

## June 2015, Leuven, Belgium – FOCUS partner cluster “High-precision Production Technologies”

The “High-precision Production Technologies” consists of in total 8 FoF projects, HI-MICRO, 3D-HIPMAS, HIPR, SMARTLAM, MICRO-FAST, FABIMED, NEXTFACTORY, HINMICO. With the support from the Commission, this cluster has been proactive in inter-cluster collaboration in order to enhance the impact of these projects. This Cluster brings together a critical mass of industry facing R&D programmes with common development objectives and complementary technologies to underpin a number of key application areas for Europe competitiveness.

On the 30th March 2015, a joint initiative – “INDUSTRIAL WORKSHOP Higher Value production technologies and KET enabled applications” has been successfully held in Milano, Italy. The participating EU projects are **HI-MICRO, 3D-HIPMAS, HIPR, SMARTLAM, MICRO-FAST, FABIMED, NEXTFACTORY, HINMICO, 4M2020, and HYPOLINE.** During this first joint workshop, both RTD institutions and industrial partners presented key results with high impact and of immediate relevance to industry. The participants at this workshop got not only an insight to the latest results of these industry-led ongoing R&D activities, but also more than 30 exploitable results presented in “innovation pitches”, each with a 5-minute highlight of key technical achievements and their potential for implementation in different product/application contexts.



During panel discussions and the coffee breaks participants were able to interact with the presenters, discussing business opportunities.

This activity has been appreciated by the Commission, and the project officer of 5 participating cluster projects, Dr. Erastos FILOS, has shortly joined the workshop through a Skype session.



## Projects in cluster “High-precision Production Technologies”

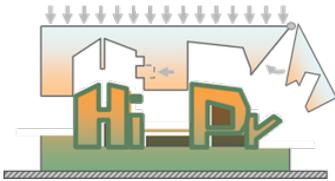


**HI-MICRO** - High precision micro production technologies ([www.hi-micro.eu](http://www.hi-micro.eu))

The **Hi-Micro** project intends to realize an innovative approach for the design, manufacturing and quality control of tool inserts, through further developing both enabling manufacturing technologies, including additive manufacturing (AM), micro electrical discharge machining (micro-EDM), micro electro-chemical machining (micro-ECM) and micro-milling, and unique metrology and quality control methods such as

computer-tomography (CT) metrology and digital holography. In order to tackle the identified challenges and critical problems in European manufacturing industry, the Hi-Micro project will provide radical innovations and major breakthroughs in high precision micro production technologies.

**HIPR** - High precision micro-forming of complex 3D parts ([www.hipr.eu](http://www.hipr.eu))



**HiPr** project, co-funded under the FP7, is developing a novel approach for metal 3D micro-parts production, capable to reduce finishing operations, which would bring micro-forming of small parts to industrial level. The new technology is supposed to replace the energy-consuming thermal finishing and electro-erosion, to produce small metal parts for consumer goods and personal care, electronics and the automotive sectors.

**3D-HIPMAS** - Pilot factory for 3D high precision MID assembly ([www.3D-hipmas.eu](http://www.3D-hipmas.eu))



The project demonstrates pilot line fabrication of advanced MID based micro assemblies. The project addresses important branches, e.g. communication, transportation, life sciences and energy. The aim is to assemble electronic components directly on 3D shaped plastic parts instead of putting them on a PCB. This technology could permit an economy of weight and matter, as well as space. The process is the following: additives are included in plastics and the plastic material is then molded into a 3D plastic part. A laser activates the surface on the plastic part and activates the additive. Then, the conductive metal lines are deposited by plating creating the circuit. Finally, electronic components are assembled on the circuit and a non-destructive quality control is done.

**SMARTLAM** - Smart production of microsystems based on laminated polymer films ([www.smartlam.eu](http://www.smartlam.eu))



The **Smartlam** concept builds on a layer by layer lamination of functionalised film sheets with different material properties, allowing for manufacturing of small medium series of micro components in a rapid manufacturing manner. The project activities are addressing three different topics of potential interest for the micro manufacturing community: new conceptual approach for modelling of layer-by-layer manufactured devices, adaption of technology modules according to the requirements of a "SMARTLAM-compatible" production, and modular setup for flexible, scalable manufacturing of small and medium series.



