Commercial Applications for Additive Manufacturing
Moving Towards Production: Developing Strategies to Integrate Additive Manufacturing into your Business Model for Profit Boosting Results

Amsterdam, Netherlands
9th – 11th February 2015

Interactive Conference Workshops on 9th February

Workshop A: The Extraordinary Possibilities for Additive Manufacturing
Led by:
Jon Fidler
Director and Founder
Modia
Richard Goddard
Director and Founder
Modia

Workshop B: The Importance of Materials in Additive Manufacturing
Led by:
Jasper van Dieten
Global Marketing Manager
DSM Somos

Interactive Roundtable Sessions
• Discussing the Most Advanced Strategies for Improving the Additive Manufacturing Process
• Making and Creating in the Future; The Opportunities to Embrace and the Dangers to Mitigate

Panel Discussion
• Is Serial Production Commercially Possible?
• Should Businesses Collaborate Together to Overcome Common Technical Challenges and Deficiencies?

Attending This Premier marcus evans Conference Will Enable You to
• Overcome the major technical challenges of moving towards serial production
• Advanced strategic planning to make additive manufacturing an integral part of your business model
• Bolster your additive manufacturing process, increase production outputs and improve efficiency
• Establish process and quality controls to improve end product result
• Discover and discuss the new possibilities available to your business through additive manufacturing
• Explore the importance of computer software to achieving excellence in additive manufacturing

Learn from Key Practical Case Studies
• Rolls-Royce provide key case studies for how additive manufacturing can revolutionise the repair, replace and maintenance supply chain
• KLM address how you can avoid investment failures, invest when the time is right and not just for hype sake
• Stanmore Implants Worldwide Ltd expose the opportunity for product development, drive product innovation and expand your product portfolio through additive manufacturing
• The Manufacturing Technology Centre shares the most advanced strategies for how process and product quality can be achieved
• Mykita analyses why and how product design is the key to achieving ultimate commercial success through additive manufacturing
• Philips Healthcare will exhibit how products can be created at end user suitable standards, the quicker to market the quicker to profit
• Croft Filters highlight how additive manufacturing can drive innovation and long term growth in SMEs

In the Chair Day One
David Wimpenny
Chief Technologist, Component Technology
The Manufacturing Technology Centre

In the Chair Day Two
Paul Unwin
Group Chief Technology Officer
Stanmore Implants Worldwide Ltd

Expert Speaker Panel
Scott Wood
Chief of Materials, Repair Technology
Rolls-Royce

Rogier van Beugen
Director of Innovation
KLM

Lorenzo Lorenzi
Advanced Manufacturing Leader
GE Oil and Gas

Mark Bloomfield
Founder
ElectroBloom

Tim Hope
Senior R&D Project Leader
GKN Aerospace

Julian Gerau
Technical Project and Design Advisor
Mykita

Frank Cooper
Senior Lecturer and Technical Manager
Jewellery Industry Innovation Centre

Jon Fidler
Director and Founder
Modia

Richard Goddard
Director and Founder
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Jasper van Dieten
Global Marketing Manager
DSM Somos

Gold Sponsor
Materialise

Workshop Sponsor
Somos

Lunch Sponsor
Höganäs
Interactive Conference Workshop

9th February 2015

WORKSHOP A

THE EXTRAORDINARY POSSIBILITIES OF ADDITIVE MANUFACTURING

08.30 Registration and Coffee

09.00 Workshop Leader’s Introduction and Opening Remarks
  Jon Fidler
  Director and Founder
  Modla

09.15 How Additive Manufacturing Can Revolutionise Your Design and Inventive Capabilities
  • Transforming your manufacturing capability: Design the impossible
  • Think big, think better: Expanding your mindset in the world of additive manufacturing
  • Using additive manufacturing to drive creative innovation in your business

10.30 Refresh

11.00 Overcome the Difficulties: Don’t Let Common Problems Ruin Your Additive Ambition
  • Implement the most advanced strategies for problem solving by integrating constant feedback into your manufacturing process
  • Increase your knowledge and improve your understanding of additive manufacturing
  • Knowing when to bring in solution providers and problem solvers
  • Discover and introduce the most advanced innovations within additive manufacturing
  • Collaborate with the most advanced experts and researchers outside of your business

12.15 Closing Remarks from Workshop Leader

What you will learn in workshop A

In Workshop A you will learn the most advanced and revolutionary possibilities of additive manufacturing, and how these can be successfully implemented into your company. Common problems which have prevented additive manufacturing being used in its most advantageous way will then be discussed and solutions based on proven methods and strategies will be actively shown. The result will be a more advanced business model based on developing new and innovative products that are only possible through the design freedom of additive manufacturing.

