

Deliverable D9.5

Presentation of dissemination materials



MASTRO

Intelligent bulk **MA**terials for
Smart **TR**ansp**OR**t industries

Lead Beneficiary	AXIA Innovation UG
Delivery Date	31 August 2021
Dissemination Level	PU
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Vo2	31/08/2021	AXIA	Myrto Pelopida, Ioanna Deligkiozi, Vasilis Maris

¹ PU = PUBLIC

PP = Restricted to other programme participants (including the Commission Services)

RE = Restricted to a group specified by the consortium (including the Commission Services)

CO = Confidential, only for members of the consortium (including the Commission Services)

Summary

This deliverable presents the dissemination tools used and material produced in order to implement the task *T9.2 Dissemination and communication activities* as well as part of task *T9.4 Knowledge management and IPR protection* in the framework of *WP9 Innovation strategy, initial exploitation and business plan and dissemination*.

The success of the dissemination activities depends on the extent as well as the form of the material produced and circulated among the relevant stakeholders of the project as well as the general public. The purpose of the release of the different dissemination materials is to reach and communicate the advantages and the novelties of the developed MASTRO technologies and knowledge to potential user groups and ensure their accessibility for public at large as well.

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Abbreviations and acronyms

EU	European Union
EC	European Commission
doi	Digital Object Identifier
D	Deliverable
URL	Uniform Resource Locator
OADR	Open Access Digital Repositories

1. Introduction

MASTRO is an EU-funded Research and Innovation project with the objective to develop intelligent bulk materials for smart applications in the transport sector incorporating self-responsiveness properties. These smart materials aim to increase consumer safety, component lifespan and performance while at the same time reduce maintenance and manufacturing costs as well as through-life greenhouse gas emissions.

It is the mission of dissemination and communication to ensure the broad promotion of the commercial exploitation of the project's results and the widest dissemination of knowledge from the project. The strategy followed is two folded: towards the marketing activities in order to enhance the commercial potential of the project's results and towards the notification of project's results in the scientific, EC and general research and development sector.

In this report, all the dissemination tools and dissemination & communication material produced are presented. In detail, the deliverable describes the dissemination material (posters, newsletters, videos etc.) developed and released by AXIA as the leader of this task and lists all the open access publications resulted under the research efforts of the MASTRO partners. The deliverable is structured as follows:

- Dissemination tools used for the facilitation of the dissemination and communication activities of the project.
- Dissemination material produced during the project's lifetime along with the online links ensuring the open access character of such material.
- Open access publications along with their doi and the link to Zenodo and the MASTRO website ensuring the open access character of the publications.

The detailed description of all the dissemination and communication activities implemented can be found in the deliverable *D9.4 Final exploitation plan*.

2. MASTRO Dissemination tools

Within the framework of the MASTRO project various dissemination tools have been selected to be utilized for the facilitation of the dissemination and communication. Among these, the three most important dissemination tools include the [official project website](#), the three social media accounts ([LinkedIn](#), [Facebook](#), [Twitter](#)) and the open access repository “[Zenodo](#)”.

2.1 Website

The project website is a critical communication channel with the public and stakeholders. In order to boost the visibility of the MASTRO objectives and results, the URL <https://www.mastro-h2020.eu/> with the “eu” domain has been established.

[MASTRO website](#)

Updates are being implemented on a regular basis on the Project website to ensure high visibility of technological outcomes. The most important news posted on the social media accounts are included on the website as well.

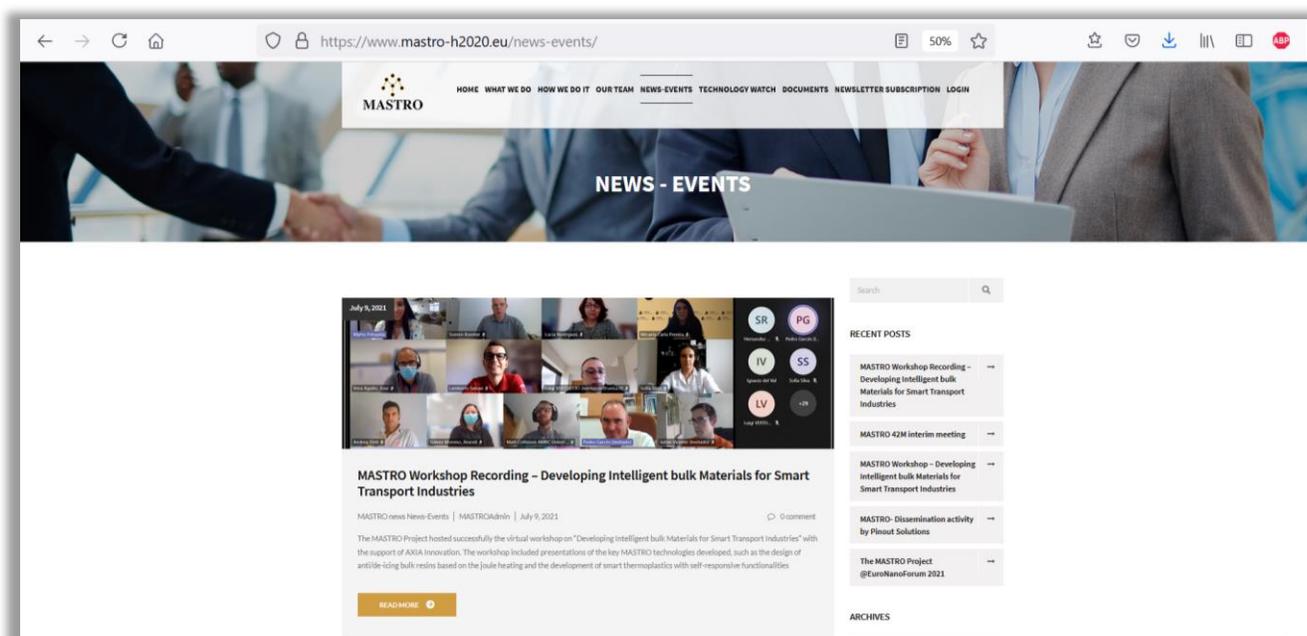


Figure 1 The MASTRO website

2.2 Social Media

Three social media accounts ([LinkedIn](#), [Twitter](#), and [Facebook](#)) have been set up for the MASTRO project with frequent posts on a weekly basis. The target is to promote the project's outcomes and inform the wider public about the concept and objectives of MASTRO. The social media profiles also direct viewers to the official MASTRO website.

