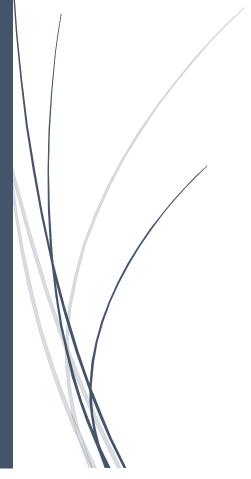


MANUELA Additive Manufacturing using Metal Pilot Line

Deliverable D10.2 Project print media, brochure, leaflets available WP 10



Deliverable Status	FINAL
Туре	WEBSITES, PATENT FILLINGS, VIDEOS,ETC
Dissemination level (according to the proposal)	PUBLIC



Project Name:	MANUELA - Additive Manufacturing using Metal Pilot Line
Grant Agreement:	820774
Project Duration:	1 October 2018 – 30 September 2022

Document Information

Work package	WP10
Lead beneficiary	AMIRES s.r.o.

Due Date	3/31/2019	Due date in months	6
Date of submission	5/27/2019	Month of submission	8

Status	Authors name and Company/Organisation	Date
Prepared by	Václav Smítka (AMIRES)	4/30/2019
Reviewed by	Terpsithea Ketegeni (CHALMERS)	5/15/2019
Approved by	Lars Nyborg (CHALMERS)	5/27/2019





Contents

Ex	ecutiv	ve Summary	3
1	Intro	oduction	4
2	MAI	NUELA printed promotional materials	5
2	2.1	MANUELA logo	5
2	2.2	MANUELA factsheet	5
2	2.3	MANUELA flyer	6
2	2.4	MANUELA leaflet v1	7
2	2.5	MANUELA leaflet v2	8
3	Cor	nclusions	9





Executive Summary

Timely and effective dissemination of results is an essential part of every research project. This ensures that the gained knowledge or exploitable foreground can benefit the whole society, and that any duplication of research and development activities is avoided.

This document shows printed materials that has been created in order to provide information on the project and its results, to support the project exploitation and to attract and involve the stakeholders from different markets and application fields.





1 Introduction

D10.2 is the deliverable associated with task T10.1 Dissemination and communication. The objective of this task is to ensure that the results of the project will be disseminated to the European and industrial community. It will ensure on-going communication between the general public, experts, technicians, grid operators etc. on one side and partners of the project on the other.

The task also describes preparation of a set of dedicated printed promotional materials. These materials will be prepared and issued during the entire lifetime of the project and its content will be regularly updated based on the project phase and results gained.





MANUELA printed promotional materials

Following chapters shows pictures of created promotional materials. In order to reduce the size of the document, pictures are reduced in resolution and dimensions. Materials in high resolution can be found on the MANUELA webpage in the section "Download".

2.1 MANUELA logo



Additive Manufacturing using Metal Pilot Line

2.2 MANUELA factsheet

Additive Manufacturing using Metal Pilot Line - MANUELA

H2020 project fact-sheet:

Additive Manufacturing using Metal Pilot Line **MANUELA**

Project ambition:

MANUELA's ambition is to provide the European industry with world class, reliable Pilot line manufacturing service leveraging metal Additive Manufacturing products. This will be achieved by having the hardware solutions cost-efficiently connected to the best possible competences and capacities across Europe to cover the full range of powder bed fusion technologies from medium to large scale LPBF as well as EBM.

since, no single machine solutions can fit all necessary end user demands, this concept is expected to best possible solution from cost of the concept is expected to best possible solution from cost of the concept is expected to be the possible solution from cost of the concept is expected to the concept in the field of AM have hence agreed to link their manufacturing capacity, technological know-how and facilities in the HANUELA repett to develop a pilot line service capable of production high quality series of products on state-of-the-art equipment in a reliable and production efficient way. The strength of the MANUELA pilot line lays in the cooperation between the RTD partners enabling industrial partners and end users to request most advanced demonstrators by selecting from the various manufacturing routes and functionalities provided. This ensures that the end-users can expect optimum output with respect to costs, reliability and performance. Hence, MANUELA is the most comprehensive AM pilot line service related to AM-parts realization, involving designing methods, the AM processes, post-AM treatment and part characterization.

- The principle five innovations, leading to the pilot line deployment, combined in MANUELA are:

 1. Tailored recyclable metal powder, for robust and reliable part manufacturing
 2. Comprehensive pilot line dashboard allowing to design, simulate and follow the manufacturing process
 3. Full pilot line workflow optimisation and automation
 4. Exploiting collected process data on the full pilot line and part, towards real-time in-line process monitoring feedback and process adaptation
 - process adaptation in mine process monitoring recounts and process adaptation and certification standard for full chain process in the aim improve the productivity, particularly in such fields where the certification is mandatory; automotive, aeronautic and medical (MANUELA's use cases)

MANUELA

Project facts:

Start date: End date:

