

The Active Fiber

Autumn 2018 Newsletter

The Active Fiber is an IPG Photonics' quarterly newsletter featuring company news, product updates and notable applications. To subscribe to the Active Fiber or for more information on products and processes discussed in this issue, please contact sales.us@ipgphotonics.com.



IPG Photonics Unveils New Leading Edge Products at FABTECH

by Craig Dowley

IPG Photonics will be launching three new innovations at FABTECH 2018 in Atlanta, Georgia (November 6- 8). These breakthroughs will further empower IPG's customers, providing increased flexibility and speed in their laser applications, while in many instances reducing costs and improving overall throughput. Visitors to the IPG's booth #C12868 will be the first to learn about these new advancements.

QCW Mode in CW Lasers

The first innovation includes the introduction of the new QCW mode to CW lasers. QCW capability provides peak power up to two times average power, allowing increases in piercing speed, improvements in pierce quality and piercing of thicker materials while maintaining the throughput benefits of CW lasers during cutting. The high peak power allows for reduced heat input in the QCW mode resulting in higher quality cuts of intricate parts with fine features and enhances drilling capabilities by allowing clean, controlled drilling in thicker materials. This unique capability is made possible by IPG's QCW diode designs, which have the ability to provide very high peak power for short duty cycles, with the real-time capability of switching to CW mode. Available exclusively from IPG in the latest releases of YLR and YLS lasers, the QCW mode will provide improved cutting and drilling quality and increased overall throughput, while saving material, time and operating costs.



Fiber Lasers with Peak QCW Mode



Fiber Laser System with Adjustable Mode Beam

Adjustable Mode Beam (AMB)

IPG will also introduce an all new adjustable mode beam capability. Adjustable Mode Beam (AMB) is now available on IPG's YLS family of lasers, allowing customers to change output beam mode on-the-fly and increase flexibility in cutting and welding applications. AMB enables programmable adjustment of the output beam mode to any combination of a small-spot high intensity bright core to a larger ring-shaped beam. "AMB will allow IPG customers to process a wider range of material thicknesses and improve piercing and cutting quality, as well as optimize welding performance in certain material combinations," states Trevor Ness, SVP WW Sales and Marketing. "Up to 20 kW of total output power with the central core delivering up to 12 kW, AMB enables optimal processing of both thick and thin materials by the same laser and has IPG's industry leading wall-plug efficiency of over 45%."

Weld Depth Monitor

Also launching at the show is an integrated high power scan head with LDD weld monitoring technology. This completely integrated and revolutionary solution meets the ever increasing quality monitoring requirements for industries such as automotive and medical. Completely integrated with IPG's recently released high power scanning heads and industry standard High-Power Lasers, LDD'S in-situ Weld Depth Monitor provides the most comprehensive and direct measurement of crucial processing characteristics including weld depth, part fit-up, seam position, undercut, surface porosity and focal distance. Integration of this technology with IPG's high power scan heads offers improved remote welding consistency and significant cost savings for applications such as e-mobility, seating, powertrain and body-in-white.



High Power Scan Head with Weld Depth Monitoring

Craig Dowley, IPG's Senior Director of Corporate Marketing, can be reached at cdowley@ipgphotonics.com.

