Interreg CENTRAL EUROPE
European Union
European Regional Development Fund

AMiCE

DT221

Report on selection of pilot cases, activity plan for each case

ABSTRACT

The scope of this report is to describe documentation of the selection criteria and results, for the matching process with the operators of the demonstrators and pilot lines.

Table of Contents

ABBREVIATIONS

(AM) Advanced Manufacturing
(TRL) Technology Readiness Level

1. Selection Criteria

Pilot lines will be preferentially focused on enhancing the possibility to get advantages by 3D printing processes. By this view point a distinction feature will be the chance to export on existing processes based upon classic technologies some evident advantages provided by 3D printing.
This target will be achieved as a first step by selecting SME or high tech StartUps already firmly engaged in their reference market and business chain. Aims will be therefore directed to highlight not the AM features themselves but more likely the "advanced manufacturing" gain that it could be reached by introducing 3D printing in the already existing processes.
Moving toward already existing goods and markets Amice will measure the importance of:

- Quality control features
- Normative and regulatory affairs items
- Measurable gains like:
  - Possibility to tailor production to the customer need
  - Optimize the process control parameters in the light of present operative procedures
  - Discovering possible limits and unknown defects
  - Suggesting optimization processes in order to maximize the 3D advantage
  - Evaluate customer trust in the new products

To do so Amice Pilot Lines will be preferentially oriented to Incremental Innovation (the gain for the product) in a framework of a Disruptive Innovation (3D printing science) and TRL level from 6 up to 9 will be strongly suggested to get success in the Pilot Lines selection process.
New materials as well as niche application will be welcome in order to expand the testing campaign of this new technology applied to existing products in order to collect the attended ROI in terms of evident advantages compared to the existing market and functional features of the goods.
Therefore, new parameter set have to be defined out of the classic weight gain, prototyping capabilities, cost reduction in order to shed light to the effective advantages on the production chain.
Finally, inner capabilities to move from a linear production to a circular and sustainable organization of the process will be evaluated as an important asset to testify the positive awareness of moving from the already existing techniques to the new technology features.
Table 1 summaries the parameters adopted to select pilot actions.

Selection Criteria
Innovation in an AM environment (i.e. product, process, technological innovation)
TRL level from 6 up to 9
Adoption of new materials
Innovative capabilities to move from a linear production to a circular and sustainable (i.e. product, process, technological innovation);

Effective advantages on the production chain such as cost and time reduction and quality improvement;
Creation of new market
Creation of new partnership

2. Selected Pilot Actions

According to selection criteria described in the previous section, Table 2 presents the selected pilot actions.

Table 2 Overview of selected Pilot Actions

Pilot Line / Demonstrator (Region)	Company (Region)	Topic / Objective		Time Schedule	PP Responsible
		Company / SME needs	Pilot line / Demonstrator capabilities		
Superfici (IT)	Ligurian Start-up	Provide AM related service for the nautical sector	Superfici can provide additive manufacturing technologies and all related services (reverse engineering and CAD/CAE) for the needs of the nautical industry. Benefits in terms of costs, quality, time-to-market, production of customized products, also @ 1:1 scale. A plastic bridge for a high-end yacht to be produced before May 2020.	May/June 2020	UniGe
SAIEM (IT)	Continental	Reduce time and costs related to brake assembly; Improve quality; Reduce defects.	SAIEM can provide rapid prototyping and additive manufacturing technologies in order to print brakes. In this case, the large corporation	May/June 2020	UniGe

Pilot Line / Demonstrator (Region)	Company (Region)	Topic / Objective		Time Schedule	PP Responsible
		Company / SME needs	Pilot line / Demonstrator capabilities		
			can directly print brakes and therefore, it doesn't need to assemble them. Benefits in terms of costs, quality and reliability. A pre-series will be printed in May 2020.		
TEN Slovakia (SK)	SME located close to Bratislava	Reduction of time and costs related to produced parts; Reduction of weight of specific parts for aviation industry from 200 kg to app. 18 kg; Keeping high quality standards; Reduction of potential defects; Question of temperature field dynamics in 3D printing.	Slovak Technical University Bratislava, Faculty of Mechanical engineering, Institute of Automation, Measuring and Applied Informatics, (STU), one of leading providers of technologies and know-how in additive manufacturing in Slovakia, can provide know-how in rapid prototyping and additive manufacturing technologies in order to deliver ultra-light aluminium	April /May 2020	BIC Bratislava

Pilot Line / Demonstrator (Region)	Company (Region)	Topic / Objective		Time Schedule	PP Responsible
		Company / SME needs	Pilot line / Demonstrator capabilities		
			composite components for aviation industry (aircraft engine mounts).		
Sortinmachine (DE)	SCHOLZ GmbH in Saxony	Test with solid recovered fuel to seperate different caloric values (wood, PP/PE/PS)	The object is to expand the application areas of NFK by adapting processes and technologies that are BEFORE and AFTER the actual production of NFK products. These include the extraction of natural fibres, the downstream recycling of NFK products at the end of the product life cycle and the energetic utilisation of non-recyclable materials.	June 2020	HSZG Anett Kupka
ETOP Alternative Energy (SK)	SME in Trencin region in Slovakia	Create of scale prototypes of products	The company Etop Alternative Energy develops new products in the energy sector with modern design as are	May/June 2020	UNIZA

