

**Laser Institute
of America**

Laser Applications and Safety

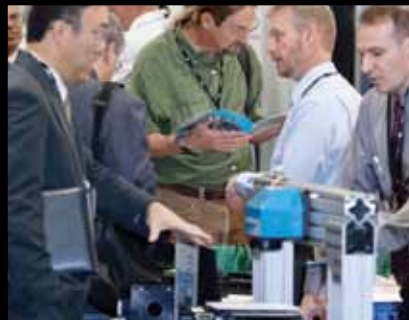
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ADVANCE PROGRAM



4TH ANNUAL

LME[®] 2014

LASERS FOR MANUFACTURING EVENT[®]

Schaumburg Convention Center
Schaumburg, IL USA

September 23-24, 2014

Presented by:



**Laser Institute
of America**

Laser Applications and Safety

www.laserevent.org

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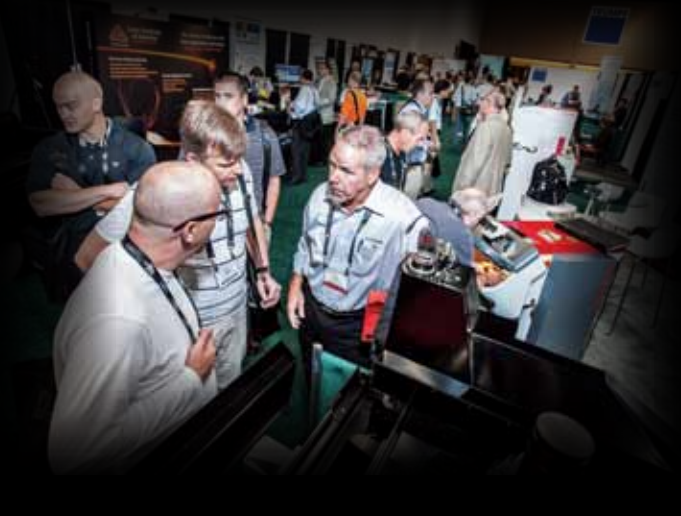
**INDUSTRIAL
LASER SOLUTIONS**
FOR MANUFACTURING.

LME[®] 2014

LASERS FOR MANUFACTURING EVENT[®]

About LME

The mission of LIA's Lasers for Manufacturing Event[®] (LME[®]) is to provide a one stop event for companies interested in integrating laser technology into their production. Attendees will learn about automation equipment, laser choices, beam delivery, safety considerations and applications development and meet exhibitors that supply these products and services. LME is the place to see the latest in laser technology, network with the industry's elite and find solutions to current and future manufacturing needs.



Basic Education Courses

Main Types of Lasers Used for Manufacturing Key Properties and Key Applications

Tom Kugler, Laser Mechanisms, Inc. (101 Course)

Learn the advantages of and how to apply the following:

- CO₂ - Flowing
- CO₂ - Sealed
- YAG - Flashlamp Pumped
- YAG - Diode Pumped
- Disk
- Fiber
- Ultrashort Pulse

Economic Justification for Laser Applications

Patrick Grace, TRUMPF (102 Course)

It was not too long ago that lasers were in their industrial infancy. They were considered to be scientific curiosities by some, and a solution without a problem by others. In many industries, those attitudes are long gone and lasers are considered a vital part of everyday production. This change in attitude has been brought about mostly because of the many applications which are much more cost effective using lasers than any of the alternatives. Hot formed steel used in automotive construction can be cut and drilled with conventional techniques, but the tools wear out very quickly. Oxide layers can be removed from metals using conventional techniques, but there can be significant costs in hazardous material disposal. High end stainless goods produced from sheet can be welded with TIG or MIG, but the costs of grinding and straightening add to the total cost of the part and also detract from the quality. These are but a few of the many applications where lasers have proven to be more cost effective than other more traditional processing methods.

Overview of Laser Welding

Geoff Shannon, Miyachi America (102 Course)

The overview of laser welding will offer a first level understanding of the capabilities of laser welding. A brief introduction to laser welding will cover conduction/keyhole welding, materials selection and guidelines for successful implementation. Many applications examples will be shown highlighting where and how lasers are being used for micro and penetration welding, including Nd:YAG, fiber, disk and diode lasers. The integration of the laser into a welding system offers many options - the basic elements and implementation options will be described.

