

How to use Lasers and Digital Twins to Accelerate EV Manufacturing

12th May, 9am-5pm

Venue: APC Showcase, IIPSI building,
University of Warwick, CV4 7AL



Large scale electrification of transport represents one of the biggest disruptive technologies in decades. In this scenario, laser beam welding is a key tool for manufacturing of e-vehicles.

This one-day event reviews some of the most established and ground-breaking novel laser concepts and beam delivery systems, sensor technologies and closed-loop control strategies for laser beam welding.

The event will also discuss current challenges and future perspectives towards the full digitalisation of laser beam welding, in line with the current trend of Industry 4.0.

Time	Title	Speaker/chair
09:00-09:30	Registration/Exhibition	
09:30-09:35	Welcome and introduction to the conference	Alison Meir - Head of Business Development for WMG's High Value Manufacturing Catapult
Design perspectives		
09:35-09:55	The revolution in future cell formats and chemistries and what this means for module, pack and vehicle engineering	Martin Dowson - Chief Engineer, Head of Battery Systems Engineering and Research at WMG
09:55-10:15	Lightweight innovative battery enclosures using recycled aluminium technologies	Emmanuel Beslin - R&D Programme Manager for Automotive Structure & Industry business unit at Constellium
10:15-10:50	Coffee Break / Exhibition	
Advanced sources, beam shaping, and monitoring		
10:50-11:10	Adjustable Ring Mode fibre lasers to overcome challenges in EV production	Dr Peter Kallage - Head of Laser Applications at Coherent
11:10-11:30	Laser Processing of EV Battery Electrodes	Philippe Leopold - Sales Director at Lumentum
11:30-11:50	The potential of photonic technologies in EV manufacturing: measurement, monitoring, control	Dr Markus Kogel-Hollacher - Head of department R&D projects at Precitec Group
11:50-12:50	Networking lunch / Exhibition	
Research perspectives		
12:50-13:10	Advanced CFD simulation of laser-based manufacturing processes	Mark Keating - Managing Director & Principal CFD Engineer, Flow Science UK Ltd
13:10-13:30	Digital twins for sustainable production systems	Prof Darek Ceglarek - Head of Digital Lifecycle Management Group at WMG
13:30-13:50	Laser beam welding in high volume manufacturing for e-mobility - what's next?	Dr Pasquale Franciosa - Associate Professor and Head of Laser Welding Applications Lab at WMG
13:50-15:05	Site tour of WMG's facilities and refreshments	
End-user perspectives		
15:05-15:15	Up-coming policies and funding opportunities for the development of net-zero technologies	Dr Francesca Ludicello - Programme Manager Automotive Zero Emission Vehicles, Land & Maritime Transport at Innovate UK
15:15-15:35	OEMs presentation - Automotive perspectives for EV manufacturing	Paul Haney - Energy Storage Technology Delivery Manager at Jaguar Land Rover
15:35-15:55	OEMs presentation - Aerospace perspectives for EV manufacturing	Clive Grafton-Reed - Global Process Coordinator Laser Processes at Rolls-Royce
15:55-16:50	Panel discussion: <ul style="list-style-type: none"> ▶ Policy directions and standards ▶ Industry needs and current challenges ▶ Desired new technological developments (with R&D support) ▶ New frontiers 	Facilitated by Dave MacLellan - Executive Director of ALLU <ul style="list-style-type: none"> ▶ Dr Francesca Ludicello, IUK ▶ Martin Dowson, WMG ▶ Paul Haney, JLR ▶ Dr Markus Kogel-Hollacher, Precitec
16:50-17:00	Wrap-up and conclusions	Alison Meir - Head of Business Development for WMG's High Value Manufacturing Catapult

Speakers

Emmanuel Beslin

R&D Programme Manager for Automotive Structure & Industry business unit at Constellium

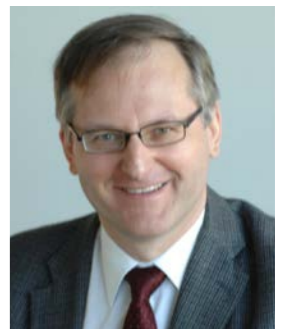
Emmanuel Beslin is a Research and Development Manager with over 20 years' experience in the aluminium industry. He joined Constellium in 2001 as a process engineer and since 2006 he has been focusing on development of high strength aluminium extrusions and their application to automotive components including electric vehicle battery enclosures.



