



Design Innovation from Additive Manufacturing

13th Annual International Wohlers Conference

Date and Time: Thursday 1 December 2011, 09:30 – 17:00 (9:30 am – 5:00 pm)

Location: Room Frequenz 2, Hall 11, Exhibition Center Frankfurt/Main, Germany

Organizer: DEMAT GmbH

Chairman: Terry Wohlers, Wohlers Associates, Inc.

Conference Language: English

Registration Fee: Full day €300 + VAT (exhibitor), full day €390 + VAT (non-exhibitor), half day €160 + VAT (exhibitor), half day €210 + VAT (non-exhibitor). 10% early bird discount when registering by 31 October. Fee includes entrance into the conference and exhibition, technical papers, refreshments, and lunch.

Registration Form: [Click here](#)

More Information: Contact Mrs. Verena Frenkler at 49 69 27 40 03 30, verena.frenkler@demat.com, or fax 49 69 27 40 03 40.

Conference Overview

Never before has a manufacturing technology given designers such freedom to create products. With additive manufacturing (AM), designers are unlocking their ideas and producing designs that were unthinkable in the past. The types of parts and assemblies being created are unprecedented. AM is also allowing organizations to reduce the number of parts that would otherwise go into a product, as well as cut inventory, assembly, labor, maintenance, material, weight, and carbon emissions.

Design innovation is believed to be at an all-time high due to advances in additive manufacturing technology. Talented individuals in many industrial sectors, including aerospace, medical, art, jewelry, and consumer products, are producing intriguing, even almost unbelievable designs that bear little resemblance to designs from the past. These innovations are inspiring others to use AM to create products that were before unimaginable. This impressive body of work is forming a foundation upon which an even greater number of striking designs will emerge in the future.

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Session I: Morning



09:30

Welcome Address

Dr. Eberhard Döring, Chief Executive Officer
DEMAT GmbH (Germany)

Dr. Döring is a mechanical engineer with a PhD in plastics processing. He created the EuroMold exhibition concept and has been the CEO of DEMAT and exhibition manager since 1996.



09:45

Keynote: Atoms Are the New Bits

Dr. Ping Fu, CEO
Geomagic, Inc. (USA)

Honored by *Inc.* Magazine as “The Entrepreneur of the Year” in 2005, Dr. Fu describes herself as an artist and scientist whose chosen expression is business. She co-founded Geomagic, a leading global software company that creates 3D technologies. Before Geomagic, Dr. Fu was director of Visualization at NCSA where she managed the Mosaic project that led to Netscape and Internet Explorer. She has more than 30 years of industry experience in Internet software, 3D image processing and printing, and computer graphics.

Presentation Summary: When Dr. Fu started in the field of visual computing in the 1980s, the focus was on bits. The implications of bits being the center focus were vast. With them, several industries revolutionized games, movies, publishing, mobile computing, and design. Profoundly, these changes have enabled us to live in an era where the transportation of goods is no longer separated from the transportation of ideas. Nowhere else is this more evident than in the field of additive manufacturing. In her keynote, Dr. Fu will explore the frontiers in which AM is creating circles of influence, from biocomputing and materials science to the maker movement. She will also discuss the implications we face when atoms become the new bits.



10:30

Light Weight and Complex Part Design

Dr. Ian Halliday, CEO
3T RPD Ltd. (UK)

Dr. Halliday is a design-orientated engineer by nature. He spent seven years in aerospace as a metallurgist and 20 years in automotive in additive manufacturing. He has been an enthusiastic advocate and technical change agent for AM since the late 1980s. Consequently, he has managed and developed three different in-house AM facilities, including BMW Munich. Since 2005, Dr. Halliday has been the CEO of 3T RPD Ltd., a leading AM provider of both plastic and metal AM in the UK. He is particularly interested in using AM to optimize designs for weight, performance, and functionality, leading to a substantial reduction in the use of energy.

Presentation Summary: The challenge of reducing carbon emissions touches us all every day in one way or another and AM is seen as a technology that will lend a helping hand. Dr. Halliday will provide insight into the ways in which we can expect AM to emerge as a real force in carbon emissions reduction through the use of a series of case studies related to common, but not necessarily commonly visible objects. He will also provide an overview of some of the tools and issues involved in taking us towards this goal. His presentation will include an overview of the AM design software used by 3T RPD called Within Enhance from Within Lab. This FEA-enabled software has the potential of becoming a primary enabler in ensuring that not only are part designs optimized for stress, weight, and function, but also for additive manufacturing.

