

Dear Colleague

It is a pleasure to invite you to participate in this event at TWI. Laser and electron beam welding are widely accepted manufacturing techniques for a wide range of industrial applications. Both technologies have their advantages and disadvantages, and traditionally these have defined the applications which they are most suitable for. However, on-going developments in both laser and electron beam technology are increasing the overlap between the technologies. As such, there are an increasing number of applications which are considered suitable for both laser and electron beam welding.

This workshop will compare and contrast laser and electron beam welding techniques, with the objectives of providing attendees with an increased appreciation of both techniques and an understanding of how current users down-select between the processes. Presentations will be given from end-users, equipment suppliers and researchers, covering the following themes:

- Current industrial applications of laser and electron beam welding
- Industrial end-user perspectives, from leading aerospace, automotive and defence companies
- Contract manufacturing perspectives on laser and electron beam welding
- Process monitoring and quality assurance
- New opportunities and research in laser and electron beam welding

The day will include lots of opportunities for discussion and questioning and will end with a tour of TWI. I look forward to seeing you there.

Jon Blackburn
Workshop Chair



Jon Blackburn is a Group Manager at TWI, where his responsibilities include managing TWI's laser welding activities. He joined TWI in 2006 as a Research Engineer, and since then has been working in the development and application of laser welding processes for TWI's Industrial Members in primarily the aerospace, automotive, defence and rail sectors. Within TWI's Joining Group he also has close interaction with TWI's electron beam welding activities.

Who should attend?

This workshop promises to be a valuable day for anyone with an interest or involvement in laser materials processing. The wide scope of the workshop should give delegates an excellent overview of the many opportunities that lasers offer for a variety of applications and sectors.

The event will be of interest to laser and electron beam users especially, but providing great opportunities to learn and network for a wide range of organisations that supply these manufacturing organisations including beam source manufacturers and suppliers, welding subcontractors and machine integrators; all of whom will find opportunities to benefit from the rapid growth in fibre-delivered lasers, and enhance their supply chain partnerships.

Networking Opportunities

One of the key features of an AILU workshop is the opportunity it provides for delegates to meet with the presenters and with one another: a comfortable environment, generous lunch and refreshment breaks, and a table top exhibition. It presents a valuable learning and networking opportunity and a chance to generate new ideas and valuable contacts.



Venue: Granta Centre

Address: Granta Park, Great Abington, Cambridge CB21 6AL
Tel: +44(0)1223 899000

N.B. This is a new conference centre adjacent to the main TWI building.

Delegates

On arrival you will receive a delegate pack containing a name badge and essential notes for the day, including a detailed programme and a delegate list. The pack will also include a user name and password for downloading PDFs of the presentations, which will be made available on the AILU website as soon as possible after the event.

A buffet lunch (including vegetarian options) and refreshments throughout the day will be provided. **Please advise us of any special dietary needs.**

Exhibitors

The exhibition, together with lunch and mid-morning refreshment breaks, will take place in an area adjacent to the seminar room and will be clearly sign-posted on the day. Exhibitors can temporarily park outside the main entrance to unload. Access will be available from 07:30 on the day. The exhibition will start at the first refreshment break (10:45) and end at the start of the afternoon session (14:05).

A table (6 x 3 ft half moon shape) will be provided free and Velcro compatible backboards can be hired from Granta (at ~£25 a day). Feel free to bring a pop-up banner or your own stand. Mains power will be provided to all tables.

Registration (delegates and exhibitors)

To register for the event please complete the registration form on this flyer or, if you are a member of AILU or have attended workshops previously, simply phone or email your intention and we will register you and send an invoice later. Alternatively, you can register and pay online at www.regonline.co.uk/220915AILU.

AILU members and members of supporting organisations* receive a registration discount for this event. Delegates who pay the full price and who decide to join the Association within 10 weeks of the event will receive this discount on their first year's corporate membership subscription. For further information on membership go to www.ailu.org.uk and look for the link to 'about us'.

Travel

Directions and maps for accessing TWI and Granta Centre by road, rail and air are provided on the page for this event on the AILU web site.