Prof. Darek Ceglarek

Head of Digital Lifecycle Management Group at WMG

Prof. Darek Ceglarek is a CIRP Fellow whose work focusses on digital manufacturing and data mining/AI for quality defects root cause analysis. He has published 250 papers and is listed by Stanford University as among the top 2% world's leading scientists and top 1.1% in 'Industrial Engineering & Automation'.



Martin Dowson

Chief Engineer, Head of Battery Systems Engineering and Research at WMG

Martin Dowson is Head of Battery System Engineering and Research at WMG. He has over 20 years' experience of working in electrification research and development, having been at the forefront of the UK automotive electrification developing hybrids, plug-in hybrids and BEVs, including the Jaguar iPace. Martin is now focused on collaborative battery research to support the expansion of electrification across all sectors from micro mobility and automotive through to all-electric aerospace.



Dr Pasquale Franciosa

Associate Professor and Head of Laser Welding Applications Lab at WMG

Dr Pasquale Franciosa is Associate Professor and Head of the laser welding applications laboratory at WMG, University of Warwick. He has published over 90 papers, receiving four best-paper awards and one industrial award. Pasquale is principal researcher on several industrial-led projects, and currently focusing on autonomous laser welding solutions to accelerate EV manufacturing.



Dr Peter Kallage

Head of Laser Applications at Coherent

Dr Peter Kallage studied mechanical engineering at the University of Hanover, Germany, and took his first job in 2005 as a researcher at the Hanover Laser Center, specializing in the field of joining technology. In 2007, he was promoted to Division Manager and became head of the "Metal joining and cutting" Group. Since October 2011, Peter Kallage is responsible for the applications lab at Coherent in Hamburg.



Clive Grafton-Reed

Global Process Coordinator Laser Processes at Rolls-Royce

Clive Grafton-Reed is the Global Process Owner for Laser processes for Rolls-Royce plc and is responsible for the technical direction of laser technology throughout the group, the development of company standards and policies. In this position he works with research groups, equipment builders and supply chain to bring significant changes to manufacturing. He holds a number of laser based patents including one for a miniaturised laser beam control device, developed with Nottingham University which won the 2012 Rolls-Royce Engineering & technology prize for creativity.



Mark Keating

Managing Director & Principal CFD Engineer, Flow Science UK Ltd

Mark Keating is the Managing Director of Flow Science UK. A chartered, post graduate engineer of 20 years, Mark provides software, support and services to the UK&I region around the FLOW-3D commercial CFD software suite of products, developed by Flow Science Inc over the last 42 years.



Paul Haney

Energy Storage Technology Delivery Manager at Jaguar Land Rover

Paul Haney has worked for Jaguar Land Rover for 20 years, for the last 6 years leading a team working on energy storage R&D supported by HVM Catapult at University of Warwick. In 2020 the team won the 'Tata Innovista Best Piloted Technologies' award for their work on energy storage. Paul is a Chartered Engineer and Member of IMechE with engineering degrees from University of Hertfordshire, Loughborough University and an MBA from University of Warwick.



Dr Markus Kogel-Hollacher

Head of department R&D projects at Precitec Group

Dr. Markus Kogel-Hollacher started his work in the laser industry in 1994 at the Fraunhofer Institute for Laser Technology (Aachen). His work at Precitec in Germany has been extensively discussed in several journals and presented at various conferences. In 2008 he obtained his Ph.D. at the Technical University of Berlin, Germany. In collaboration with RTD stakeholders and end users, he works to continuously increase the reliability and use of process monitoring and control devices in laser materials processing.



Philippe Leopold

Sales Director at Lumentum

Philippe Leopold is Sales Director at Lumentum and responsible for all commercial laser products in EMEA. Philippe graduated from Telecom Physique Strasbourg (France) in 1996 with an engineering degree in optoelectronics, worked for Peugeot Sport Formula 1, Matra Marconi Space, Alcatel Submarine Networks and JDSU now called Lumentum between 1997 through 2022, and obtained an M.B.A. from Manchester Business School (UK) in 2015.



Alison Meir

Head of Business Development for WMG's High Value Manufacturing Catapult

Alison Meir is Head of Business Development for WMG High Value Manufacturing Catapult, with a wide remit across research directorates of Energy, Digital Technologies, Materials & Manufacturing, and Intelligent Vehicles, joining WMG in 2017. Alison has worked in high performance engineering sectors, and large-scale technical broadcast, including Olympics and Commonwealth Games, proficient in diverse, multi-disciplinary environments, and has an MBA and BSc Chemistry (Hons).