[Facebook](#)

MASTRO's Facebook page is used for the general public project communication in the form of pictures from meetings and outreach activities. Due to the nature of the social media platform of Facebook, this social media channel is set up to promote the project, aiming at the general public.

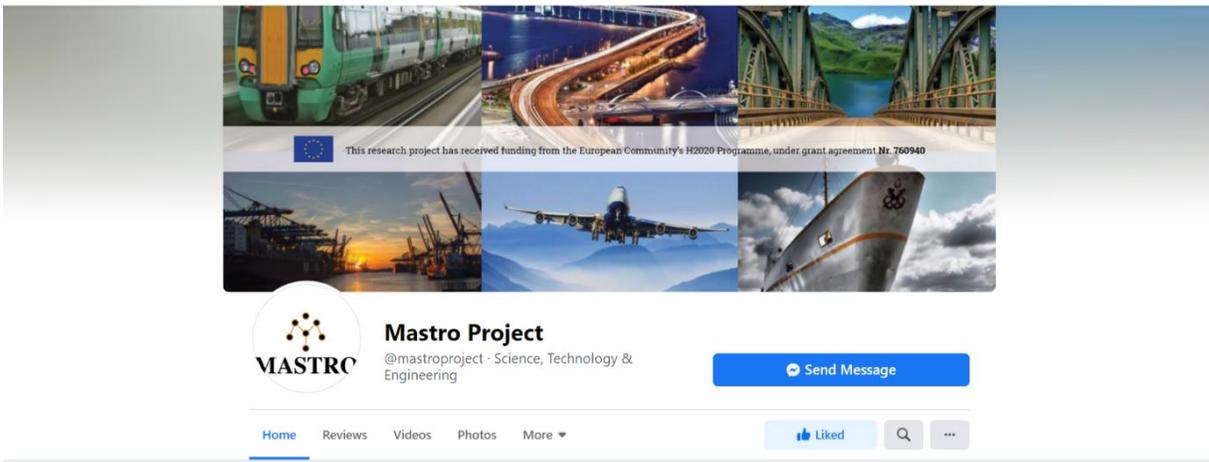


Figure 2 MASTRO Facebook page

[LinkedIn](#)

MASTRO's LinkedIn page is used to establish connections and build relationships between the project and interested stakeholders. In this framework, AXIA helps the project to strategically connect interested stakeholders and engage in more targeted outreach of the concept of MASTRO, aiming at relevant target groups.

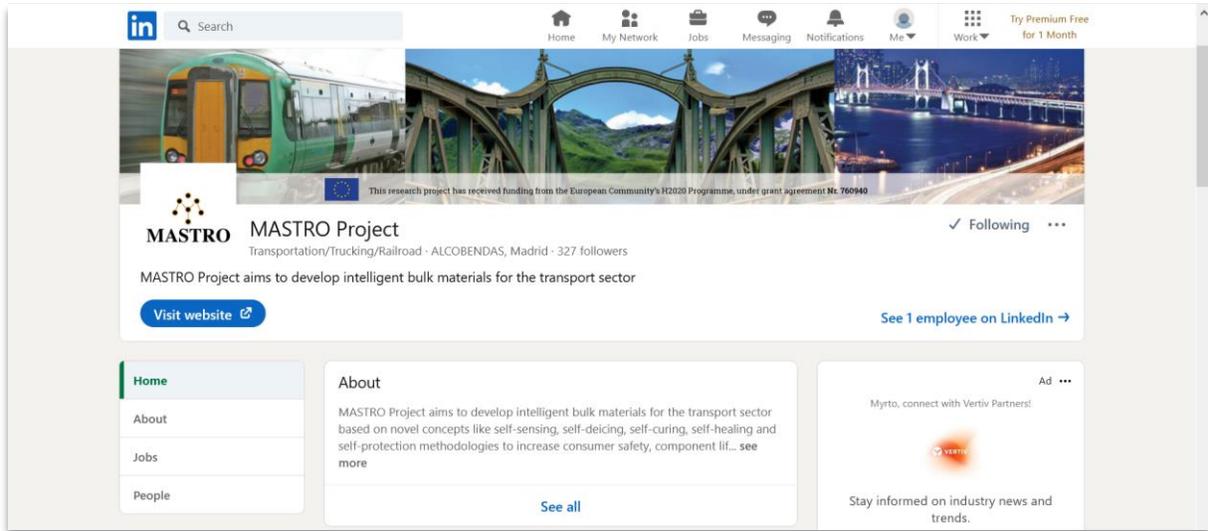


Figure 3 MASTRO LinkedIn page

Twitter

MASTRO’s Twitter account is used for communication purposes with stakeholders through networking, short news announcements, information of participation in conferences, and promotion of the overall MASTRO objectives. AXIA is managing the account as a more generic means of communication that has the ability to reach broader and less engaged audiences.

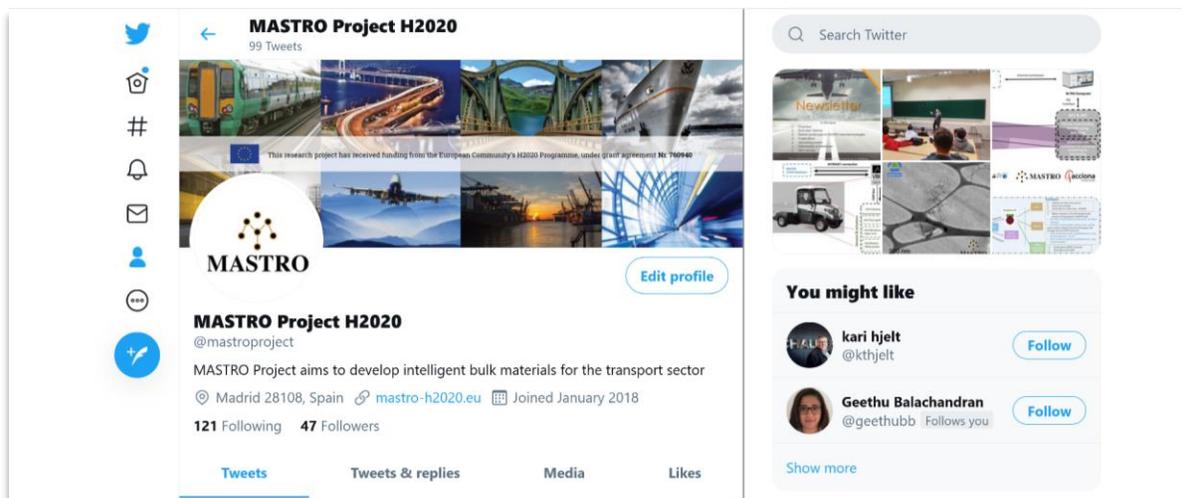


Figure 4 MASTRO Twitter page

2.3 Zendo

Due to its ease of use, MASTRO partners were encouraged to use the EU-funded repository Zenodo for depositing data, without excluding other OADRs (please visit OpenAIRE for additional options).

