



## Factory of the Future

### Manufacturing by Additive Fabrication

EuroMold 2008  
10th Annual International Conference

**Date and Time:** Friday 5 December 2008, 09:30 – 17:00

**Location:** Exhibition Center Frankfurt/Main, Germany, Hall 8.1, Room Symmetrie 2

**Organizer:** DEMAT GmbH (Frankfurt, Germany)

**Chairman:** Terry Wohlers, Wohlers Associates, Inc. (USA)

**Conference Language:** English

**Fee Per Half Day:** €150 + 19% VAT. Special price for full day: €250, plus VAT. Registration fee includes entrance into the conference and exhibition, technical papers, and lunch.

**Registration:** Phone 49 69 27 40 03 30, fax 49 69 27 40 03 40, or email

[verena.frenkler@demat.com](mailto:verena.frenkler@demat.com). A registration form is available at [www.euromold.com](http://www.euromold.com).

**Conference Description:** In 1983, a conference titled The Future Factory was held in the United States. It concentrated on CAD/CAM, CNC, robotics, and other emerging technologies and processes. As the years passed, much of the speculation presented at the conference became true and developed impressively. The event gave a precious glimpse into the future of manufacturing.

Fast forward 25 years. A similarly titled conference hopes to achieve a similar goal. The difference is that this conference focuses on additive fabrication (AF) technology for manufacturing. A growing number of large and medium size organizations are using AF to manufacture products, but it is some of the small, start-up efforts that are the most interesting. AF and the Internet are leveling the playing field, allowing almost anyone from anywhere to manufacture.

Indeed, a new wave of low-volume manufacturing is developing. The availability of AF allows individuals to more easily experiment with the manufacture of custom and limited edition products. The risk is relatively low, so a number are already doing it. Conventional methods of manufacturing require tooling, machining, or other expensive processes, so most new product ideas are ignored because they require an army of people and a lot of money. Not so with AF.

Volume manufacturing of standard products will not disappear, nor will most conventional methods of manufacturing. However, many new kinds of products and companies are developing as people uncover the vast capabilities of additive fabrication.

**Factory of the Future**  
Manufacturing by Additive Fabrication  
**Session I: Morning**

9:30 am

**Welcome Address**

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



9:45 am

**Keynote: The Rapid Reality of FigurePrints**

Mr. Ed Fries, CEO  
FigurePrints (USA)

Mr. Fries will kick off the event as keynote speaker. As a former vice president at Microsoft, Mr. Fries grew Microsoft Game Studios from 50 people to over 1,200 and published more than 100 games, including many top sellers.

Late in 2006, three individuals from the video game business and a sign printer came together to answer this question: Could 3D printing technology be used to produce custom products of player avatars from World of Warcraft, the most popular video game in the world? In December 2007, FigurePrints was launched. In less than a year, it has grown to become the largest and most successful business of its kind, with thousands of custom products sold. What's more, tens of thousands of customers are joining a lottery each month, hoping to get a chance to place an order. Mr. Fries will explain how the idea developed, which technologies were available to make it possible, what unexpected challenges were faced along the way, and where the company hopes to go in the future.

10:30 am

**The Future of Manufacturing**

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

How will manufacturing be different in the future? Is the custom manufacturing megatrend real, and if so, what does it mean to the future of product development? To what extent will additive fabrication play a role? Wohlers will address these and other issues related to the future of manufacturing in the USA, Europe, Asia, and other parts of the world. Expect to hear about the importance of labor reduction, the need for speed, green manufacturing, light weight structures, bridge manufacturing, and distributed design and manufacturing.

11:00 am

**Break and Refreshments**

11:30 am

**Factories at Home: Promoting Innovation  
and the Future of Personal Fabrication**

Dr. Evan Malone, Post-Doctoral Research Assistant and Co-creator of Fab@Home  
Cornell University (USA)

In the future, personal fabrication technology will provide individuals the ability to manufacture and customize almost any kind of product at home. Cornell University has produced the Fab@Home machine as a personal fabrication system based on a multi-material, additive process. It has been used to produce a wide range of items, including polymer structures, conductive wiring embedded in structural materials, and elastomer strain gages. Also, it has created complete batteries, soft actuators, organic polymer transistors, electromechanical relays, engineered living tissues, and (with furnace sintering) dense stainless steel parts. Open-source designs, instructions, and software are provided from a website, so anyone can obtain a Fab@Home machine.

