Facing the Future: Additive Manufacturing

SECOND ROUND

Call for Partners: Consortium Study

KEX.
Knowledge Exchange

Our partners:

Fraunhofer IPT Fraunhofer ILT
Motivation

Costs for additive manufactured components are almost independent from quantity and complexity.

This leads to the question if conventional processes can be replaced by additive manufacturing. If so, what products and applications would be replaced and to what extent?

On the 24th of September 2014, a first round of the consortium study started with the participation of over 40 relevant industry players. Due to the high demand for this study and the continuous request for further places, a second round will start in March 2015.

In cooperation with the most relevant players, this consortium study aspires to create economic and technological transparency and to point
out future trends and developments of additive manufacturing technologies. Furthermore, we aim to promote valuable exchange and networking between more than 60 international industry partners in the field of additive manufacturing.

### Main Focus

The study focusses on the fields of productivity, process, quality, components and materials and covers different questions and issues, which will be adjusted individually.

<table>
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<tr>
<th>Productivity</th>
<th>Process Quality</th>
<th>Components</th>
<th>Materials</th>
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<tr>
<td>- How can the build-up speed be improved?</td>
<td>- How can process stability be improved by process monitoring?</td>
<td>- How can the dimensions of the components be increased?</td>
<td>- Which powder properties must be fulfilled so that it can be applied as a material?</td>
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<td>- In what way can new machine concepts contribute to a higher productivity?</td>
<td>- Which measures are necessary to certify the components?</td>
<td>- How can the components be configured and designed process-orientedly?</td>
<td>- How can the material spectrum be expanded through standardized qualification measures?</td>
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<td>- Which automation measures keep the costs low?</td>
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<td>- Which measures improve accuracy and surface quality?</td>
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Network of Experts

In our study we aim to create transparency with regard to

- actual and future potential applications of additive manufacturing,
- methods and expertise requirements in the development, production and management of these new technologies and
- market development opportunities.

In order to achieve our objectives for this consortium study, we are building an expert network that enables the knowledge and information exchange across value creation stages and business sectors. In other words, we are bringing together all experts and decision makers involved with additive manufacturing. Benefit
from the chances provided by our network and take the opportunity to determine which technologies and innovations to bring to the market!

Markets

Additive manufacturing methods have been established as important manufacturing systems for the product development in various industry sectors.

In this consortium study we will focus on application and future potential of this production process in the following specific markets:

- Automotive
- Aviation and Aerospace
- Electronics
- Medicine
- Energy Technology
- Consumer Goods
Study Approach

Methodology

The study's approach is to generate a technology forecast, scan the different product trends, gain a better market understanding and improve the management.

The broad analysis of technology, market, management and cross-industry in our study creates economic and technological transparency and points out future trends in additive manufacturing.

This study aims at providing an overview on additive manufacturing technologies and related future trends as well as at aligning these trends with requirements from diverse applications within the most relevant target markets. This broad information basis on both technological capabilities and market requirements will then be utilized to derive and assess highly attractive market opportunities and hidden potentials. In order to reach this aim systematically the study is divided into three phases:

Phase 1 - Pilot Study:
Generating an overview on the status-quo of technologies and market applications and relevant trends

Phase 2 - Detailed Study:
Providing detailed information on selected applications regarding technological opportunities and market potential

Phase 3 - Business Cases:
Deriving comprehensive business cases on selected highlight applications regarding technological feasibility and market competitiveness

This study addresses technology users already working with or planning to implement additive manufacturing technologies as well as technology providers, thus forming an additive manufacturing community covering all relevant elements of the value added chain. As a consortium partner you will be able to influence the study focus in several milestone meetings.
General study approach. If needed, each analysis can be broadened.

Technology Analysis
- Overview of existing and future technologies
- Assessment of strengths and weaknesses
- Assessment of process chains
- ...

Management Analysis
- Quality Management
- Data Management
- Basis for strategic positioning in the field of additive manufacturing
- ...

Market Analysis
- Overview and segmentation of relevant markets
- Elaboration of relevant market requirements
- Estimation of future product volumes
- Overview of future product concepts & designs
- ...

Sum Up & Outlook
Development of future production standards, benchmarking of production systems

Cross-Industry Analysis
- Identification of best practices
- Elaboration of cross-industry lessons learned
- ...

General study approach. If needed, each analysis can be broadened.
Study

Your participation in this consortium study provides a broad access to an expert community regarding actual performance and future development of additive manufacturing methods. Through your regular participation in workshops you will be able to influence and direct the progress of the study. Furthermore, you will get an exclusive access to all independent study results.

Your Benefits

- Independent study results
- Expert community
- Networking with more than 60 industry partners from different levels of the value creation chain
- After the consortium study you also have the possibility to exploit the achieved study results by means of joint projects on technology development. The participation in this phase is optional.

Time Frame

Start: 24th March 2015
End: 9th December 2015

Costs

The investment in this study will be 25,000 €
Our Partners

Competivation Consulting
- Founding Year: 2013
- Specialized on innovation management
- International network of leading experts and practitioners
- New business model, which combines consulting and management education with research

Fraunhofer Institute for Production Technology IPT
- Founding year: 1980
- 415 employees
- Knowledge and experience in all fields of production technology for developing and optimizing solutions for modern production facilities
- Member of the Fraunhofer Alliance: www.generativ.fraunhofer.de
www.ipt.fraunhofer.de

Fraunhofer Institute for Laser Technology ILT
- Founding year: 1985
- 420 employees
- Business portfolio: Lasers and Optics, Laser Material Processing, Medical Technology and Biophotonics, Laser Measurement Technology and EUV Technology
- One of the most important development and contract research institutes of Laser Technology worldwide
www.ilt.fraunhofer.de
KEX Knowledge Exchange AG

- Founding year: 2012
- Technology and market information provider
- Demand-based provision of information: Scanning, scouting and monitoring of markets and technologies, as well as an exclusive access to an unique network of experts.

www.kex-ag.com

TIME Research Area, Technology and Information Management Group

- Founding year: 1990
- One of the leading European research institutions for innovation, technology, business models and customer-centric value creation
- Interdisciplinary, practice-oriented research of disruptive trends in technology and innovation management and transfer into industry

PEM - Production Engineering of E-Mobility Components

- Established at RWTH Aachen University in 2014
- Led by Prof. Dr.-Ing. Achim Kampker
- The chair of Production Engineering of E-Mobility Components holds key positions in numerous research projects in the following areas: Battery production, electric powertrain, automotive assembly, electric vehicle production and plastics components.
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