Overall, ZENODO enables users to:

- easily share data sets in a wide variety of formats, including text, spreadsheets, audio, video, and images across all fields of science
- display and archive research results, get credited by making the research results citable, and integrate them into existing reporting lines to funding agencies like the European Commission
- easily access and reuse shared research results
- define the different licenses and access levels that will be provided

All open access publications resulted from the research efforts within MASTRO as well as all the dissemination material produced during the project implementation have been uploaded at Zenodo.

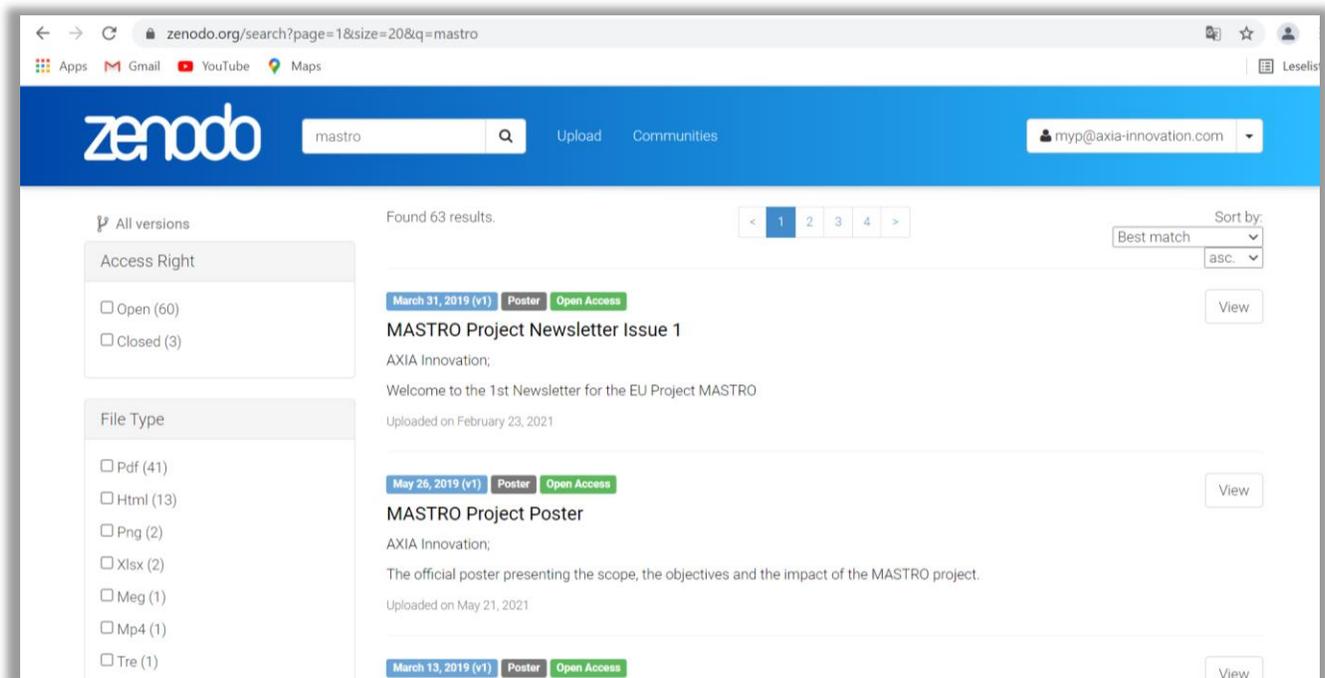


Figure 5 MASTRO on Zenodo

3. MASTRO Dissemination material

Several dissemination materials has been designed and released from the beginning of the project ensuring efficient project visibility. The following material has been published throughout the project's lifetime on the official MASTRO website under <https://www.mastro-h2020.eu/dissemination-material/> and Zenodo under <https://zenodo.org/search?page=1&size=20&q=mastro:>

- 3 Posters
- 2 Brochures
- 1 Roll-up
- 6 Newsletters
- 3 Videos

3.1 Posters and Leaflets

The MASTRO posters and brochure provide a generic presentation of the project and its results and are addressed to all audiences including the general public. They are an efficient way to communicate directly and visually about the project by giving a glance at the MASTRO ambitions, structure, and communication channels.

A conceptual poster has been released during the first period of the project containing the main information and objectives of MASTRO. The poster is available at the [MASTRO website](#) and [Zenodo](#).

MASTRO
Intelligent Bulk Materials for a Smart Transport Sector

Introduction
The EU 2020 Strategy states that Europe needs to turn into a smart, sustainable and inclusive economy, developing an economy based on knowledge and innovation. Fully aligned, The EC White Paper on Transport takes into account major policy initiatives that may impact on transport and establishes as a priority the need for integration of transport in sustainable development. Road and air are the most common means of passenger and freight transport in Europe. The automotive industry is therefore crucial for Europe's prosperity considering that the sector provides jobs for 12 million people and accounts for 4% of the EU's GDP.

MASTRO PROJECT MANAGEMENT
MASTRO Innovation, exploitation, training & dissemination

Activities focused on boosting future MARKET UPTAKE
RESEARCH ACTIVITIES developed at small scale in laboratory environment
UP-SCALING OF the manufacturing process and production, with prototype testing
VALIDATION OF the technologies, according to requirements and needs set by END-USERS

Impact
Enhancing market opportunities for European industries
Improving consumer safety
Reducing maintenance costs
Improving resource efficiency
Contributing to a future circular economy
Improving our understanding of materials properties
Enhancing the knowledge base in the EU in R&D, manufacturing, and production

Consortium
ACCIONA Construction - IND (ES)
alke ALKE SRL - SME (IT)
Applus+ Solutions S.L. - SME (ES)
amgama
ARKEMA FRANCE - IND (FR)
AJA Innovation VC - SME (IT)
BETA BETA S.p.A. - SME (IT)
BETA LIMITED - SME (UK)
CETMA - IED (IT)
CITEVE - IED (PT)
COPI - IED (PT)
ELAD GROUP SRL - IND (IT)
IPC - IED (IT)
Induser Portugal, S.A. - IND (PT)
SHERIDAN GRAPHEX Deutschland GmbH - IND (DE)
PASCART - SME (ES)
UNIVERSITA DEGLI STUDI DI SALERNO - SME (IT)
UNIVERSIDAD DE ALICANTE - UNI (ES)
THE UNIVERSITY OF SHEFFIELD - UNI (UK)