11:00 am

Break and Refreshments



11:30

Design Innovation Capabilities and New AM Material Opportunities at EADS

Mr. Frank Palm, Senior Expert, Welded Structures & Processes
EADS (Germany)

Mr. Palm is a senior expert at EADS Innovation Works, the corporate research organization of the EADS group. His more than 22 years at EADS has focused on metallic materials and processing, especially on welding metallurgy, processes, and welded structures (including metallic AM), and related failure analysis (EADS wide). For five years, he has served as the deputy chairman of the German Welding Research Association (GWRA). For nine years, he has headed the technical research committee (FA1) Metallurgy & Material Engineering of the GWRA under the German Welding Society (DVS).

Presentation Summary: Metallic additive manufacturing is becoming an indispensable product development approach at EADS. It has been a vital part of many production schemes for complex and highly-sophisticated aerospace and defense components for more than 20 years. With the advent of higher-resolution and better net-shape capability, especially in powder-bed and powder-nozzle build-up platforms, AM is expected to become one of the most powerful methods of improving performance, with a possible reduction of carbon emissions. Enhanced topology design, coupled with the right material, could lead to a new manufacturing revolution.



12:00

AM's Impact on Design: A Veteran's Perspective

Mr. David Leigh, President
Harvest Technologies (USA)

Mr. Leigh heads Harvest Technologies, an additive manufacturing service bureau with 19 laser sintering systems and eight stereolithography systems. Harvest was one of the first AS9100 certified service bureaus to focus on the demands of direct part manufacturing in the aerospace industry. Mr. Leigh was on the original team at DTM Corp. that brought the Sinterstation 2000 to market in the early 1990s. He left DTM and started Harvest Technologies in 1995. He has championed the LS process throughout his career and worked on the first manufacturing specifications of LS for direct production applications.

Presentation Summary: Mr. Leigh will give his views on how additive manufacturing has impacted the products we use and see on a daily basis. Among them: more organic and ergonomic user interfaces and weight reduction efforts with complex assemblies that are becoming single parts. Indeed, additive manufacturing and 3D CAD designs have changed the way we harness and connect to our environment. Mr. Leigh will present examples of AM's impact on design in several industries, including medical, automotive, aerospace, consumer products, and art.

12:30 pm

Buffet Lunch

Special Presentation: For the first time, a presentation and discussion have been scheduled to coincide with lunch. We are delighted to announce that Mr. Pat Picariello of ASTM International will be present to discuss an exciting, new agreement. ASTM International and the International Organization for Standardization (ISO) recently signed a Partner Standards Developing Organization (PSDO) cooperative agreement to govern the ongoing collaborative efforts between ASTM International Committee F42 and ISO TC 261. Its purpose is to eliminate duplication of effort while maximizing resource allocation for the ASTM and ISO additive manufacturing committees. The agreement includes normative referencing, fast track adoption of existing standards, and collaborative work in developing new standards. Mr. Picariello will elaborate on the specifics of the agreement and provide the rationale behind its development.



13:15

Collaborative Standards Development: ASTM International Committee F42 and ISO TC

Mr. Pat Picariello, Director of Developmental Operations
ASTM International (USA)

Mr. Picariello oversees the exploration, planning, organization, and management of new standards development at ASTM International. He has experience with ASTM standards development and strategic standardization initiatives, both nationally and internationally. Mr. Picariello holds a bachelor's degree from Dartmouth College and a Juris Doctorate (J.D.) degree from Temple University School of Law. He is certified in Standards Management by the Standards Engineering Society and is a member of the American Society of Association Executives.

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Session II: Afternoon



14:00

Design Innovation with AM Starts at the Idea Phase

Dr. Eric Klemp, Commercial Director
Direct Manufacturing Research Center (Germany)

Dr. Klemp studied mechanical engineering at Technical University of Clausthal, Germany and completed his PhD in the field of rapid tooling in 2002. He was employed by Bosch and Siemens Household Appliances as a project leader for consumer products from 2001 to 2007. From 2008 to 2009, he worked at Rational AG as a product architect and was responsible for international chain customers. Since October 2009, he has been the commercial director of the Direct Manufacturing Research Center (DMRC) at the University of Paderborn.

Presentation Summary: The DMRC is a proactive collaboration of key technology stakeholders with common interests in advancing additive manufacturing technology into dependable, production-rugged manufacturing technology. To achieve this goal, a product design must be implemented correctly from the beginning in order to exploit the many possibilities offered by additive manufacturing. At the end, a real product must fulfill demands and survive. Dr. Klemp will show what this means through several examples.