**MICRO-FAST** - Fast process and production system for high-throughput, flexible and cost-efficient vol. production of min. components ([www.micro-fast.eu](http://www.micro-fast.eu))



EU FP7 **Micro-FAST** project is to develop a completely new manufacturing system for the volume production of miniaturised components by overcoming the challenges on the manufacturing with a wide range of materials (metallic alloys, composites, ceramics and polymers), through: (i) developing a high-throughput, flexible and cost-efficient process by simultaneous electrical-forming and electric-fast-sintering (Micro-FAST); (ii) scaling up the process to an industrial scale; (iii) further developing it towards an industrial production system for micro-/nano-manufacturing.

**FABIMED** - Fabrication and functionalization of biomedical microdevices ([www.fabimed.eu](http://www.fabimed.eu))



**FaBiMed** will demonstrate the value of the developed technologies by producing three different micro-parts, which are essential for the performance of three innovative medical devices. The main scientific developments will be related with mould materials, in particular the substitution of conventional tool steels with coated steels, and with ceramic/glass inserts, with better replication characteristics (nanostructure transfer, better thermal control, and better demolding performance). The associated multiscale micro-nanostructuring techniques associated with such new insert materials are being developed, in particular combinations of micromilling, laser ablation, and ion implantation for highly selective plasma etching, to produce millimeter-micron-nanometer hierarchical structures with high precision. Polymer tools for casting are also being fabricated by a combination of stereolithography and multiphoton polymerization.

**HINMICO** - High throughput integrated technologies for multimaterial functional micro Components ([www.hinmico.eu](http://www.hinmico.eu))



The objective of the **HINMICO** project is the development and optimization of manufacturing processes to produce high quality multi-material micro-components, with the possibility of additional, functionalities, through more integrated, efficient and cheaper process chains.

**NEXTFACTORY** - All-in-one manufacturing platform for system ([www.nextfactory-project.eu](http://www.nextfactory-project.eu))



**NextFactory** is to provide a radically new way of producing micro-systems - disruptive compared to today's globalised, time- and resource-intensive production chains. In a one-stop-shop approach, Next Factory shall enable producers of micro-mechatronic systems to manufacture their products completely on one machine - set up





and programmed for their specific needs within one day even in lotsizes down to 1. NextFactory aims at providing an all-in-one solution: a highly generic and flexible process chain and system architecture, integrating the manufacturing tools, components, materials and software required for the entire production cycle for all kinds of micro-systems.

**HYPROLINE** - Hybrid Manufacturing Platforms for Production of Miniaturised Components  
([www.hyproline.eu](http://www.hyproline.eu))

**HYPROLINE**

The general objective of **Hyproline** is to strengthen the competitiveness of the European industry by introducing manufacturing methods, which will allow companies to reduce time-to-market and number of rejects, make more customized and innovative products with a higher market value, and make products > 20% more accurate with considerable savings (>30%) in consumption of waste metal, fluids and services, with an equivalent reduction of CO2 emission.

**4M2020** - Advanced Manufacturing of Multi-Material Multi-Functional Products Towards 2020 and Beyond  
([www.4m2020.eu](http://www.4m2020.eu))



**4M2020** is focused on building upon the durable integration mechanisms/structures and innovative chains created within three levels of project clusters in the field of multifunctional miniaturised products and their applications in energy, medical, optoelectronics and microoptics, printed electronics and ultra precision engineering, Industrial sectors that led to the creation of long term R&D+I partnerships. 4M2020 will facilitate cross fertilisation of product centred advanced manufacturing platforms along the five R&D+I streams and thus create alliances based on interrelated technological research and product demonstration activities and add value to its stakeholders by establishing R&D+I environment for combining KETs heterogeneously in the context of specific technology and product requirements.

For more information about "Hi-Micro" cluster, contact Dr. Jun Qian - [jun.qian@kuleuven.be](mailto:jun.qian@kuleuven.be)

**Acknowledgement:**

This project has received funding from the European Union Horizon 2020 Programme (H2020) under grant agreement n° 637090.

For further information please visit:

[http://ec.europa.eu/research/industrial\\_technologies/factories-of-the-future\\_en.html](http://ec.europa.eu/research/industrial_technologies/factories-of-the-future_en.html)

Factories of the Future is a EUR 1.2 billion program in which the European Commission and industry are collaborating in research to support the development and innovation of new enabling technologies for the EU manufacturing sector.

**Contacts:**

Project Coordinator: Odd Myklebust, NTNU

[odd.myklebust@sintef.no](mailto:odd.myklebust@sintef.no)

Dissemination Manager: Ro Green, Delcam

[rsg@delcam.com](mailto:rsg@delcam.com)

[www.focusonfof.eu](http://www.focusonfof.eu)