PROJECT DETAILS
Project Title: MASTRO
Intelligent Bulk Materials for Smart Transport Industries
NMP-04-2017-760940
Advanced material concepts for intelligent bulk material structures
Type of action: Research and Innovation Action (RIA)
This research project has received funding from the European Community's Horizon Programme under grant agreement No 760940
EC Contribution: 6,062,887.50 €
Duration: 01.12.2017 - 31.05.2021
Project Co-ordinator: Dr. Silvia Hernández-Rodrigo

Objectives
1. To produce various types of tailored carbon-based nanomaterials with electrical conductive functionalities
2. Develop a multi-scale model for predicting the self-responsive functionalities of composite materials
3. Design and develop intelligent bulk materials with self-responsiveness properties
4. Develop an ICT platform for intelligent monitoring and control
5. To demonstrate, prove, and validate the developed functionalities
6. Conduct LCA, LCC, and REACH analysis, standardization, and training activities
7. To boost the communication, dissemination, and exploitation of the technologies

Conceptual workflow
Polymer characterization & functionalization
Electrical conductive functionalization
Smart Bulk Materials
Intelligent self-responsive functionalities
Self-sensing
Self-healing
Self-curing
Self-curing
Self-healing
Self-curing
Self-healing
Addressed sectors: TRANSPORT (CONSUMER GOODS & CT) REPLICABILITY SECTORS

Project Website: www.mastro-horizon.eu

Figure 6 MASTRO Conceptual Poster

In a later phase of the project, a technical poster has been released presenting some of the main research results achieved up to that point of the project's implementation. The poster is available at the [MASTRO website](#) and [Zenodo](#) and has been presented at various events such as e.g., the EuroNanoForum 2021.

MASTRO
Intelligent Bulk Materials
for a Smart Transport Sector

Introduction
MASTRO Project aims to the development of intelligent bulk materials for the transport sector based on the novel concepts like self-sensing, self-healing, self-curing, self-healing and self-protection methodologies to increase consumer safety component life-span and performance while reducing maintenance and manufacturing costs for the sectors of aerospace, automotive and transport networks. The major technical outcomes of the MASTRO H2020 project are presented.

www.mastro-h2020.eu

Large scale self-cured components for the aerospace and automotive sectors
One of the smart functionalities developed for the aerospace and automotive sectors is the self-curing of carbon fiber reinforced polymer components. A large scale, 2 meter by 0.7 meter wing leading edge section was cured using the process at 120 °C. During the cure, the process consumed less than 1000W, using approximately 15 kWh in total for the cure, compared to approximately 20 kWh in total for an equivalent area process.

Development of smart bulk materials (epoxy resins) with 5 different self-responsive functionalities (self-sensing, self-healing, self-curing, self-healing and self-protection)
High-performance linear fibers have been developed. They manifest great mechanical potentiality under the strong influence of electrical and water stimuli. Self-curing resins filled with carbon nanotubes and expanded graphite characterized by very different aspect ratios led to microcapsule systems with high film formation temperature and reasonable values of the glass factor.

Compatibility of carbon-based nanomaterials
Optimized dispersion and compatibility of carbon-based nanomaterials incorporated to the different matrices, achieving the required electrical conductivity for the different applications. Different dispersion techniques and surface functionalization treatments have been optimized.

Life cycle and life cycle cost analysis, REACH analysis, standardization and Training
The main objective is to quantify the economic and environmental impacts of the families of materials by Life Cycle Costing, analysis (LCC), Life Cycle Assessment (LCA), waste recycling and REACH analysis which will be applied to compare the new products against existing materials. The work also covers the organization of training activities and defining standardization needs. Achieved results: With initial needs for comparison of life cycle environmental and economic impacts having been completed, a REACH analysis has been carried out. Several materials developed by the MASTRO consortium. Steps have been taken towards standardization of MASTRO materials, by establishing contact with relevant bodies and identifying applicable standards.

ICT platform
MASTRO project creates its own cloud platform for data management and analysis. It integrates some of the best ICT tools, such as Amazon of things, edge computing, for remote computing or mobile business analytics. The platform integrates both user-control lines and back processing to visualize information on predictive and sensitive dashboards, allowing real access to analysis information and set some to call systems from anywhere in the world.

Development of adhesive formulations suitable to act as hosting matrices to integrate self-responsive functions.
Optimal adhesive epoxy, methacrylate matrix and formulation are used as the backbone of the materials to ensure adhesion to the area and are selected to be used by End User (operator) of composite from structure.

Self-managed self-healing functions in concrete
Particularly interesting smart structural materials are those exhibiting auto-healing properties that is, the ability to provide an electrical output that is correlated to their state of stress, also known as piezoresistive property. This function is extremely attractive in the perspective of structural health monitoring (SHM), potentially enabling the development of structures that are able to communicate their structural condition. On the other hand, one of the most powerful self-healing functions that can be used in concrete is the possibility of heating. Heating can be useful and essential for civil structures in view of de-icing, healing, thermal shrinkage and residual processing.

Development of smart bulk materials (epoxy resins) with 5 different self-responsive functionalities (self-sensing, self-healing, self-curing, self-healing and self-protection)
Design and development of the smart thermoplastic and elastomer materials at component level.
Matrix Resin: Thermoplastic nanocomposites and related manufacturing process developed steps completed. Self-sensitivity measured as a general requirement for each new study checked. With regards to damage based on pulse effect, predictive models were internally developed from the perspective of preliminary component design. Full scale possibly possible for the possible to all cases. Accurate on a study on electrical conductivity suitable for electrostatic discharge was obtained. This kind of demonstration is only required to be diagnostic, that is an inherent characteristic of the constituent material. i.e. the smart component is a positive option and requiring any extra equipment. Active demonstration a metal-electrical conductivity was obtained for an effective self-healing as being behavior with low input voltage (0.48 V DC), this value for some. Typical cost lower in 12 V DC but in the additional input current and work voltage 24 or 48 V DC are currently available.