14:30

AM Inspired Design

Prof. Deon de Beer, Executive Director, Technology Transfer & Innovation
Vaal University of Technology (South Africa)

Prof. de Beer is South Africa's leading pioneer in additive manufacturing. At Central University of Technology (CUT), he established the Centre for Rapid Prototyping and Manufacturing, as well as the Product Development Technology Transfer Centre. He led the Integrated Product Development Research team at CUT and established a Fab Lab at the same institution. Since joining Vaal University of Technology, Prof. de Beer has established the Direct Digital Manufacturing Centre, the Design Centre, and the innovative Idea 2 Product Lab, which is a first worldwide. He has been instrumental in the Rapid Product Development Association of South Africa and the Global Alliance of Rapid Prototyping Associations.

Presentation Summary: Imagine the ability to see things that never were, to solve problems, and to design and create mechanisms, products, and processes that have the ability to change or influence lives. Imagine the frustration to be so far ahead of your time that it may take 400 years for your dreams, products, or inventions to become reality. Welcome to the world of Leonardo da Vinci—artist, scientist, engineer, and innovator. Now, imagine designing in an unrestricted world, and imagine not asking why, but why not? Prof. de Beer will discuss creative products made by additive manufacturing in South Africa, inspired by endless possibilities, enabled by AM.



15:00

Revolutionizing Design through Additive Manufacturing

Mr. Wim Michiels, Executive Vice President
Materialise NV (Belgium)

Mr. Michiels is responsible for eight business units at Materialise. He has worked at the company since 1999, first as international sales manager for the prototyping service bureau, then as general manager Asia Pacific, operating from the company's Malaysia branch office. In 2006, he returned to Belgium to start a new assignment as division manager for Materialise's Software Division. Mr. Michiels is passionate about AM technology and sees it as a company mission and personal target to bring game-changing technology to a wide audience for a better and healthier world.

Presentation Summary: Artists, fashion designers, and even consumers increasingly rely on additive manufacturing to materialize their ideas. Additive manufacturing provides an unseen and revolutionary freedom of design to these people. Even so, the route from a nice concept to a well-produced product often involves challenges. This is where the expertise of Materialise comes in. The company has created a collection of design products, including lighting and jewelry, through its .MGX line. It has been working with designers and artists to make exclusive designs possible, such as dresses by fashion designer Iris Van Herpen. Also, through i.materialise, Materialise is empowering consumers to create and print their own designs.

15:30 am

Break and Refreshments



16:00

Providing Added Value through Additive Manufacturing

Dr. Lionel Theodore Dean, Creative Director
FutureFactories (UK)

Dr. Dean is a graduate engineer with a Master's degree from the Royal College of Art in London, England, and a PhD. In 2002, he created FutureFactories, initially as a blue-sky residency project. His work now focuses exclusively on the use of additive manufacturing. Through FutureFactories, Dr. Dean has created a series of iconic designs, ranging from gallery pieces to retail products for well-known manufacturers. He has exhibited extensively worldwide and has his work on display as part of permanent collections at the Museum of Modern Art (MoMA) in New York and DHUB Design Museum Barcelona.

Presentation Summary: The domestic consumer goods market has proved significant in the growth of additive manufacturing. Early examples have focused on unusual forms that can be created. Novel aesthetics alone, however, make for a difficult business proposition. It is the added value that additive manufacturing offers that justifies the use of a premium production process. Added value can be realized by exploiting the freedoms and flexibility of the technology. Aesthetics are important, but they are only a part of the story. New approaches to design, manufacturing, and consumption are the way forward.



16:30

The Future of Design Innovation with AM

Mr. Terry Wohlers, Principal Consultant and President
Wohlers Associates, Inc. (USA)

Mr. Wohlers has authored 375 books, articles, and technical papers and has given 80 keynote presentations on five continents. Through Wohlers Associates, he has provided consulting assistance to 170 organizations in 23 countries. In 2007, more than 1,000 industry professionals from around the world selected him as the #1 most influential person in rapid product development and additive manufacturing. In 2004, Mr. Wohlers received an Honorary Doctoral Degree of Mechanical Engineering from Central University of Technology in Bloemfontein, South Africa.

Presentation Summary: Predicting the future is easy but doing it accurately is not. In his 25 years of consulting and advising organizations of all sizes, Mr. Wohlers has presented countless forecasts, the majority of which have been correct. He will again present what he believes the future will bring, this time in the context of design innovation from additive manufacturing. Whether you agree or not, plan to attend and voice your thoughts and opinions on what he and the other speakers have to say.

17:00

Final Questions and Closing Comments