Laser Safety for Industrial Laser Systems

Gus Anibarro, Laser Institute of America (101 Course)

- Manufacturers Responsibility - FDA/CDRH Report Classification of Laser
- OSHA - What Do They Look For?
- Safety Officer - Duties & Responsibilities
- Nominal Hazard Zone
- Enclosures & Barriers
- Interlocks, Warning Lights
- Training Requirements & Procedures

Education Track

Tutorials

Design Guidelines for Laser Welding

David Havrilla, TRUMPF

As the use of lasers become more widespread, designers and product engineers alike need to gain familiarity with not only the properties, advantages and applicability of the laser welding process, but also with how to design components, assemblies and systems for successful laser welding. Component material selection, weld joint design, fit-up requirements, weld strength considerations and part design for laser joining are all critical to successful implementation of the laser welding process. These topics are presented along with numerous practical examples, with the intent of building the foundation for sound laser welding design and process implementation.

Overview of Laser Additive Manufacturing Systems

Paul Denney - Lincoln Electric Company

The term “laser additive manufacturing” is a broad description for many processes and therefore the systems to accomplish these processes vary tremendously. These variations in many cases date back to the origins of the process which may have started during the earliest days of laser materials processing where depositing layers of metals were first attempted. In parallel to these early deposition efforts, there was research into techniques that used lasers to solidify liquids and sinter powder beds to fabricate models and later functional structures. With improvements in laser technology, software, and understanding of processing; these different approaches have evolved into what is now considered laser additive manufacturing and a major player in digital manufacturing type that has been described as the next “industrial revolution”. This tutorial will enlighten the audience on the basics of “laser additive manufacturing”, how the various process differ and equipment to accomplish the processes vary, and potential applications for these systems. The presentation will educate participants so they can look at a system and ask the right questions as it relates to their application.

Ask the Expert

Chair: Rob Mueller, Lasers-at-Work Consulting, Ltd.

Need a quick answer about what types of lasers will be the best fit for a particular application?

Do you want guidance on what components you need to build the most efficient production system?

LME's Ask the Expert booth, right on the exhibit floor, is the place to go for help. A rotating cast of industry experts from the top laser makers and system integrators on hand at LME will assist you on the path to profitability. With dozens of LME exhibitors at your disposal, the experts at the booth can point you in the right direction so you can network immediately with the people you need to meet to get your job done – and done right.



Laser Technology Showcase

The show floor will feature the Laser Technology Showcase where keynote presentations by industry experts will be presented.

Industry Highlights

The 2014 Market for Industrial Lasers and Applications

David Belforte, Industrial Laser Solutions

David Belforte, past president of the Laser Institute of America and chief editor of Industrial Laser Solutions magazine, will present another data-packed state-of-the-industry keynote address at the fourth annual Lasers for Manufacturing Event® (LME®) on Sept. 23 at the Schaumburg Convention Center. At last year's LME, Belforte covered the use of lasers for everything from energy generation and electronic devices to agricultural equipment to aviation, aerospace, automotive and medical applications. Speaking at the Laser Technology Showcase Theater on the exhibit floor, Belforte promises another insightful look into key sectors where lasers are poised to make the greatest gains in his talk The 2014 Market for Industrial Lasers and Applications.

Laser Cutting Applications in Today's Manufacturing Environment

Mitchell Van Zuiden, Bystronic

This discussion will define the different applications currently using today's high powered cutting lasers. Specifically we will highlight the major industries, material types and thicknesses, typical quantities, and geometric shape formats that have proven to be economically feasible in today's manufacturing environment. In addition we will look at the economic justification(s) that make these applications the most suitable for cutting by laser. Finally we will give a brief overview of the types of lasers that are the most common in today's manufacturing environment including both the CO₂ format as well and the new and fast growing fiber laser cutting format. We will contrast and compare the differences between these two laser types, highlighting the pros and cons of each, while at the same time specifically defining the applications that best fit each technology.

Laser Additive Manufacturing / 3D Printing

Ingomar Kelbassa, Fraunhofer ILT

With Additive Manufacturing (AM), parts can be manufactured for design instead of being designed for manufacture. This keynote introduces the two laser based AM processes, Selective Laser Melting SLM and Laser Material Deposition LMD.

Ultrafast Lasers for Manufacturing

Ron Schaeffer, PhotoMachining

Ultra short pulse (USP) lasers, both picosecond and nanosecond, are now available from a large number of manufacturers with new players entering the field at a rapid pace. These lasers, which only a few years ago were cool toys in the research lab, are now being used extensively in production environments and allowing the microprocessing of many materials and in many applications that were not possible using longer pulse length lasers. This presentation will focus on some of the considerations of using these lasers in a production environment and the associated costs.