Development of multifunctional epoxy-based materials for specific applications in the area of civil engineering and architecture
A suitable formulation, 20-45 (DGEBA + 10% w/w + 17% ABC 1014), and electrical setup for the self-healing, self-curing and self-sensing functionalities are being reviewed were developed and set the setup for the final permanent prototype.

To develop the ICT module focused on the prototypes that will be validated for the infrastructure sector
The Infrastructure ICT module covers the needs of three prototypes as follows:
1. Input/output data, sensors and actuators to be implemented were defined for each demonstrator and each smart function type.
2. Acquisition, processing, real-time transmission system was defined.
3. Activation, controlling, and simulation system were also defined.

Logos of partners: Gacciona, aike, ARKEMA, EMBRAER, XOLIS, pinat, SUPERIOR GRAPHITE, The University of Zaragoza, CETMA, citive.

EUROPEAN UNION
This research project has received funding from the European Union's Horizon Programme under grant agreement No. 747490.
EC Contribution: 4,000,000.00 €
Duration: 01.12.2017 - 31.08.2021
Project Coordinator: Dr. Iñaki Hernández Hueto

Figure 7 MASTRO Technical Poster

Towards the end of the project the final poster of MASTRO was designed and released including all the main research results achieved within the project. The poster is available at the [MASTRO website](#) and [Zenodo](#).



Figure 8 MASTRO Final poster

In order to provide the broad public with information about the project, a general information leaflet about MASTRO has been designed and approved by the consortium. The leaflet is available at the [MASTRO website](#) and [Zenodo](#).



Figure 9 MASTRO Leaflet

In the framework of the MASTRO dissemination workshop “Developing intelligent bulk materials for smart transport industries”, a brochure containing all the relevant information (scope, agenda, speakers) was released. The brochure is available at the [MASTRO website](#).

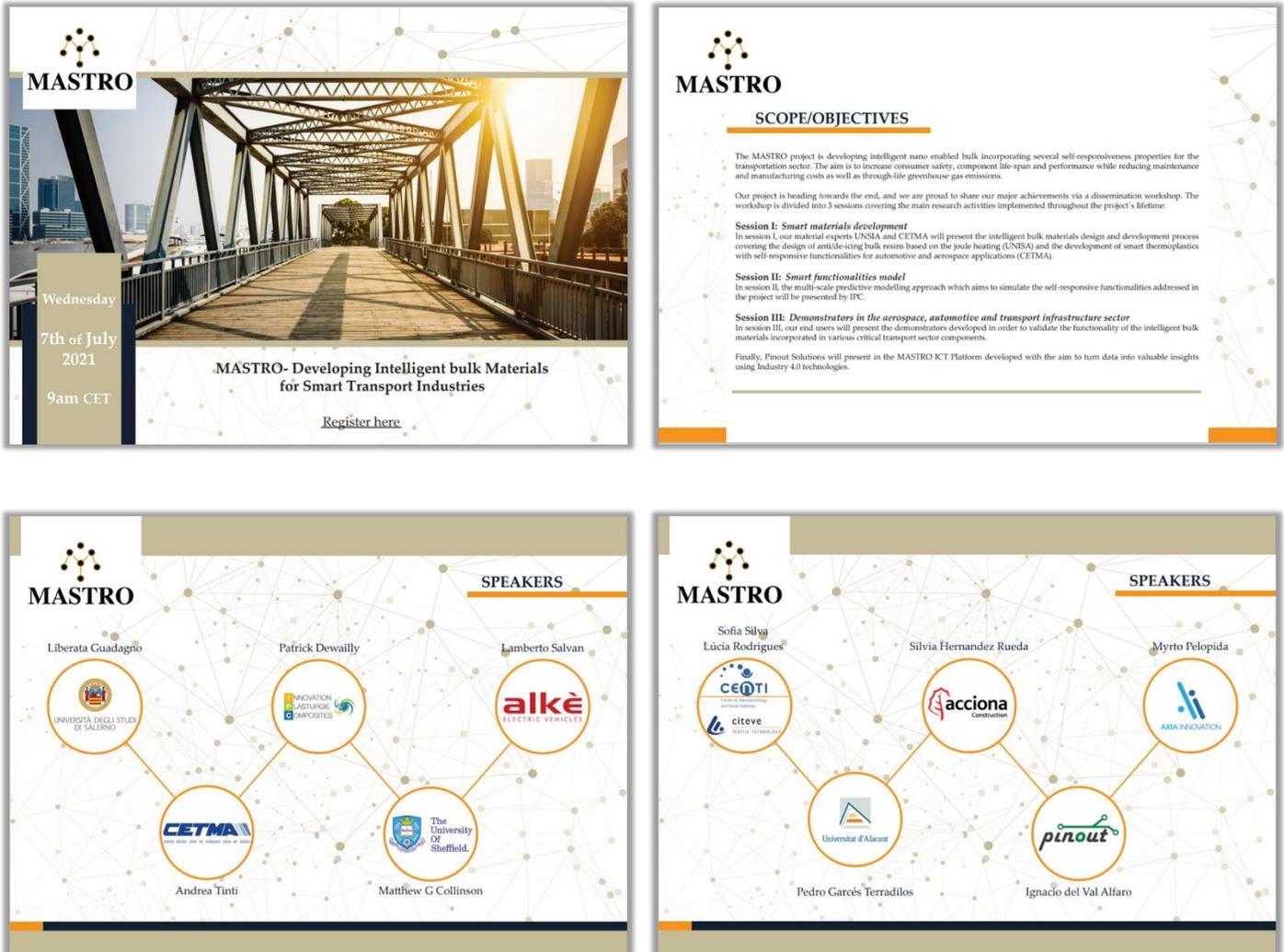


Figure 10 MASTRO Workshop Brochure

3.2 Roll-up

A roll-up has been designed with the highlights of the project in order to spread the word about it in the events organized by the consortium and to give visibility to the project at conferences and any event the consortium or any of its representatives participated in. The Roll-up is available at the [MASTRO website](#) and [Zenodo](#).

The MASTRO roll-up features the following content:

- Logo:** MASTRO with the tagline "Intelligent bulk Materials for Smart TRanspOrt industries".
- Sectors:** AERONAUTIC, AUTOMOTIVE, TRANSPORT INFRASTRUCTURE.
- Text:** "From nanomaterials and manufacturing: A know-how to building self-responsive materials for the aerospace, automotive, and transport infrastructure sectors".
- Statistics:** 7 EU Countries, 5 SMEs, 6 RTDs, 21 Researchers, 3.5 Years, 5 Industries, €6 MILLION.
- Funding:** "This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 760940".
- Contact:** @mastroproject, www.mastro-h2020.eu, e-mail: info@mastro-h2020.eu.
- Partners:** A list of project partners including Acciona, alké, ANKEMA, ASIA INNOVATION, BSRJA, CETMA, Citeve, D4S, EMBRAER, SUPERIDA, GRAPHITE, CIGRI, and pinout.

