

QUALITY CONTROL FOR ADDITIVE MANUFACTURING



Monday January 23rd 2017

08:15-08:45	Registration
09:00-09:15	Welcome Talk
09:15-09:45	Keynote 1: Development of the UK strategy for additive manufacturing by Phill Dickens (Professor of Manufacturing Technology), The University of Nottingham, UK
09:45-10:15	Session 1 Dimensional metrology & NDT – state-of-the-art review “Dimensional metrology & NDT for additive manufacturing” by Filippo Zanini, University of Padua, IT
10:15-10:45	Coffee & networking
	10:45-12:15 Session 1 Dimensional metrology & NDT
10:45-11:05	“Non-destructive volumetric control of additive manufactured parts: alternatives methods to X-ray tomography” by Anne-Françoise Obaton, Laboratoire National de Métrologie et d'Essais (LNE), FR
11:05-11:25	“Geometric shape deformation control for additive manufacturing” by Q. Sean Huang, Epstein Department of Industrial and Systems Engineering, University of Southern California, US
11:25-11:45	“A Renishaw solution-approach to AM part quality” by Michael McClelland, Renishaw, UK
11:45-12:05	“A non-contact, information-rich, fast strategy for complex form measurement” by Petros Stavroulakis, Patrick Bointon, Nicholas Southon, Richard Leach, Manufacturing Metrology Team, The University of Nottingham, UK
12:05-12:25	‘Simultaneous integrity & dimensional CT inspection’ by Nick Brierley, NDT Team, MTC, UK
12:30-13:30	Lunch
13:30-14:00	Session 2 Surface metrology – state-of-the-art review “State-of-the-art in surface metrology for additive manufacturing”, by Nicola Senin, Manufacturing Metrology Team, The University of Nottingham, UK
	14:00-15:45 Session 2 Surface Metrology
14:00-14:20	“A fresh approach to surface metrology for additive manufacture”, by Adam Thompson, Nicola Senin, Lewis Newton, Carlos Gomez, Richard Leach, Manufacturing Metrology Team, The University of Nottingham, UK

14:20-14:40	“Extracting surface topography data of AM parts from computer tomography systems” by Liam Blunt, University of Huddersfield, UK
14:40-15:00	
15:00-15:20	“Characterization of laser powder-bed fusion processes via in-process and post-process measurements” by John Ziegert, Bin Zhang, Zachary Reese, Angela Davies, Chris Evans, UNCC, US
15:20-15:40	“Effects of build angle and processing on surface measurements”, by Evangelos Chatzivagiannis, Bethan Smith, NDT and AM teams, MTC, UK
15:40-16:00	“Precision for additive metal manufacturing (PAM ²)” by Ann Witvrouw, KU Leuven, BE
16:00-16:30	Coffee & networking
16:30-18:00	Tour
18:30-21:00	Dinner @ MTC

Tuesday January 24th 2017

08:30-09:00	Keynote 2: From powder to part – why AM needs a TQM system from starting material to built component by Nicola Jones, LPW Technology, UK
09:00-09:30	Session 3 In-process metrology & NDT – state-of-the-art review “Technology landscape for in-process NDT for additive manufacturing” by Ben Dutton, NDT team, MTC, UK
09:30-10:00	Coffee & networking
	10:00-12:00 Session 3 In-process metrology & NDT
10:00-10:20	“Approaches for AM in-process inspection using SRAS and OCT”, by Adam Clare, Advanced Component Engineering Laboratory, The University of Nottingham, UK
10:20-10:40	“In-situ monitoring and machine learning” by Iain Todd, Department of Materials Science and Engineering, University of Sheffield, UK
10:40-11:00	“Process control for wire-arc additive manufacturing” by Stephen T Newman, University of Bath, UK
11:00-11:20	“High-speed imaging of the powder-bed and shield gas during metal PBF additive manufacture” by Andrew J. Moore, Heriot-Watt University, UK
11:20-11:40	“Spatio-temporal detection of defects in SLM by using in-situ high-speed vision” by Marco Grasso, Bianca M. Colosimo, Politecnico De Milano, IT
11:40-12:00	“The integration of a vision based in-process inspection system within the CassaMobile project” by Xiaoxiao Han, Loughborough University, UK
	Commercial Session 12:00-12:05 Alicona 12:05-12:10 Lambda Photometrics 12:10-12:15 Olympus 12:15-12:20 Added Scientific 12:20-12:25 Zeiss 12:25-12:30 12:30-12:35 12:35-12:40 12:45-13:45 Lunch
13:45-14:15	Keynote 3 “Standards for AM” “Standards landscape for additive manufacturing” by Alex Price, BSI,

	UK
14:15-15:15	Session 4: Open forum and discussions
15:15-15:30	Coffee & networking
	15:30-17:10 Session 4 Metrology for process control
15:30-15:50	'Quality control of metal powders used in powder bed additive layer manufacturing' by Jason Dawes, Powder Management team, MTC, UK
15:50-16:10	"X-ray tomography for additive manufacturing: from metrology to in situ process control" by Peter D. Lee, Alex C.L. Leung, MXIF, University of Manchester, UK
16:10-16:30	"Feedback control and process monitoring of direct laser deposition" by Mark Ward, University of Birmingham, UK
16:30-16:50	"Qualification of wire + arc additive manufacture: measurement requirements" by Stewart Williams, Welding Science and Engineering, School of Aerospace, Transport and Manufacturing, Cranfield University, UK
16:50-17:10	"Current challenges for AM volume production" by Desi Bacheva, HiETA Technologies Ltd, UK
	17:10-17:20 Closing remarks

Organising Committee: Professor Richard Leach (University of Nottingham), Dr Peter Woolliams (National Physical Laboratory), Dr Ben Dutton (MTC), Mr Marcus Pont (Domin Fluid Power Ltd).



19.12.16