WORKSHOP B

THE IMPORTANCE OF MATERIALS IN ADDITIVE MANUFACTURING

13.30 Registration and Coffee

14.00 Workshop Leader’s introduction and Opening Remarks
  Jasper van Dieten
  Global Marketing Manager
  DSM Somos

14.15 Understanding the Importance of Materials for End-Product Excellence
  • Use groundbreaking and world-leading materials to guarantee final product quality
  • Match the right approach with the right materials to ensure success
  • Move additive manufacturing to a new level of performance for competition beating results

15.30 Refresh

16.00 Reduce Risks and Mitigate Danger; Product Creation Through an End to End Process Partnership
  • Understand whether stereolithography is right for your desired product before making the investment
  • Understand the importance of working with highly advanced and dedicated material experts to allow you to achieve performance excellence
  • Discussing the pros and cons of various material options to optimise your design process

17.15 Closing Remarks from Workshop Leader

What you will learn in workshop B

In Workshop B you will learn the importance of materials and how choosing the most optimal and advanced materials will massively increase your final product performance. By analyzing and understanding the quality and qualities of materials this will allow for a product to be more successfully produced. Although, the importance of materials within conventional manufacturing has long been recognized, and much work has gone into developing highly advanced materials, this has yet to occur properly within additive manufacturing. This is now changing and it is integral to the commercial success of additive manufacturing within your company that you be one of the first to make the leap into this new world of material quality.

About the Sponsor

**Höganäs Digital Metal** offers a revolutionary and innovative manufacturing technique for metallic components. It is a proprietary precision ink-jet technology for additive manufacturing and 3D printing of metal components and systems. This offers a unique capacity to rapidly and cost effectively produce highly complex and intricate designs and features for metallic parts. As the world moves steadily towards more generative and flexible manufacturing methods, Digital Metal® is at the forefront of this development. Digital Metal belongs to the global Höganäs Group, which is headquartered in Sweden and best known for its pioneering work in metal powders. There is an obvious and natural connection between 3D metal printing and the Group’s core business, but the advantages do not end here. Being part of a much larger organisation guarantees our financial stability, and makes Digital Metal a partner you can rely on in the long term.

About the Lunch Sponsor

**Materialise** began as a specialist in Rapid Prototyping (RP) and Additive Manufacturing (AM) and has grown into the market leader for 3D printing and Digital CAD software. Materialise has a state-of-the-art AM facility with numerous technologies which has allowed our team to become industry experts. With first-hand knowledge of all the technologies and bottlenecks in AM, our software development staff (the largest in the sector) stays ahead of the trends with software solutions for every step of the AM process, from design to printed part and for machines going from the smallest to the largest. Together these solutions form a software platform for 3D printing that links applications from various markets and industries ranging from automotive, aerospace, to medical industry, consumer goods and many more, to the wide range of 3D printers and Additive Manufacturing technologies.

About the Workshop Sponsor

**DSM** believes that 3D printing is a major change agent for the world creating brighter lives for people today and generations to come. Somos® Materials move the Additive Manufacturing industry to a new level of performance. We are dedicated to customer growth in the ever-changing world of 3D Printing and promote this growth through continuous material and application development, encouraging industry collaboration and maximizing customer asset value by providing continuous information and support. More information about Somos® can be found at www.dsm.com/somos

About the Gold Sponsor

**Materialise** began as a specialist in Rapid Prototyping (RP) and Additive Manufacturing (AM) and has grown into the market leader for 3D printing and Digital CAD software. Materialise has a state-of-the-art AM facility with numerous technologies which has allowed our team to become industry experts. With first-hand knowledge of all the technologies and bottlenecks in AM, our software development staff (the largest in the sector) stays ahead of the trends with software solutions for every step of the AM process, from design to printed part and for machines going from the smallest to the largest. Together these solutions form a software platform for 3D printing that links applications from various markets and industries ranging from automotive, aerospace, to medical industry, consumer goods and many more, to the wide range of 3D printers and Additive Manufacturing technologies.