*Educational Training program subject to change

Register for LME 2014 for FREE!
Use Discount Code: LMEAP14

New

Laser Institute of America's

Lasers for **Manufacturing** SUMMIT

September 22, 2014

Schaumburg Convention Center • Schaumburg, IL

Summit Program: 1PM – 5PM

VIP Reception: 5PM – 6:30PM

COME TO THE SUMMIT!

SEE FOR YOURSELF

Market Overviews, Key Applications, How to use the technology, Senior Executives from companies that can help you!

CONQUER YOUR COMPETITION, your challenges and your fears!

About Lasers for Manufacturing Summit:

The Lasers for Manufacturing Summit is a brand-new event by the Laser Institute of America. This event will bring together C-suite and other top executives who want to hear first-hand expert intelligence on how to use these powerful tools most profitably in a variety of high-value manufacturing applications.

The Summit is the only event that focuses on the entire laser marketplace. It provides a comprehensive market perspective that is unobtainable elsewhere, with market data segmented by applications and laser technology from laser industry's leading resources. In addition, industry experts present their views and analysis of laser-market trends, applications development, and business outlook.

Who Should Attend:

This event is intended for business leaders and key players in manufacturing and their suppliers as well as anyone with a stake in the business of lasers, such as technology analysts and investors. Target attendee audience includes:

- Presidents, CEOs and COOs
- Chief Technology Officers
- R&D Management
- Sales and Marketing Executives
- Business Development Directors
- Managing Directors
- Business/Technology Analysts



EDUCATION TRACK:

MARKET OVERVIEW

Mark Douglas, *Longbow Research*

LAM OVERVIEW

Terry Wohlers,
Wohlers Associates, Inc.

3D PRINTING/ADDITIVE MANUFACTURING

Todd Rockstroh,
General Electric Aviation, US

ULTRAFAST LASERS

Sascha Weiler, *TRUMPF, Inc.*

LASER MANUFACTURING FORUM

Moderator, David Belforte,
Industrial Laser Solutions

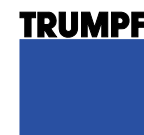
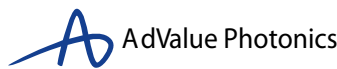
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ENDS AUGUST 17, 2014

REGISTER NOW!

www.lia.org/lasersummit

LME 2014 EXHIBITORS



LME 2014: Media, Cooperating Societies and Industry Partners



Hotel Information

Renaissance® Schaumburg
Convention Center Hotel
1551 N. Thoreau Drive
Schaumburg, IL 60173 USA

Hotel Reservation Information

[http://www.lia.org/conferences/laserevent/
general-information/hotel-information](http://www.lia.org/conferences/laserevent/general-information/hotel-information)

Hotel Reservation Deadline

September 2, 2014

EXPOSITION DATES

September 23-24, 2014

Tuesday, September 23rd
10:00 AM - 5:00 PM

Wednesday, September 24th
10:00 AM - 4:00 PM

Registration

To register, go online to www.laserevent.org

Register for LME 2014 for FREE!
Use Discount Code: **LMEAP14**

About LIA

Laser Institute of America (LIA) is the international society for laser applications and safety. Our mission is to foster lasers, laser applications and laser safety worldwide. Serving the industrial, medical, research, and government communities for over 45 years, LIA offers technical information and networking opportunities to laser users from around the globe.

Looking for additional information?

Visit us online at www.laserevent.org for complete details on the educational program, exhibit registration, hotel, and travel arrangements.

Benefits of Attending

LME is the only Event where you can see the latest in laser technology, network with the industry's elite and find solutions to current and future manufacturing needs. Attendees will learn about automation equipment, laser choices, beam delivery, safety considerations, applications development and meet exhibitors that supply these products and services.

Who Should Attend?

- Chief Operation Officers in small companies
- Product Managers
- Manufacturing Engineers
- Purchasing Agents
- Automation specialists
- and more...

Industries Represented:

- Aerospace
- Automotive
- Alternative Energy (Solar & Fuel Cells)
- Construction & Agriculture
- Electronics (Semiconductors)
- Medical
- Oil and Gas
- Optics
- Photovoltaic
- Scanners
- Software
- Tool & Die Manufacturers
- Transportation
- and more...