The Power to Transform®



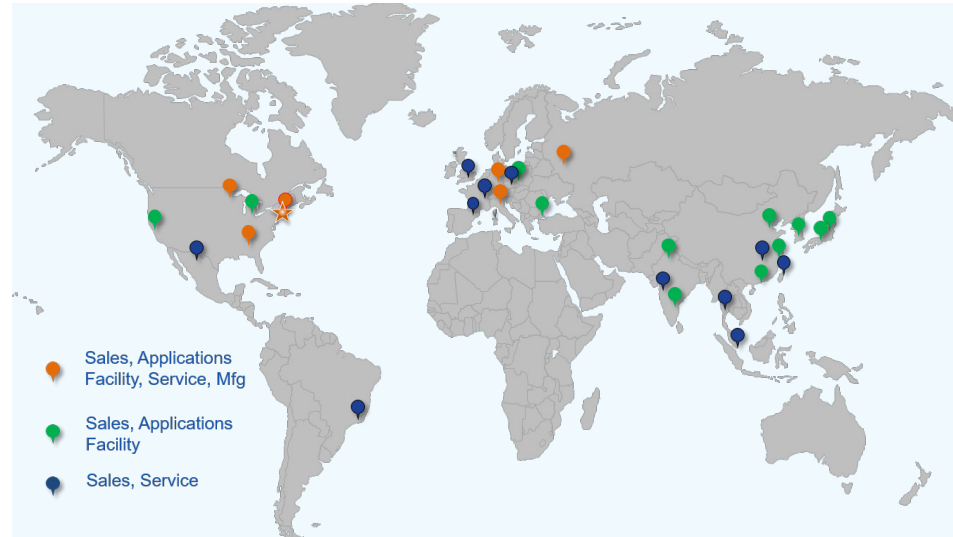
Let IPG Photonics Develop Your Laser Processing by Bill Shiner

IPG Photonics has invested in applications facilities to provide customers worldwide the opportunity to investigate the benefits that fiber laser processing may bring to their product development or manufacturing lines. Each of these facilities are equipped with the latest fiber lasers, motion systems, programmable multi-axis workstations and scanners. Each laser or system may be outfitted with a beam delivery option dependent upon the application. Our highly trained application engineers are proficient in a broad range of applications with each location specialized in local industries and customers. The labs are utilized for company-sponsored projects to optimize product performance, investigate processing techniques and qualify application parameters. Each facility is also equipped with a metallurgy lab for sample analysis and qualification. The following are examples of our applications facilities:



Northeastern United States

IPG's premier applications center is located in Marlborough, Massachusetts. This 20,000 sq. foot state-of-the-art lab is equipped with IPG's extensive range of fiber lasers, beam delivery components and turnkey multi-axis systems. The Marlborough lab expertise is developing high power applications for cutting, welding, drilling, surface treatments,



additive manufacturing and cladding in the medical, automotive, aerospace and general industries. It is equipped with CW lasers of powers up to 25 kW, high energy pulsed lasers up to 20 kW and a high power kW class of nanosecond lasers. These lasers are integrated into industrial robotic cells and a suite of IPG's Multi-axis systems for customer demonstrations and application development. Additional labs in the region support specialty applications such as micromachining using IPG's new ultrafast lasers as well as UV and green lasers for the semiconductor, medical and electronics markets. Please contact Lab Director, Vijay Kancharla, at vkancharla@ipgphotonics.com for further information.



Midwestern US

IPG Midwest Applications Center is located in Novi, Michigan, an ideal location to

support the regional automotive industry. The lab has a broad range of fiber lasers with power levels up to 10 kW, including QCW lasers, pulsed marking lasers, a trifocal brazing system and remote welding C-Guns integrated to robotic systems for spot welding applications. In addition, the facility has numerous CNC systems and robots that can be configured with the appropriate beam delivery dependent upon the application. The lab also has the capability to produce short-run production trials for qualification testing. IPG Midwest Applications Center is managed by Eric Stiles and can be reached at estiles@ipgphotonics.com.

Western US

IPG recently increased support for Western US and worldwide customers with a recently renovated 13,000 square-foot laser processing applications facility. Located in Santa Clara, California, the Silicon Valley Technology Center (SVTC) tripled its lab space to accommodate IPG's flagship Multi-axis Systems and a new line of ultrashort pulse lasers

complementing the broad range of IPG lasers and beam delivery options. Uniquely located in the heart of Silicon Valley, SVTC accommodates a number of industries including semiconductor, consumer electronics, electric vehicle design and medical device manufacturing. Please contact Toby Strite at tstrite@ipgphotonics.com for further information.