Figure 11 MASTRO Roll-up

3.3 Newsletters

Overall, 6 newsletters have been released during the lifetime of the MASTRO project serving as an electronic source for news, updates, and general information of the project.

The 1st MASTRO Newsletter was released in March 2019 and is available on the [official website](#) and [Zenodo](#):



Figure 12 MASTRO Newsletter- Issue 1

The 2nd MASTRO newsletter was released in June 2019 and is available on the [official website](#) and [Zenodo](#):



Figure 13 MASTRO Newsletter- Issue 2

The 3rd MASTRO newsletter was released in March 2020 and is available on the [official website](#) and [Zenodo](#):

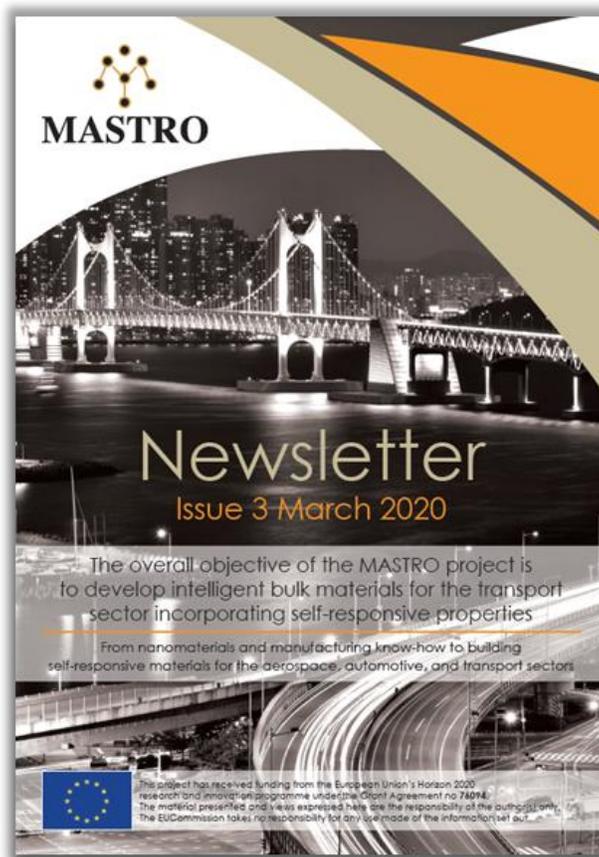


Figure 14 MASTRO Newsletter- Issue 3

The 4th MASTRO Newsletter was released in December 2020 and is available on the [official website](#) and [Zenodo](#):



Figure 15 MASTRO Newsletter- Issue 4

The 5th MASTRO Newsletter was released in July 2021 and is available on the [official website](#) and [Zenodo](#): The 5th Newsletter was a special edition dedicated to the patent search implemented by AXIA Innovation as part of the exploitation task. The issue describes the patent mapping analysis by presenting the methodology followed and the main results obtained. This includes the mapping of the patent landscape of fiber reinforced composites and self-responsive properties in the automotive, aerospace and transport infrastructure sectors.



Figure 16 MASTRO Newsletter- Issue 5

The 6th and final newsletter was released in August 2021 and is available on the [official website](#) and [Zenodo](#).



Figure 17 MASTRO Newsletter- Issue 6

3.4 Videos

The official [MASTRO video](#) has been developed and was released by AXIA in January 2021. The video is a powerful, effective part of the MASTRO marketing strategy and boosts the awareness, interest, and interaction of all the different stakeholder groups within MASTRO.

The video can be found on [YouTube](#), the [official website of MASTRO](#) and [Zenodo](#).



Figure 18 MASTRO Infographic Video

Additionally, a [video teaser](#) has been released on YouTube with the purpose to entice the wider public to anticipate the upcoming video.



Figure 19 MASTRO Video-Teaser

Furthermore, a final video has been released presenting all the research accomplishments and results of the MASTRO partners. The video can be found on [YouTube](#), the [official website](#) and [Zenodo](#). Additionally the video has been added to the Multimedia' tab of the CORDIS project page [MASTRO](#) as well as to the [CORDIS YouTube channel](#) to give it even more visibility.

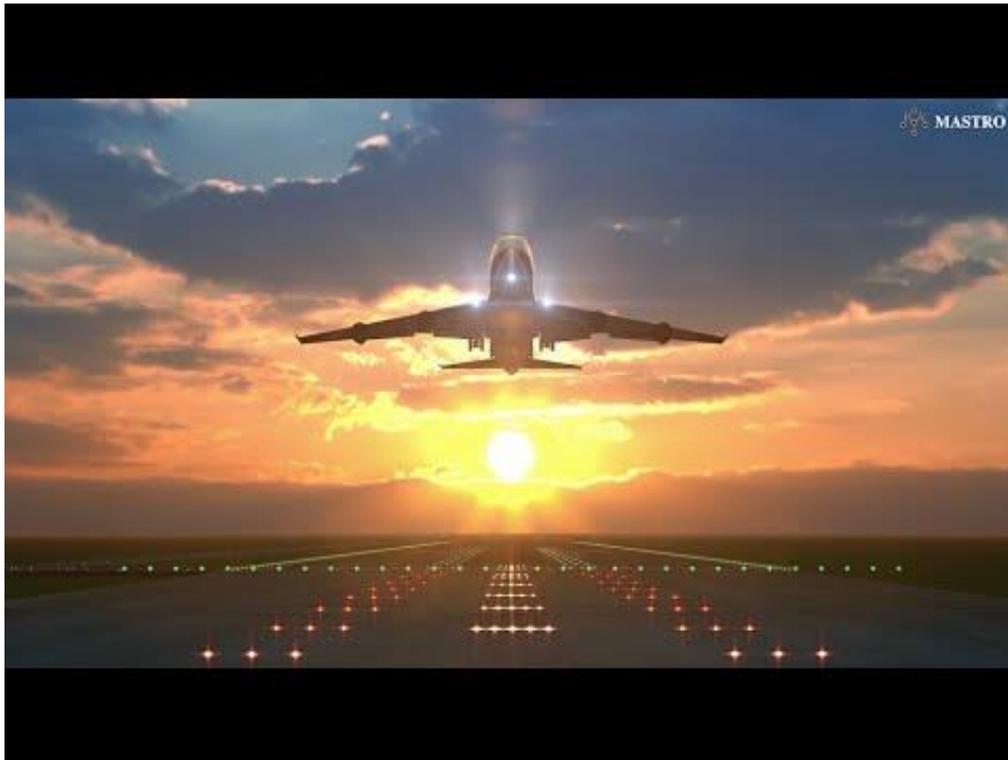


Figure 20 MASTRO- Final Video

Finally, a video has been also prepared presenting all the dissemination material produced throughout the project's lifetime. The video can be found on [YouTube](#), the [official website](#) and [Zenodo](#). This video has been created as part of this deliverable, aiming to present in an attractive way the dissemination material developed during the project's implementation.