Additional information for sat nav users

If you are planning to use a sat nav please note that there has been a recent postcode change. Recently updated sat navs should work with the postcode CB21 6AL; otherwise it is best to enter an address: Bourne Bridge Road, Great Abington

Accommodation

The page for this event on the AILU web site provides information on accommodation at Granta Centre and nearby hotels.

* Discounts apply only to members of organisations that charge a membership fee.

AILU reserves the right to alter the programme or cancel the meeting at short notice and accepts no responsibility for the views expressed by the speakers or delegates.

Photo courtesy of TWI Ltd

Successful industrial welding techniques and applications with laser and electron beam

Presentations, exhibition & tour

Tuesday 22 September 2015
TWI (Granta Centre), Cambridge

Supported by:



At this event the new AILU Power Beam Processing Special Interest Group will be formally launched

Programme



Courtesy: TWI Ltd

08:45 - 09:30 Registration and refreshments

09:30 - 10:45 **Session 1**

Welcome

Jon Blackburn TWI

Advances in power beam welding technologies

Chris Punshon TWI

Laser welding research at the Centre for Innovative Manufacturing in Laser Based Production Processes

Stewart Williams Cranfield University

Keynote presentation

Laser and electron beam – a comparison from a welding engineers perspective

Nick Longfield Rolls Royce

10:45 - 11:15 Refreshment break & **EXHIBITION**

11:15 - 13:05 **Session 2**

Keynote presentation

Laser and electron beam welding at GKN

Jan Lundgren GKN

Lasers in stainless steel – fabrication

Ian Bannister Graham Engineering

Comparison of electron beam & laser welding of turbo-charger shaft-wheels

Didier Horlaville Honeywell

Nd:YAG micro-laser welding, practical applications and opportunities

Jim Fife Attica



Courtesy: Attica

13:05 - 14:05 Lunch & **EXHIBITION**

14:05 - 15:30 **Session 3**

Keynote presentation

A perspective on opportunities for power beam welding in the nuclear industry

John Francis University of Manchester

Approaches to electron beam welding quality assurance

Mike Nunn TWI

Using laser beam analysis as a process control tool for laser welding in production

Otto Märten PRIMES, Germany

One step closer to real-time control of the laser welding process - low coherence sensors heading for industrial applications

Markus Kogel-Hollacher Precitec, Germany

15:30 - 16:00 Refreshment break and launch of the **Power Beam Processing Special Interest Group (PPI SIG)**

16:00 - 16:30 **TOUR**

The tour of TWI facilities will include:

- TWI's high-power laser welding and cutting facilities
- TWI's electron beam processing facilities
- TWI's weld integrity and performance assessment facilities



Courtesy: Honeywell



Courtesy: Attica

Registration

Industrial welding techniques

22 September 2015

Name: Title & initials First name Surname

Position:

Organisation:

Address:

Post Code:

Tel: Fax:

E-mail:

Payment options

Please invoice me

- I wish to pay in advance by:
1. Bank/Euro cheque in £ Sterling or EURO, payable to AILU
 2. Visa/Mastercard (billing in GBP):
Name on Card

Number _____ Exp. ___/___
Please debit my account

Delegate/exhibitor options

I wish to register as a delegate. The applicable rate is:

£160.00 (= £192.00 incl. VAT)

I am a member of AILU, KTN or TWI

£65.00 (= £78.00 incl. VAT)

I am unemployed or retired.

£45.00 (= £54.00 incl. VAT)

I am a full time student.

£195.00 (= £234.00 incl. VAT)

I wish to register as an exhibitor. Please reserve me:

Space only A table

The applicable rate is:

GBP 155.00 (= £186.00 incl. VAT)

I am a member of AILU or one of the supporting organisations ticked above.

GBP 195.00 (= £234.00 incl. VAT)

I wish to register as a delegate AND exhibitor.

Please give me a £50 plus VAT discount on the total fee.

Signed: Date:

Cancellations will be accepted up to 1 week before the event; otherwise the full fee may be charged.

Please return completed form to the AILU office by FAX (+44 (0)1235 550499) or mail to AILU, 100 Ock Street, Abingdon, Oxon OX14 5DH, UK