Germany

IPG's Germany Applications Lab has a range of fiber lasers with power levels up to 30 kW, single-mode lasers up to 3 kW and QCW lasers up to the 1 kW level. These lasers can be evaluated on several 6-axis robotic systems as well as three Multi-axis systems. The lab is equipped with a variety of pulsed lasers up to the 2 kW average power level. In addition, both UV and Thulium lasers are available for evaluation. Located in Burbach, Germany, the facility has a complete array of beam delivery including high-speed high power scanners, hybrid welding heads, soldering heads as well as cutting and drilling heads. The applications lab is managed by Michael Grupp and can be reached at mgrupp@ipgphotonics.com.



Russia

IPG has a major applications center in Fryazino, Russia. The facility has ten fiber laser systems for application development. These systems are available with up to 15 kilowatts of CW laser power. The

systems include four robotic welding systems, a CNC multi-axis welding system, a Laser Seam Stepper (LSS) system for spot welding applications, one robotic system dedicated to cladding applications, high peak power marking systems and a LaserCube cutting system. The lab has expertise in sintering, cladding, engraving, hybrid welding, multipass welding, pulsed welding, perforation and cleaning applications. The applications lab is managed by Kirill Zhilin and can be contacted at Kzhilin@ntoire-polus.ru.

China

IPG Photonics has four application facilities located in Shanghai, Shenzhen, Wuhan and Beijing. These labs have an extensive arsenal of the latest fiber lasers including high power fiber lasers up to 20 kW, QCW lasers up to 6 kW, single-mode fiber lasers to 7 kW, six pulsed lasers ranging from 20 to 200 watts and both UV and lasers operating in the green. A complete complement of beam delivery devices, automated CNC machines and robots are available for customer processing trials. Please contact Department Manager Jing Zhang at jingzhang@ipgbeijing.com for further information.

Japan

The applications lab in Japan is located in Yokohama. The lab features fiber laser power up to 6 kW, short pulsed lasers to 100 watts, picosecond lasers, and nanosecond pulsed green lasers. The lab includes welding and cutting beam delivery, spot wobbler optics, several scanners, a micro cutting head an integrated marking system as well as Multi-axis workstations. Application Manager Kazunari Miyata can be contacted at kmiyata@ipgphotonics.com.

Italy

The Italian applications center is located in Milan, Italy. Lab equipment includes three robotic cells, Multi-axis welding workcell, LaserCube, high power scanning system, mid-power scanners both for pulsed and continuous laser sources, low-power marking systems and an UV integrated marker. IPG Photonics Italy closely works with research institutes, OEM and end users in several markets such as energy, oil, gas and transport (automotive, naval, aerospace and railways). A particular focus in welding is reserved for high thickness components and joints characterized by critical metallurgy. Development of tube and profile welding solution (TPS) has been one of the most important recent activities to date. Available pulsed laser sources provide a variety of application processes such as marking, cleaning and surface treatments. Increasing interest has been observed in these applications, in which lasers may be a valid alternative to conventional machining for ablation, steel pickling, oxide removal, depainting or stainless steel polishing.

The Applications Manager is Marco Franzosi and can be contacted at mfranzosi@ipgphotonics.com.

In addition to these facilities, IPG Photonics has applications labs located in Turkey, France, Brazil and Spain, all equipped to provide customer support. Let IPG assist your company in developing your production laser process. Our engineers will optimize the laser and application parameters on your supplied material and provide you with a detailed report and samples of the results.

Bill Shiner is Sr Marketing Advisor to the CEO. He can be reached at bshiner@ipgphotonics.com.



Is your cutting edge product development pushing the envelope of current technology and techniques? Meet with industry experts and learn how manufacturing leaders are utilizing fiber lasers to set new benchmarks for process capabilities on the modern shop floor. You'll even have the opportunity to discuss your specific applications with our processing specialists. Did we mention that lunch is on us?

- Wednesday, November 14th
- 9:30 AM – Lunch
- 3930 Freedom Circle, Ste 130, Santa Clara, CA 95054

Please indicate if you wish to schedule one-on-one time with our SVTC applications and sales team regarding specific applications and products. Space is limited.