Figure 21 MASTRO- Video of dissemination material

4. MASTRO Open access publications

All open access publications generated within MASTRO have been uploaded at Zenodo.

Moreover, the official website of MASTRO has been also selected to storage the open access publications under <https://www.mastro-h2020.eu/publications/>.

The table below lists all the open access publications along with their digital object identifier (doi) and the relevant links at the Zenodo Platform and the MASTRO website.

Table 1 MASTRO Open Access Publications

No.	Partner	Title	Main author	Journal title	Year of publication	Permanent identifiers	Zenodo Link	Website Link
1	UNISA	Electrical conductivity of carbon nanofiber reinforced resins: Potentiality of Tunneling Atomic Force Microscopy (TUNA) technique	Marialuigia Raimondo	Composites Part B	2018	https://doi.org/10.1016/j.compositesb.2018.02.005	https://zenodo.org/record/3963850#.X7fflNCc2w	https://www.mastro-h2020.eu/wp-content/uploads/2018/Composites-Part-B_UNISA-1.pdf
2	UNISA	Morphological, Rheological and Electrical Properties of Composites filled with Carbon Nanotubes functionalized with 1-Pyrenebutyric acid	Liberata Guadagno	Composites Part B	2018	https://doi.org/10.1016/j.compositesb.2018.04.036	https://zenodo.org/record/3963900#.X7ff67NCc2w	https://www.mastro-h2020.eu/wp-content/uploads/2018/Composites-Part-B_UNISA-2.pdf
3	UNISA	Smart coatings of epoxy based CNTs designed to meet practical expectations in aeronautics	L. Vertuccio	Composites Part B	2018	https://doi.org/10.1016/j.compositesb.2018.04.027	https://zenodo.org/record/3964043#.X7fpgbNCc2w	https://www.mastro-h2020.eu/wp-content/uploads/Smart-coatings-of-epoxy-based-CNTs-designed-to-meet-practical-expectations-1.pdf

4	UNISA	Self-healing epoxy nanocomposites via reversible hydrogen bonding	Liberata Guadagno	Composites Part B	2019	https://doi.org/10.1016/j.compositesb.2018.08.082	https://zenodo.org/record/3963926#.X7fhebNCc2w	https://www.mastroh2020.eu/wp-content/uploads/2019/Composites-Part-B-UNISA-self-healing-nanocomposites.pdf
5	USFD	The effect of type of mechanical processing on conductivity and piezoresistive response of CNT and graphite composites	M. Collinson	CIRP Procedia	2019	https://doi.org/10.1016/j.procir.2019.10.001	https://zenodo.org/record/3956112#.X7fmRrNCc2w	https://www.mastroh2020.eu/wp-content/uploads/The-effect-of-type-of-mechanical-processing-on-conductivity-and-piezoresistive-response-of-CNT-and-graphite-composites-compressed.pdf
6	UNISA	Electrical current map and bulk conductivity of carbon fiber-reinforced nanocomposites	Liberata Guadagno, Marialuigia Raimondo	Polymers	2019	https://doi.org/10.3390/polym11111865	https://zenodo.org/record/3956174#.X7fkJLNCc2w	https://www.mastroh2020.eu/wp-content/uploads/Electrical-current-map-and-bulk-conductivity-of-carbon-fiber-reinforced-nanocomposites-compressed.pdf
7	UNISA	Carbon-based aeronautical epoxy nanocomposites: Effectiveness of Atomic Force Microscopy (AFM) in investigating the	Marialuigia Raimondo	Polymers	2019	https://doi.org/10.3390/polym11050832	https://zenodo.org/record/3956211#.X7fkRrNCc2w	https://www.mastroh2020.eu/wp-content/uploads/Carbon-based-aeronautical-epoxy-nanocomposites-Effectiveness-of-

		dispersion of different carbonaceous nanoparticles.						Atomic-Force-Microscopy-AFM-in-investigating-the-dispersion-of-di compressed.pdf
8	UNISA	Reversible self-healing carbon-based nanocomposites for structural applications.	Liberata Guadagno	Polymers	2019	https://doi.org/10.3390/polym11050903	https://zenodo.org/record/3955875#.X7fkbrNCc2w	https://www.mastroh2020.eu/wp-content/uploads/Reversible-Self-Healing-Carbon-Based-Nanocomposites-for-Structural-Applications compressed-1.pdf
9	UNISA	Multifunctional performance of a Nano-Modified fiber reinforced composite aeronautical panel.	Maurizio Arena	Nanomaterials	2019	https://doi.org/10.3390/ma12060869	https://zenodo.org/record/3956146#.X7fkI7NCc2w	https://www.mastroh2020.eu/wp-content/uploads/Multifunctional-performance-of-a-Nano-Modified-fiber-reinforced-composite-aeronautical-panel. compressed.pdf

