

About this workshop

Additive Manufacturing (AM), increasingly referred to as 3D Printing, has seen a meteoric rise in recent years. From White House funding programmes in the USA, press reports of AM handguns to 'Print me a Stradivarius', it seems that anything is possible with this technology. Certainly, AM potentially offers large improvements in performance through enhanced design capability, combined with reduced cost and material consumption. Whilst the Aerospace and Medical sectors are leading the way in metallic AM, applications are being exploited in almost every industrial sector.

The UK has a thriving AM community and for this event we have brought together academic specialists and researchers with commercial users in AM technologies to present their current views and their latest work. The scope of the workshop will reflect the broad skills base needed to exploit AM, which spans materials, material testing, processing knowledge, design, CAD and mechanical engineering. It will also reflect the variety of techniques used to add material to create components layer-by-layer, many of which are based around laser technology. Areas will include: technology development regarding processes; up and downstream factors; technical areas that are a commercial reality; case studies of AM successes; strategic development of the technology in research and industry.

We cannot promise all the answers, but through this exploration of AM reality delegates will be better able to separate fact from over-sold fiction and will gain a better understanding of what is happening and how it could impact on their business. They will be able to assess the different processes, the latest developments in commercially available systems and the products and applications for which AM can be exploited.

The day will include lots of opportunities for discussion and questioning and will end with a tour of AM activities at the nearby TWI Technology Centre.

Rob Scudamore Workshop Chair



Rob Scudamore is Associate Director and manager of the Joining Technologies and Additive Manufacturing Group at TWI. He has been heavily involved with lasers for many years, especially laser welding and deposition. This has included Laser Metal Deposition (LMD) and Selective Laser Melting (SLM) of various metals, including high temperature materials, for repair and original build.

Who should attend?

One of the key features of ALLU workshops is the opportunity it provides for delegates to meet with the presenters and with one another: a comfortable environment, generous lunch and refreshment breaks, a table top exhibition and a tour of a research facility.

The wide scope of this event means that there is something for everyone in the laser user and supplier community, or who simply have an interest in material processing. Delegates will include:

Engineers and managers from manufacturing industry looking to enhance production capabilities or simply to keep abreast of the latest developments

Job shop owners looking for new technology pathways and opportunities in small batch manufacturing runs for the engineering sectors.

Researchers in materials and in laser materials processing wishing to keep up to date or looking for new research opportunities.

Delegates may like to consider staying on in Sheffield for an [Additive Manufacturing Clustering event on 2nd April](#). Organised by the TWI Technology Centre it will focus on European AM projects. For further info contact: Rachel.Sanderson@twi.co.uk

About this workshop

Venue

The Copthorne Hotel is located immediately adjacent to the Sheffield United Football Club stadium, only 6 miles (15 minutes drive) away from TWI Technology Centre.



Delegates

On the day delegates will receive a name badge, a list of delegates, essential notes for the day and a password for accessing the key presentation slides, which will be made available on the ALLU website shortly after the end of the event. A buffet lunch (including vegetarian options) will also be provided together with refreshments throughout the day. Please advise us of any special dietary requirements.

Exhibitors

The table top exhibition will be held, together with lunch and refreshment breaks, in the spacious Yorkshire 1 room of the Copthorne Hotel, with the presentations taking place in the adjacent Yorkshire 2 room. Tables (6 ft) will be provided, with white linen covers if required. Backboards are not provided but exhibitors can bring their own banners and pop-up stands and there will be 240 V mains power available. Please let us know well in advance if you require significant power.

Access to the exhibition area will be from 07:30 on the day. Please use the hotel car park and report to Reception who will advise on the best entrance to use to access the first floor conference suite. A lift is available for heavy items. The allocation of tables is 'first come first served'.

Registration

Delegates and exhibitors who are ALLU members need only phone or email their names; otherwise the registration form on this flyer should be completed.

ALLU members and members of supporting organizations receive a registration discount. For delegates who pay the full price and who decide to join the ALLU within 10 weeks of the event, the member discount will be deducted from their first year's corporate membership subscription. For more information about membership go to www.allu.org.uk and take the 'about us' link.

Travel

Full address: Copthorne Hotel, Bramall Lane, Sheffield, S2 4SU.

Air: Robin Hood airport near Doncaster is the closest airport (40 minutes from the venue by car & 7 miles from Doncaster railway station for a train to Sheffield).

Rail: The venue is a close (15 min walk) from Sheffield railway station.