Meet with industry experts to learn how you can advance your cutting and drilling capabilities for higher productivity, tighter tolerances, smaller feature sizes, improved yields and lower per-part costs. An interactive format includes user case studies, hands-on demonstrations, as well as open and closed door Q&A sessions.

- Tuesday, December 4th
- 8:30 AM – 12:30 PM
- 259 Cedar Hill Drive, Marlborough, MA 01752

We have a limited number of one-on-one appointments with our application engineers available, so be sure to reserve your seat well in advance.



Upcoming Events

- Oct 31 - Nov 1** **MD&M Minneapolis**
Booth #2409
Minneapolis, MI
- Nov 6 - 8** **FABTECH**
Booth #C12868
Atlanta, GA
- Nov 14** **Silicon Valley FiberForum on Ultrafast Lasers**
Santa Clara, CA
- Dec 4** **FiberForum Seminar on Laser Cutting and Drilling**
Marlborough, MA
- Dec 5 - 7** **Photonix 2018**
Tokyo, Japan
- Dec 6 - 8** **PRI Show 2018**
Booth #5359
Indianapolis, IN
- Feb 5 - 7** **Photonics West**
Booth #1641
San Francisco, CA
- Feb 5 - 7** **MD&M West**
Booth #1539
Anaheim, CA

In addition to these upcoming events, IPG also offers regional seminars and in-house events. Please contact sales.us@ipgphotonics.com to find out more.



IPG's Custom Systems for Innovative Solutions by Victoria Baxter



Before commencing work on a customized system, IPG provides laser applications testing, an overview of process flow and estimated budget for your project. Our 3D concept drawings allow you to easily visualize your system, material flow and ensure that it will fit in your facility.

The key to our success is the IPG team of professionals which includes engineers, skilled technicians, an applications team—including a metallurgist and a service team. Our dedicated project managers will work with you throughout the entire process. We have designed and constructed laser systems for applications that range from welding and cutting small surgical instruments to welding large copper elements in rocket engines. We can help you whether you need systems for high volume production or a custom lab-scale system for process development. As your partner for innovative solutions, IPG provides laser process development, system design, fabrication and installation.

Victoria Baxter, Systems Engineer for the Custom Systems Group, can be reached at vbaxter@ipgphotonics.com.

The IPG Photonics' Custom Systems Group in Oxford, Massachusetts, delivers the total solution in custom laser processing systems to our customers. IPG combines state-of-the-art laser technology with high precision motion systems and software to address the growing requirements for advanced materials processing. We've designed and assembled more than 250 custom systems over the last 8 years.

The Custom Systems Group is on the leading edge of product development for IPG Photonics and the laser industry. As such, we help customers when their requirements are more complex or multifaceted than a standard system would provide. The questions customers often ask when they first come to us are:

- *Can a laser process meet my application needs?*
- *How can the Custom System Group help to develop my new application?*
- *What are the Custom System Group's capabilities?*
- *How do we get a project started?*



Applications

IPG Photonics offers complimentary sample processing and evaluation as well as laser product recommendations. Whether the processing method is cutting, welding, marking or surface modification, IPG has comprehensive application expertise in materials, process development, system set-ups for clean environment requirements, and metallurgical and surface analyses. Each evaluation includes an applications report and follow-up. [Contact IPG](#) to arrange your initial evaluation.

Visit www.ipgphotonics.com for more information on IPG lasers and systems.

IPG Photonics' Innovative Laser Solutions for Cutting, Welding, Brazing, Drilling and Ablation

- ▶ Consistently High Quality Parts
- ▶ Enhanced Overall Productivity
- ▶ Accelerated ROI
- ▶ Increased Profitability
Money in YOUR POCKET



Turnkey Laser Tools

Designed, Manufactured and Supported by the
World Leader in Fiber Laser Technology



Visit IPG at FABTECH
Booth #C12868

Sales.US@ipgphotonics.com
www.ipgphotonics.com