Who Should Attend

Vice Presidents, Directors, Heads and Managers with decision making responsibility for:

• Engineering
• Advanced Manufacturing
• Technology
• 3D Printing
• Materials
• R&D, Innovation Networks
• Global Innovation Network – Product, Architecture and Engineering
• Technology & New Product Development
• Product Development Engineering
• Business Development and Innovation Additive Manufacturing
• Product Architecture and Engineering
• Materials and Manufacturing Advanced Programs
• Manufacturing Engineering
• Manufacturing Improvements
• Rapid Prototyping
• Advanced Manufacturing Engineering

More information about Somos® can be found at www.dsm.com/somos

Visit us at www.dsm.com/somos
Day One
10th February 2015

08.30 Registration and Coffee

09.00 Opening Address from the Chair
David Wimpenny
Chief Technologist, Component Technology
The Manufacturing Technology Centre

GET TO GRIPS WITH YOUR COMMERCIAL NEEDS WHEN INVESTING IN ADDITIVE MANUFACTURING

09.10 Case Study
Making the Smart Decision for Your Additive Manufacturing Investments: Don’t Invest Just for Hype Sake
• Carry out an effective analysis of your customer and business needs before choosing to use additive manufacturing to maximise commercial gains
• Develop clearly understandable and realistically achievable objective benefits from your new investment
• Assess you have the skills and expertise necessary to produce what you truly want to produce
Rogier van Beugen
Director of Innovation
KLM

09.50 Case Study
Design for Additive Manufacturing, Extracting the Full Potential of Additive Manufacturing Technologies
• Enhance product development; Create organic, complex and optimised objects
• Take advantage of CAD modeling techniques to create the most advanced and ambitious geometries
• Investigate the capability to manufacture textile type structures that enable a step-change in achievable geometric complexity over conventional fibre-based textiles
• Embrace the opportunity for integration of emerging technologies for the realisation of high-performance AM textiles for demanding applications.
Guy Bingham
Senior Lecturer and Researcher, Additive Manufacturing
Loughborough University

10.30 Refreshments

11.00 Case Study
Create A Unique Product That Will Truly Benefit from Additive Manufacturing
• Create the formerly impossible; Develop a product that will capture the consumer’s imagination and beat the competition
• Develop problem solving solutions; Create designs that couldn’t be produced with conventional manufacturing
• Don’t just repeat what you have done before; Use additive manufacturing as a new means of innovation
Julian Gerau
Technical Project and Design Advisor
Mykita

DEVELOPING EFFECTIVE BUSINESS MODELS FOR PROFITABLE PRODUCTION

11.40 Case Study
Investigating Whether Additive Manufacturing Can Ever Move Beyond Producing Low Volume, High Value Goods
• Evaluating current production strategies using additive manufacturing; Are new strategies needed?
• Assess the cost of equipment and materials; How can production costs be controlled?
• Exploring new methods of boosting printing speed and increasing production capacity; Investing in large scale additive manufacturing production facilities
Mark Bloomfield
Founder
Electrobloom

12.20 Case Study
The Business Benefits of Personalisation; Customisation for the Masses
• Integrating mass customisation and personalisation into your business model to increase customer satisfaction and product success
• Integrate customer interaction software platforms into your business to increase customisation efficiency
• Discussing the future of personalisation; A feature yet to be used to its full advantage?
Speaker to be Confirmed Shortly

13.00 Pre-Lunch Address
Hans Kimblad
Technical Sales Manager
Hoganas

13.15 Lunch

14.15 Case Study
Repair, Replace and Supply: Using Additive Manufacturing to Maintain a Constant Stream of Required Products and Components to Your Customers
• Discussing contractual agreements and consumer guarantees in an additive manufacturing world; Repairing and replacing faulty products
• Improve customer satisfaction by boosting production speed of replacement products
• Enhance your customer guarantees; Be able to additively manufacture out of date components that are no longer being conventionally manufactured
Scott Wood
Chief of Materials, Repair Technology
Rolls-Royce