Car: The closest motorway junctions are 33 and 34 of the M1. The Hotel is adjacent to the Sheffield United Football Club. See address and postcode above.

For full directions see the event page on the ALLU web site.

Parking: There is plenty of parking at the hotel and the adjacent football parking lot.

Accommodation

Accommodation is available at the workshop venue, the Copthorne Hotel, at a special delegate rate of **£80.00 b&b**. The code you will need to quote to the reservations team is **TWI/310314**:

T: +44 (0) 11 4252 5480; E: reservations.sheffield@millenniumhotels.com

This presents a great opportunity to enjoy an informal pre-workshop evening meal and drinks with other delegates.



Metal powder for additive manufacturing. Courtesy of LPW Technology Ltd

Metal Additive Manufacturing: Opportunities in applications and improvements in process technology

Presentations, exhibition and tour of the nearby TWI Technology Centre - Yorkshire

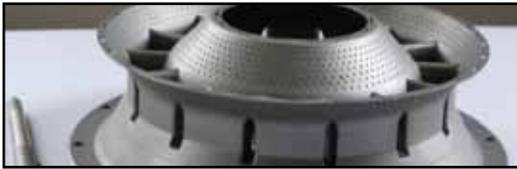
Tuesday 1 April 2014

Copthorne Hotel, Sheffield

Supported by:



Programme



Courtesy of Materials Solutions

09:00 - 09:55 Registration and refreshments

Welcome

Rob Scudamore AM SIG Chair

10:00 - 11:20 **Session 1**

Keynote

Commercial exploitation of AM through technical development

Stephane Abed Poly-Shape, France

Design and dirty secrets - getting the best out of AM

Robin Wilson Technology Strategy Board

Additive Manufacturing in the medical sector

Edward Draper JRI Orthopaedics

A view on the industrial exploitation of AM

Neil Burns Croft Additive Manufacturing

11:20 - 11:45 Refreshments and EXHIBITION



Courtesy of Croft Additive Manufacturing

11:45 - 12:45 **Session 2**

Keynote

An industrial perspective on AM

Neil Mantle Rolls-Royce

Update on Additive Manufacturing within the HVM Catapult

David Wimpenny Manufacturing Technology Centre

Industrial applications and development in LMD and SLM

Sozon Tsopanos TWI

12:45 - 13:45 LUNCH and EXHIBITION

Programme



Courtesy of Renishaw

13:45 - 14:45 **Session 3**

Keynote

Residual stress and distortion control in large scale Additive Manufacture

Stewart Williams Cranfield University

DLD of large structures: current research and technology roadmap

Moataz Attallah Birmingham University

Additive Manufacturing of ferrous and non-ferrous alloys using modulated lasers

Ravi Aswathanarayanan Renishaw

14:45 - 15:00 Refreshments and exhibition

15:00 - 15:55 **Session 4**

Part production using SLM

Trevor Illston Materials Solutions

DMLS - Is it a done deal?

Phil Kilburn 3T RPD

Quality control measures critical to the adoption of sustainable Additive Manufacturing component production

Ben Ferrar LPW Technology

15:55 End of workshop

16:00 - 17:00 **TOUR**
Travel to TWI (15 mins) and tour (45 mins)

TOUR: TWI Technology Centre - Yorkshire

Delegates will primarily visit the Laser Metal Deposition and Selective Laser Melting facilities at TWI. There will also be an opportunity to see Friction Stir and Cold spray activities.

Travel (6 miles, approximately 15 minutes)
Delegates who have their own transport will be provided with a map and instructions for the short trip to TWI. Arrangements will be made on the day for those without cars.



Registration

Metal Additive Processes

1 April 2014

Name:
Title & initials First name Surname

Job title:

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, 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:

GBP 160.00 (= £192.00 incl. VAT)

I am a member of AILU and/or the Additive Manufacturing Association

GBP 65.00 incl. VAT

I am unemployed or retired.

GBP 45.00 incl. VAT

I am a full time student.

GBP 195.00 (= £234:00 incl. VAT)

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

Space (≤ 1.8m width) A table (~ 1.8 x 0.75 m)

240 V power

The applicable rate is:

GBP 155.00 (= £186.00 incl. VAT)

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

GBP 195.00 (= £234:00 incl. VAT)

I have registered above as both a delegate and an 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:

FAX: +44 (0)1235 550499

Mail: AILU, 100 Ock Street, Abingdon, Oxon OX14 5DH, UK

TEL: (0)1235 539595 E: cath@ailu.org.uk