12:00 pm

### **Rapid Manufacturing at Work at FutureFactories**

Mr. Lionel Dean, Creative Director  
FutureFactories (England)

When FutureFactories began in 2002, the project was deemed “blue-sky” research. The technology seemed too expensive and the materials were not durable enough for retail products. The technological landscape has since changed, giving way to exciting new products in the decorative design market. FutureFactories has created a spectrum of iconic products, ranging from gallery pieces to serially produced retail designs. The future challenge is to create products with sophisticated geometric features, and to view design, manufacturing, and consumption in entirely new ways.

12:30 pm

### **Buffet Lunch**

## **Session II: Afternoon**

2:00 pm

### **Consumer Goods from Additive Fabrication**

Mr. Bart Van der Schueren, Director of Industrial Services  
Materialise (Belgium)

In September 2003, Materialise launched .MGX as a venture to commercialize products manufactured through additive fabrication. Five years later, .MGX is producing and commercializing a wealth of new and interesting consumer products. Van der Schueren will explain how the .MGX business is organized, what type of AF technologies are used, and how these technologies have influenced the business model. The company continues to face challenges, but .MGX shows that embracing AF can create exciting new market and business opportunities.

2:30 pm

### **Enabling Consumer Production Through Rapid Manufacturing**

Mr. Peter Weijmarshhausen, CEO  
Shapeways (The Netherlands)

People today are looking for ways to make unique and personalized products. Shapeways.com, which is a part of the Philips corporate incubator program, is a relatively new Internet-based service that offers people the chance to upload and print their designs. For users who do not want to—or know how to—use 3D software, Shapeways offers easy-to-use templates. Shapeways is leveraging existing rapid manufacturing techniques for consumer products, although this presents interesting challenges that Weijmarshhausen will present.

3:00 pm

### **Rapid Manufacturing of Surgical Devices: Challenges and Rewards**

Mr. Andy Christensen, President  
Medical Modeling Inc.

The rapid manufacturing of surgical implant devices using additive fabrication offers an exciting frontier. Applications for short-run and custom implants showcase both the flexibility of additive fabrication as well as the unrestrained use of complexity in design. Where “design for manufacturability” has previously been key, new applications and devices are being developed that capitalize on the unique benefits enabled by the use of AF and implantable metals. Groundbreaking manufacturing processes, such as Electron Beam Melting, use titanium and cobalt-chrome alloys to produce products that someday may become mainstream. Mr. Christensen will focus on the challenges and rewards, and the business case of applying AF to metals technology for custom devices.

3:30 pm

**Break and Refreshments**

4:00 pm

**Laser Sintering/Melting in the Dental Industry**

Mr. Horst Dreger, Founder and CEO  
DFW Dental Fräswerk AG (Germany)

The production procedures in dental laboratories has experienced revolutionary change over the past few years. Laser scanning and special software from companies such as 3Shape and Etkon are credited for much of the change. The data produced by these systems is being used with laser sintering/melting systems and CNC milling machines. Up to 250 dental restorations can be produced each day with these new digitally-driven processes. As a result, a dental technician's manual labor has dropped from about 90 percent to 20 percent. Mr. Dreger will explain how it is possible.

4:30 pm

**The 2020 Factory: Rapid, Green, and Lean**

Mr. Jim Williams, President and CEO  
Paramount Industries (USA)

Paramount Industries has experienced the evolution of additive fabrication technology and has witnessed its growth into true manufacturing solutions for finished products. Mr. Williams will present his views of how manufacturing innovation centers will develop over the next 12 years. Highly automated processes and advanced engineered materials will offer a safe, lean, and green manufacturing infrastructure. It will lead to the qualification, adoption, and standardization of AF technologies among a myriad of demanding industries where mass customization, quality, repeatability, and reliability of products are crucial.

5:00 pm

**Conclusion of Conference**