14.55 Panel Discussion
Is Serial Production Commercially Possible?
• Investigating whether additively manufactured products can be produced at commercially viable prices
• Does the capacity and supply of equipment support mass production; Bottleneck issues and size limitations
• Can products be manufactured quickly enough to meet consumer demands compared to traditional manufacturing methods?
Panel Moderator:
David Wimpenny
Chief Technologist
The Manufacturing Technology Centre
Panelists:
Gerald Martines
Director of Innovation
Qualipac
Harry Kleijnen
Manager, Development & Engineering
Rolls-Royce
Guy Bingham
Senior Lecturer and Researcher, Additive Manufacturing
Loughborough University
Julian Gerau
Technical Project and Design Advisor
Mykita

15.35 Refreshments

16.15 Case Study
How the Jewellery Industry is Preparing for the Paradigm Shift that 3D Printing and AM is Bringing
• How and why the jewellery industry currently uses CAD and 3D printing technologies
• How and why the jewellery industry is migrating those skills into taking up the potential offered by additive manufacturing
Frank Cooper
Senior Lecturer and Technical Manager
Jewellery Industry Innovation Centre

16.55 Case Study
From Prototype to Serial Production in a Medical Regulated Environment
• Where application meets technology; Connecting customer requirements to technology capabilities
• Develop products not prototypes; Producing products suitable for end user use
• Identifying process validation and product verification needs; Matching technology capabilities against regulatory requirements
• Understand the requirements for large volume additive manufacturing, Challenges in PDM, ERP and lean manufacturing
Harry Kleijnen
Manager, Development & Engineering
Philips Healthcare

17.35 Panel Discussion
Should Businesses Collaborate Together to Overcome Common Technical Challenges and Deficiencies?
• Opening up new opportunities through open sourcing
• Reduce mistrust and paranoia, Working with your competitors to improve your additive manufacturing process
• Assessing when potential competitive advantage is outweighed by common process failures in additive manufacturing
Panel Moderator:
Rogier van Beugen
Director of Innovation
KLM
Mark Bloomfield
Founder
Electrobloom

Closing Comments from Chair and End of Day One
Day Two
11th February 2015

08.30 Registration and Coffee

09.00 Opening Address from the Chair
Paul Unwin
Group Chief Technology Officer
Stanmore Implants Worldwide Ltd

ACCHIEVING COMMERCIAL PRODUCTION: IMPROVE AND ENHANCE THE ADDITIVE MANUFACTURING PROCESS IN YOUR BUSINESS

09.10 Case Study
Controlling the Quality of AM Parts Through an End-to-End Approach; To Ensure Consistent Product Quality
- Developing feedback loops within additive manufacturing production to reduce process errors
- Achieve quality products; Integrating quality control methods into your production process
- Observe and control; Increase automation within additive manufacturing

David Wimpenny
Chief Technologist, Component Technology
The Manufacturing Technology Centre

09.50 Case Study
Developing Process Control within Additive Manufacturing to Improve Product Quality and Performance
- Embrace real-time control to minimise variations in AM process and final product result
- Develop quantitative and traceable data for determining process control validity and optimal process conditions
- Take advantage of software to increase product result uniformity between multiple machines; Move towards successful serial production

Senior Representative
Materialise

10.30 Refreshment

11.00 Case Study
Enhance Productivity within Additive Manufacturing to Increase Production Capacity
- Boost production rate through automation; Move additive manufacturing into the 21st Century
- Avoid bottlenecks and build your additive infrastructure now not later
- Construct a central location platform within your production system to drive and control all your printing equipment to increase output speeds

Ralf Schwenger
R&D Director, Racquet Sports
Head Sports

11.40 ROUNDTABLE SESSION
Analysing the Most Advanced Strategies for Improving the Additive Manufacturing Process

Group One
Discussing the Importance of CAD and Software to Achieve Excellence Through Additive Manufacturing
Guy Bingham
Senior Lecturer and Researcher, Additive Manufacturing
Loughborough University

Group Two
Changing Mindsets; How Additive Manufacturing Requires New Ways of Thinking and New Expertise
Mark Bloomfield
Founder
Electrobloom

THE FUTURE IS WHAT YOU MAKE IT: THE NEW CREATIVE POSSIBILITIES WITH ADDITIVE MANUFACTURING

12.20 Case Study
We Play with Our Food, A New World of 3D Printed Foods
- Understand how a business model can be created and based on additive manufacturing
- Increase efficiency and productivity by reducing the production and assembly time of complicated designs
- Take creativity to the next level; Expand your product portfolio

