser applications. Ring-Core Mode.

Laser Characteristics That Drift and How to Manage the Changes

On Demand

Speaker: John McCauley, Sr. Business Development Manager, MKS Inc.

Lasers used for material processing face two general challenges over the course of their lives. First, these lasers operate at relatively higher power levels. Second, the environments in which these lasers operate are usually harsh. These two challenges can cause the laser's performance to drift over time, causing adverse effects on their processes. In this session, hosted by Photonics Spectra, we discuss, first, which laser performance characteristics are meaningful to measure; second, at what frequency these characteristics should be measured; and third, and most importantly, how changes in these characteristics relate to the process. Laser Characteristics.

Research News

Unconventional High-Harmonic Generation in Resonant Membrane Metasurfaces

High-harmonic generation (HHG) in solids has rapidly emerged as a promising platform for creating compact attosecond sources and probing ultrafast electron dynamics. Metasurface-enhanced HHG is believed to follow the conventional integer-power scaling laws that hold for non-resonant bulk HHG. Here, the authors discover that highly resonant metasurfaces driven by quasi-bound states in the continuum break this principle, manifesting *non-integer intensity dependencies* of the

Trade Shows

SPIE BiOS Expo 2026
17-18 January 2026
San Francisco, CA, USA

SPIE Photonics West
20-22 January 2026
San Francisco, CA, USA

SPIE Quantum West
20-22 January 2026
San Francisco, CA USA

Laser World of Photonics China 2026
18-20 March 2026
Shanghai, China

Focus on Microscopy 2026
29 March – 1 April 2026
Stockholm, Sweden

Find more MKS trade shows here.

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generated harmonic powers. An Ophir PD300-IR power meter and spectrometers were used to measure the conversion efficiency of the generated harmonics. Metasurface-Enhanced HHG.

Terahertz Semiconductor Laser Chaos
In the terahertz (THz) range, due to the lack of effective THz light sources, chaos generation in THz semiconductor lasers, e.g., quantum cascade lasers (QCLs), is particularly challenging. Here, the authors experimentally demonstrate a THz chaos source based on a sole multimode THz QCL without any external perturbations. Such a dynamical regime is characterized by the largest Lyapunov exponent of the measured radio frequency signal of the laser. The continuous wave (cw) output power of the THz QCLs is measured using a THz power meter (Ophir 3A-P-THz), with the lasers operated in constant current mode. THz Semiconductor Lasers.

About Ophir Products

Ophir is a brand within the MKS Inc. Photonics Solutions 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 and zoom lenses for defense and commercial applications, OEM and replacement high-quality optics and sub-assemblies for CO_2 and high-power fiber laser material processing applications. Ophir products enhance our customers' capabilities and productivity in the semiconductor, advanced electronics, and specialty industrial markets. For more information, visit www.ophiropt.com.

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