Duration in months: 48

Project EU funding: € 12.5 M

H2020 Innovation Action

Grant Agreement: 820774

Call: H2020-NMBP-F0F-2018

FOF-04-2018

Pilot lines for metal Additive

Keywords:
Metal Additive Manufacturing,
Powder Bed Fusion,
Design for AM,
In-line control,
Quality monitoring,
Machine learning,
Post AM processing,
Material qualification for AM,
Automation,

Standardization

Additive Manufacturing using Metal Pilot Line - MANUELA

Project workplan:

- Project workplan:

 The approach of MANUELA is based on a balanced, well-structured and well-scheduled combination of research, focused deployment and validation, dissemination and raising stakeholders' awareness. It comprises three main phases as follows:

 1. Technology improvement: bringing the proposed technologies to the targeted TRL and tuning them to the technologies to the targeted TRL and tuning them to the technologies to the targeted TRL and tuning them to the technologies to the targeted TRL and tuning them to the technologies of the targeted TRL and tuning them to the technologies on project accordingly. Refining the demonstration roadmap based on use cases study.

 2. Pilot line integration, path to market assessment: deploying the technologies on pre-defined use cases; refining the pilot line management;

 3. Pilot line service deployment and adoption: demonstration and assessment of the pilot line service opential through implementation of 10 business development cases, identifying of the project exploitable results and assessing best exploitation strategy based on the feedback of business stakeholders; cross-cutting assessment and targeted dissemination of the project results

Production time saving up to 60% over the full production chain thanks to:

- Production time saving up to 60% over the full production chain thanks to:

 An optimized manufacturing flow, (reducing manufacturing flow time by a factor of 3.7 or more)

 An increased manufacturing speed
 An optimized post AM treatment (reducing time per component up to 3.7.5 %.)

 Production speed will be increased by > 30% thanks to:

 Reduction of the component volume to be built thanks to proper design for AM as well as optimal component placement in the build chamber

 Maturation of the process utilizing process optimisation for the component design, variation in powder layer thickness and scanning speed

 Utilization of the high-power energy source

 Robustness of metal AH+ based processes will be increased by more than 40% thanks to:

 Reduction of uncertainties of selected material quality parameters

 Usage of multi-physics multi-scale simulation tools combined into a digital two.

- into a digital twin,

 Real time process monitoring, fault detection and adaptation thanks to big data, data mining and machine learning

 Automation and traceability during post AM treatment

 Robustness is directly linked to improvements in right-first-time capability, material quality parameters and product quality.

 Time to market will be reduced by at least 30% through:

 Production time reduction

- Increase of production speed
- Minimization of design iteration through first time right Well defined standards and new certification schemes

Consortain	
Chalmers University	SE
CSEM	CH
FAU Erlangen	DE
Swerea IVF	SE
Cardiff University	UK
Politecnico di Torino	IT
Höganäs AB	SE
EOS Finland	FI
ABB AB	SE
OSAI Automation System	IT
METAS	CH
MSC Software	DE
Siemens	SE
Qioptiq Limited	UK
Biomedical Engineering	SK
ENEL Produzione	IT
O.E.B. Srl	IT
Chalmers Industriteknik	SE
Amires s.ro.	CZ
RUAG Slip Rings	CH

Project coordinator:

Prof. Lars NYBORG Prof. Lars N. Dec. _ Chalmers University (Sweder lars.nyborg@chalmers.se

Dissemination manager:

Václav SMÍTKA, Ph.D. AMIRES s.r.o. (Czech Republic) smitka@amires.eu

http://manuela-project.eu/







2.3 MANUELA flyer







2.4 MANUELA leaflet v1



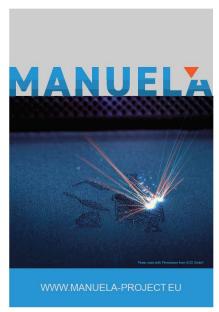






2.5 MANUELA leaflet v2







ADDITIVE MANUFACTURING (AM) with metals is on the verge of delivering on its promise as a cost competitive mass-production technology. The Manuela project is fundamentally about propelling this development and to provide a competitive edge to European industry within metal-based AM.

Within the scope of Manuela, leading European universities, institutes and companies have therefore agreed to merge their manufacturing capacity, technological know-how and manufacturing facilities to form a world class consortium within advanced additive manufacturing ion metals.

The ambition with Manuela to leverage on the above objective is to provide European industry with an accessible world-class pilot line manufacturing service for additive manufacturing in metals.

If you would like to know more or have an interest in utilizing the Manuela pilot line manufacturing service, please visit www.manuela-project.eu or contact us at manuela@chalmersindustriteknik.se

WWW.MANUELA-PROJECT EL





3 Conclusions

Additional promotional materials will be published throughout the lifetime of the project, in particular in the later stages of the project when the first results on demonstration activities can be expected.

The MANUELA promotional materials meet the requirements which were set for the website in the respective task T10.1 Dissemination and public events. The promotional materials have been prepared in order to increase public awareness of MANUELA and to disseminate the project's results. All the materials created up to now can be found on the webpage.

All promotional materials include the emblem of EU flag and following sentence: "This project has received funding from the European Community's Horizon 2020 Framework Programme under grant agreement 820774."