Julian Sing
Founder
3D Chef

13.00 Lunch

14.00 Case Study
New Commercial Opportunities; Expanding Your Product Portfolio
- Enhance your customer satisfaction; Design bespoke items specifically to their desires
- Take advantage of alternative materials to design products that could not be produced with conventional methods
- Use additive manufacturing to drive product innovation

Paul Unwin
Group Chief Technology Officer
Stanmore Implants Worldwide Ltd

14.40 Case Study
Additive Manufacturing for SMEs: Innovation and Commercial Opportunities
- In-house development of novel metal AM Filtration media
- Characterisation of novel filtration media to deliver data specifications to customers to support industrial adoption of metal AM
- Achieving customer led innovation

Louise Geelkie
Project Director
Croft Filters

15.20 Product Development in the Future; The Opportunities to Embrace and the Dangers to Mitigate

Group Two
Discussing why and how Additive Manufacturing Can Drive Innovation
Louise Geelkie
Project Director
Croft Filters

GROUP ONE
Take Advantage of Software Solutions to Improve and Enhance Your Additive Manufacturing Process
Senior Representative
Materialise

OVERCOME BUSINESS AND COMMERCIAL CHALLENGES TO ACHIEVE MAINSTREAM PRODUCTION

16.00 Case Study
Overcome the High Costs: Achieve ROI in Additive Manufacturing
- Investigate the best methods for targeting the benefits of additive manufacturing most effectively within your supply chain
- Increase manufacturing productivity to reduce your costs
- Integrate conventional and additive manufacturing to increase speed of post process work and decrease lead time

Lorenzo Lorenzi
Advanced Manufacturing Leader
GE Oil and Gas

16.40 Case Study
Minimum Viable Product for Early Stage Adoption of Additive Manufacture
- Understand the difference between ornaments and technology demonstrators
- AM industrialisation approach for minimum viable products
- Linking technology and manufacturing readiness levels to technological business cases

Tim Hope
Senior R&D Project Leader
GKN Aerospace

17.20 Case Study
Expand Company Wide Knowledge of Additive Manufacturing to Boost Production Success and Efficiency
- Implement employee training and education courses for additive manufacturing
- Pursue collaboration projects with research institutions to bolster employee knowledge of the capabilities of additive manufacturing
- Take advantage of human resources; Hire in knowledge to your company

Speaker to be Confirmed Shortly

18.00 Closing Comments from Chair and End of Conference
Speaker Profiles

Gérald Martines holds a Master degree in Physics, an engineering degree in Material Science and an MBA. He held technical, marketing and general management positions in 3 industries: automotive, office furniture design and lately cosmetic packaging. He dedicated the last 7 years to innovation in the field of Beauty application. He is currently Director of Innovation for Qualipac, a division of the Pochet Group, the second largest global supplier of primary packaging for Fragrance, Skincare and Color cosmetics. He is also one of 18 founding members of the BeautyFull Club, a non-profit organization gathering executives across the global Cosmetic industry supply chain, aiming to promote best practices in Corporate social responsibility, Ethics & Intellectual property, for which he is President of the Sustainable development commission.

Julian Gerau has pursued his education in design at the Kunsthochschule Berlin Weisensee, where he graduated as a Product-Designer. He has also spent time at the renowned Design Academy in Eindhoven. After returning to his native Berlin, he jointly funded the Verein der Gestaltung, Berlin e.V. a multi-disciplinary collective who’s members cover a diverse spectrum of the creative industries. Furthermore he runs a Co-working space in the central district of Kreuzberg, one of Berlin most creative hubs. Currently his main client is Mykità, a boutique sunglasses manufacturer in the heart of Berlin, where he works as a consultant heading a design and product development project. Julian’s practice can be described as creating and executing ideas through a process rooted in design-thinking and thoughtful communication.

Rogier van Beugen over the past decade has been active for KLM Royal Dutch Airlines in various leadership roles. He has been active in general management as well as in Commercial management, focused on (B2B) sales and business development. Over the last 3 years his focus has been organizational change, which led him into Innovation. He has a passion for improving organizations and for (B2B) sales (development).