Dr Francesca Iudicello

Programme Manager Automotive Zero Emission Vehicles, Land & Maritime Transport at Innovate UK

Dr Francesca Iudicello is Programme Manager for Zero Emission Vehicles at Innovate UK. She joined Innovate UK in January 2019 to lead the on-vehicle technology programmes, including the Integrated Delivery Programme (IDP). Before joining Innovate UK, she worked in the automotive industry for nearly 9 years: Ford, Ricardo, Delphi and Dana.



Dave MacLellan

Executive Director of AILU

Dave MacLellan has an engineering degree from Manchester University and over 30 years of industrial experience in design, manufacturing, sales and marketing of laser systems both as an exporter and importer. In 2014 he established Anode Marketing, and has been Executive Director of AILU since 2015, promoting lasers in manufacturing.



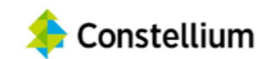
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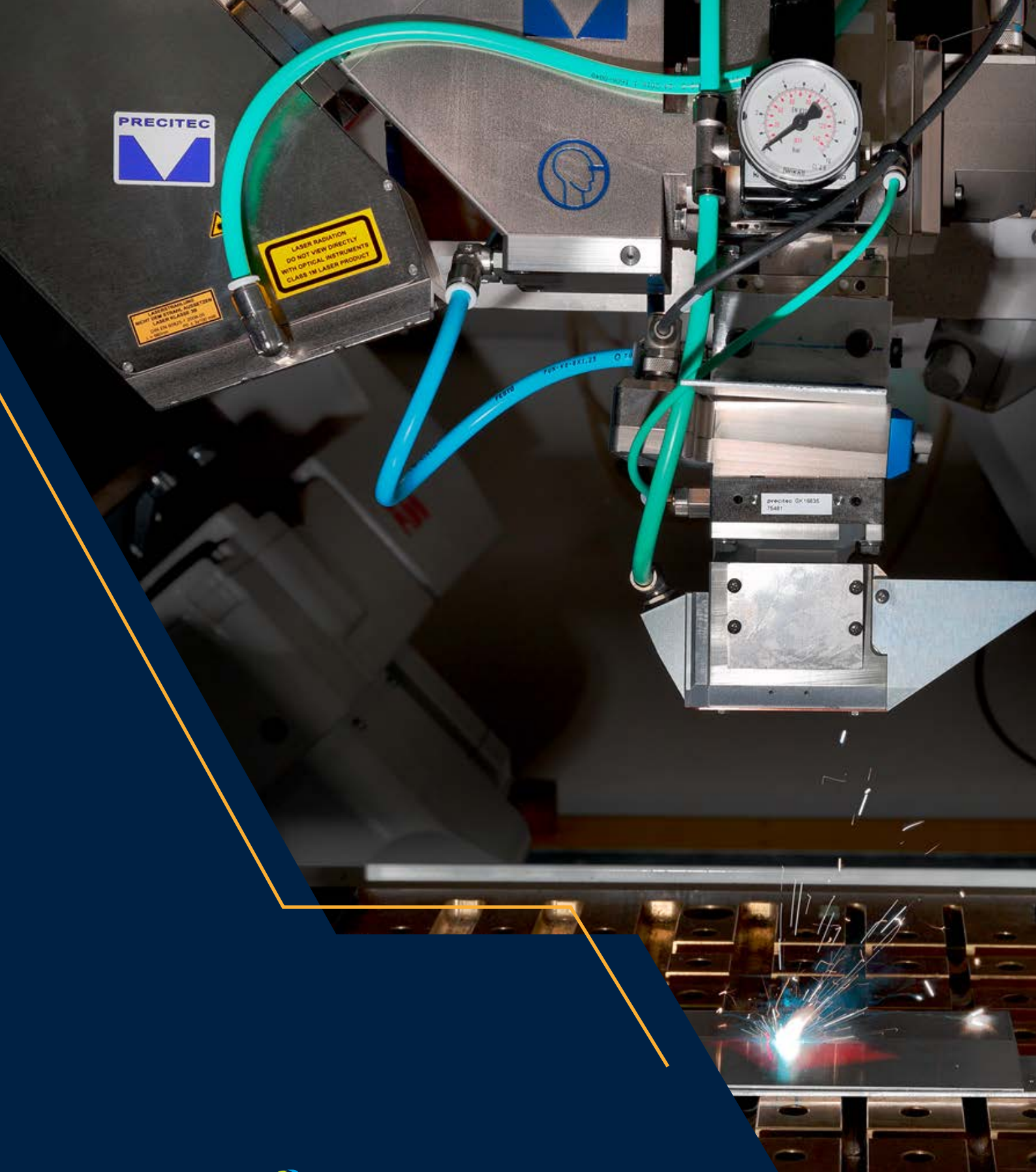


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