Pilot Line / Demonstrator (Region)	Company (Region)	Topic / Objective		Time Schedule	PP Responsible
		Company / SME needs	Pilot line / Demonstrator capabilities		
			fireplaces, heat pumps and also different decorative features with interesting use. Two of these products want to print to introduce them to potential customers on a smaller scale (special design of fireplace, smart flower pot).		
RIS3CAT 3D Tooling / 3D Factory Incubator (Catalonia)	Carrasco Tool Components, Tallers Fiestas, Etow Tool	3DP molds: increase the rate of heat extraction, reduce the cycle time, promote a better and faster distribution of temperatures on the surface of the mold, increase mold durability and reduce maintenance tasks	AM3DP equipment: FDM, SLS, MJF, SLA, SLM, CGS (cold gas spray) Atomizer for metal powder production Mechanical polishing: sandblaster, tumbler, shot peening Chemical and electrochemical polishing Heat treatment Organic, metallic and ceramic coatings Testing facilities:	Ongoing	LEITAT

Pilot Line / Demonstrator (Region)	Company (Region)	Topic / Objective		Time Schedule	PP Responsible
		Company / SME needs	Pilot line / Demonstrator capabilities		
			mechanical, chemical, physical, microscopy, fatigue, ageing, metrology, fire resistance / Design and redesign for AM (DfAM & DFM) Topological optimization and simulation Materials science: chemistry and metallurgy, new metal alloys for AM SLM parameter development for new metal powder alloys. Study, analysis and implementation of post-processing systems for 3D printed parts Coating and functionalization of 3D printed parts Tooling design and production testing campaigns		
RECYC (CZ)	Plantiq, SME in Ostrava	Create prototypes of products based	The Technical University in Liberec,	Ongoing	TUL

Pilot Line / Demonstrator (Region)	Company (Region)	Topic / Objective		Time Schedule	PP Responsible
		Company / SME needs	Pilot line / Demonstrator capabilities		
	region in Czech Rep.	on natural, recyclable material to replace existing plastic components	Institute for nanomaterials, Advanced technologies and Innovations, leader in the research, development, innovation and development of technologies, technological processes and their alternatives, including the monitoring and optimization of process parameters influencing the final properties of parts produced by advanced and progressive non-chip-producing technologies (plastics and composites, casting, forming and welding Arburg 270S 400-100 injection molding machine for PIM technology,		

Pilot Line / Demonstrator (Region)	Company (Region)	Topic / Objective		Time Schedule	PP Responsible
		Company / SME needs	Pilot line / Demonstrator capabilities		
			including an Arburg MULTILIFT H robotic system for a 270S machine. Furnaces for PIM technology. Sintering furnaces for CIM technology and sintering furnaces for MIM technology. Injection molding machine ARBURG 470 S 1000-400 with the MuCell technology DSC1/700 Mettler Toledo designated for conducting analysis using differential scan calorimetry method.		
SMART (CZ)	Entry Engineering, SME in Liberec region in Czech Rep.	Development of a new Lightweight construction composite material with intrinsic sensory properties. Exhancement of safety of critical	XSTRESS G3 3000 mobile diffractometer Sintering furnaces for CIM technology and sintering furnaces for MIM technology.	Ongoing	TUL

Pilot Line / Demonstrator (Region)	Company (Region)	Topic / Objective		Time Schedule	PP Responsible
		Company / SME needs	Pilot line / Demonstrator capabilities		
		components, namely parts of chassis of vehicles	Impact devices for head impacts. Vibration device. Data acquisition system. Detectors, sensors, strain gauges, dynamometers. UHR FE-SEM ZEISS Ultra Plus JPK SPM NanoWizard 2 with AFM, EFM, MFM, CAFM Plasma chamber for thin layers using RF PACVD method		
FRP technology (PL)	CINNOMATECH cluster, Lower Silesia (PL)	Need of technology of compsites elements (FRP) manufacturing, The know-how of design and manufacture toolings for FRP parts manufacturing	Wrocław Univeristy of Science and Technology will provide research, innovation and services on composite elements - new materials development, surface-engineering, technology for	ongoing	ITT/Letia

Pilot Line / Demonstrator (Region)	Company (Region)	Topic / Objective		Time Schedule	PP Responsible
		Company / SME needs	Pilot line / Demonstrator capabilities		
			layered FRP metal (Fiber Reinforced Polymer) composites - TRL (up to 5-6)		
WrUST – strength tests (PL)	Cluster of Excellence MERGE, (Saxony)	Research activities on designing flexible and bending stand for strength tests Designing and implementation of a flexible and bending stand for strength tests of composite elements and for crash tests Development of experimental solution/object/ stand Shear tests of composite elements within crash tests	Wrocław Univeristy of Science and Technology will provide research, innovative solution and services (tests) on composite elements - new materials development, surface-engineering,- TRL (up to 7)	ongoing	ITT/Letia
University of Barcelona/LEITAT	TU Chemnitz/ PT+A GmbH Dresden	3DP of fibre reinforced ceramics for new environmentally friendly high performance materials	University of Barcelona provides knowledge and experiences with the 3DP of ceramics For the fibre reinforcements a special technology will be developed and	Aug. 2019 – May 2020	PP1, PP11

Pilot Line / Demonstrator (Region)	Company (Region)	Topic / Objective		Time Schedule	PP Responsible
		Company / SME needs	Pilot line / Demonstrator capabilities		
			tested, UB received fibre samples from Chemnitz/Dresden, the involved partners have developed a joint workplan, first results have been reviewed, a F2F-meeting is planned for May 2020 in Barcelona Joint H20207 HEurope opportunities will be assessed		