Guy Bingham after gaining his PhD in 2007 within the area of AM textile structure design and modelling, he remained at the AMRG as a Post-doctoral researcher investigating the design implication of Additive Manufacturing. During this period he designed many landmark artefacts showcasing the design potential and freedoms of AM techniques, including footwear, textiles, personal protective equipment and the World’s first conformal AM textile garment. In 2009 Dr Bingham co-founded the first international symposium in Digital Art and Design and has exhibited digital sculptures internationally. In 2010, Dr Bingham returned to Loughborough University as a Lecturer within the New Design School and is continuing his research addressing the design opportunities of Additive manufacturing.

Mark Bloomfield MA (RCA) - a creative visionary in the making with strong interests in design, science, technology, and art, a home computer enthusiast since the early 1980s through which he developed an obsession for 3D creative software environments, CAD CAM and Additive Manufacture. Trained as a jeweler. Mark continues to be a maker of small things, with an active interest in wearable technology, gamification and biomimicry. Experienced in the luxury, technology, entertainment and craft industries Mark has created wearable accessories for film, fashion and luxury brands including, Titanic, Judge Dredd, Vivienne Westwood, Paul Smith, Matthew Williamson, Asprey, NCR and Virgin Galactic. Mark established electrobloom to focus on the design and development of on-demand customised accessories, gifts and interior products with a view to satisfying the individuals desire for bespoke goods. 3D printing and other computer controlled processes are used to manufacture on-demand and by making these complex emerging technologies accessible and fun, your creative participation is encouraged and everything is ultimately made for you.

Frank Cooper is a senior lecturer in Jewellery Manufacturing Technology and Technical Manager of the Jewellery industry Innovation Center. Areas of expertise include CAD, Prototyping, Casting, Polishing, Laser Welding, Laser Scanning. Currently heavily involved in a number of research activities based around the Direct Metal Laser Melting (sintering) of precious metals.

David Wimpenny is one of the world’s leading experts in the field of Additive Manufacturing. His ground breaking work at Warwick University and DeMontfort University has paved the way for the use of AM in the production of end use parts. He is the Secretary of the Additive Manufacturing Association (AMMA), one of the key bodies representing the Additive Manufacturing sector in the UK. David joined the Manufacturing Technology Centre in 2011 and established the Net Shape & Additive Manufacturing research theme which has grown to become one of the largest research activities within the Centre, driven by demand from some the UK’s leading manufacturing companies. In 2014 he was given a strategic role as Chief Technologist across the Component Technology area which encompasses High Integrity Fabrication, Nonconventional Machining, as well as the Net Shape & Additive Manufacturing theme.

Julian Sing is a 3D creator with a passion for food. He started out his long career in 3D modeling and his designs span many industries. From making movie models for films like the Matrix in his hometown Sydney, to building scale models of the entire city of Dubai. His passion for baking brought him to 3D printing in sugar. He was making decorations for a cake for his family and it struck him that this could be done using the techniques he was already employing. Since then he’s perfected the process of sugar printing and has won critical acclaim for the many beautiful designs he has already created.

Paul Unwin has been a key figure in the orthopaedic limb preservation market for over 25 years. His career began in 1989 designing patient specific limb salvage implants at the Centre for Biomedical Engineering at University College London. He subsequently gained commercial experience with the newly privatised AEA Technology PLC. In 1997 he become CEO Stanmore Implants Worldwide and in 2008 he led the company’s spin out from University College London. In 2012 Paul was appointed Chief Technical Officer to focus on the next generation of limb salvage products through advanced design and manufacturing technologies. Dr Unwin holds a MSc in bioengineering from University of Surrey and a PhD in orthopaedic science from University College London. From 2001 through 2013 he served as a member of the board of directors of the International Society of Limb Salvage.

Louise Geekie supports the extensive metal 3d printing R&D programme by co-ordinating the approach to maximise the technology’s capabilities and product specifications. She believes that the extensive capabilities of metal 3D printing can create new opportunities for industrial processes across many industrial sectors.

Tim Hope is an enthusiastic engineer, with a number of years working within a varied range of disciplines. He enjoys the challenges faced in design, and particularly relish watching a project move from pre design gates to production. I have worked in both production and R&D environments for a variety of companies and as such have developed a flexible approach to working.