10	UNISA	UV irradiated graphene-based nanocomposites: Change in the mechanical properties by local harmoniX atomic force microscopy detection.	Liberata Guadagno	Nanomaterials	2019	https://doi.org/10.3390/ma12060962	https://zenodo.org/record/3956077#.X7fktLNCc2w	https://www.mastro-h2020.eu/wp-content/uploads/UV-Irradiated-Graphene-Based-Nanocomposites-Change-in-the-Mechanical-Properties-by-Local-HarmoniX-Atomic-Force-Microscopy-Detection_compressed.pdf
11	UA+ANS	The Effect of Different Oxygen Surface Functionalization of Carbon Nanotubes on the Electrical Resistivity and Strain Sensing Function of Cement Pastes	Pedro Garcés	Nanomaterials	2020	https://doi.org/10.3390/nano10040807	https://zenodo.org/record/3941500#.X7fINrNCc2w	https://www.mastro-h2020.eu/wp-content/uploads/The-Effect-of-Different-Oxygen-Surface-Functionalization-of-Carbon-Nanotubes-on-the-Electrical-Resistivity-and-Strain-Sensing-Function-of-Cement-Pastes_compressed.pdf
12	UNISA	Simulation of self-heating process on the nanoscale: a multiscale approach for molecular models of nanocomposite materials	Greta Donati	Nanoscale Advances	2020	https://doi.org/10.1039/D0NA00238K	https://zenodo.org/record/4286891#.X7vMz7NCc2w	https://www.mastro-h2020.eu/wp-content/uploads/Simulation-of-self-heating-process-on-the-nanoscale-a-multiscale-approach-for-molecularmodels-of-

								nanocomposite-materials.pdf
13	UNISA	Damage Monitoring of Structural Resins Loaded with Carbon Fillers: Experimental and Theoretical Study	Giovanni Spinelli	Nanomaterials	2020	https://doi.org/10.3390/nano10030434	https://zenodo.org/record/4286174#.X7vNWLNCc2w	https://www.mastroh2020.eu/wp-content/uploads/nanomaterials-10-00434-v2.pdf
14	UNISA	Rheological and Morphological Properties of Non-Covalently Functionalized Graphene-Based Structural Epoxy Resins with Intrinsic Electrical Conductivity and Thermal Stability	Maria Rossella Nobile	Nanomaterials	2020	https://doi.org/10.3390/nano10071310	https://zenodo.org/record/4287036#.X7vNWrNCc2w	https://www.mastroh2020.eu/wp-content/uploads/Rheological-and-Morphological-Properties-of-Non-Covalently-Functionalized-Graphene-Based-Structural-Epoxy-Resins-with-Intrinsic-Electrical-Conductivity-and-Thermal-Stability-2.pdf
15	UNISA	Electrical characterization of aeronautical nanocomposites supported by Tunneling AFM (TUNA)	Patrizia Lamberti	MATEC Web of Conferences	2018	https://doi.org/10.1051/mateconf/201823300023	https://zenodo.org/record/4308000#.YPafCUxCO2w	https://www.mastroh2020.eu/wp-content/uploads/2018-Electrical-characterization-of-aeronautical-nanocomposites-supported-by-

								Tunneling-AFM-TUNA.pdf
16	UNISA	Nanocomposites conductivity point measurement using Tunneling AFM (TUNA)	Marialuigia Raimondo	MATEC Web of Conferences	2018	https://doi.org/10.1051/mateconf/201823300022	https://zenodo.org/record/4308016#.YPa_fOExCQ2w	https://www.mastroh2020.eu/wp-content/uploads/2018_Nanocomposites-conductivity-point-measurement-using-Tunneling-AFM-TUNA.pdf
17	UNISA	Development of aeronautical epoxy nanocomposites having an integrated selfhealing ability	Elisa Calabrese	MATEC Web of Conferences	2018	https://doi.org/10.1051/mateconf/201823300021	https://zenodo.org/record/4308032#.YPa_fUEXCO2w	https://www.mastroh2020.eu/wp-content/uploads/2018_Development-of-aeronautical-epoxy-nanocomposites-having-an-integrated-self-healing-ability.pdf
18	UNISA	Rheological and Morphological Properties of Non-Covalently Functionalized Graphene-Based Structural Epoxy Resins with Intrinsic Electrical Conductivity and Thermal Stability	Marialuigia Raimondo	Nanomaterials	2020	https://doi.org/10.3390/nano10071310	https://zenodo.org/record/4287036#.YPa_fakxCO2w	https://www.mastroh2020.eu/wp-content/uploads/Rheological-and-Morphological-Properties-of-Non-Covalently-Functionalized-Graphene-Based-Structural-Epoxy-Resins-with-Intrinsic-Electrical-Conductivity-and-Thermal-Stability-2.pdf

19	UNISA	Low-Voltage Icing Protection Film for Automotive and Aeronautical Industries	Liberata Guadagno, Luigi Vertuccio	Nanomaterials	2020	https://doi.org/10.3390/nano10071343	https://zenodo.org/record/4416050#.YPaffkxCO2w	https://www.mastroh2020.eu/wp-content/uploads/2020_Low-Voltage-Icing-Protection-Film-for-Automotive-and-Aeronautical-Industries.pdf
20	UNISA	Design of multifunctional composites: new strategy to save energy and improve mechanical performance	Liberata Guadagno, Luigi Vertuccio	Composites Part A: Applied Science and Manufacturing	2020	https://doi.org/10.3390/nano10112285	https://zenodo.org/record/4416061#.YPafmkxCO2w	https://www.mastroh2020.eu/wp-content/uploads/Design-of-Multifunctional-Composites-New-Strategy-to-Save-Energy-and-Improve-Mechanical-Performance.pdf
21	UNISA	Tunneling atomic force microscopy analysis of supramolecular self-responsive nanocomposites	Marialuigia Raimondo	Polymers	2021	https://www.mdpi.com/2073-4360/13/9/1401	https://zenodo.org/record/5126674#.YPqDU-gzY2w	https://www.mastroh2020.eu/wp-content/uploads/2021_Tunneling-Atomic-Force-Microscopy-Analysis-of-Supramolecular-Self-Responsive-Nanocomposites.pdf%20target=
22	UNISA	Self-Sensing Nanocomposites for Structural Applications: Choice Criteria	Luigi Vertuccio, Liberata Guadagno	Nanomaterials	2021	https://www.mdpi.com/2079-4991/11/4/833	https://zenodo.org/record/5126687#.YPqFpegzY2w	https://www.mastroh2020.eu/wp-content/uploads/2021_Self-Sensing-Nanocomposites-for-Structural-Applications-Choice-Criteria-1.pdf

23	UNISA	Effect of non-covalent functionalization of graphene-based nanoparticles on the local electrical properties of epoxy nanocomposites	Marialuigia Raimondo	IOP Conference Series: Materials Science and Engineering	2021	https://iopscience.iop.org/article/10.1088/1757-899X/1024/1/012004	https://zenodo.org/record/5126731#.YPqKIOgzY2w	https://www.mastro-h2020.eu/wp-content/uploads/2021_E1.pdf
24	UA	Temperature and humidity influence on the strain sensing performance of hybrid carbon nanotubes and graphite cement composites	Pedro Garcés	Construction and Building Materials	2021	https://doi.org/10.1016/j.cobuildmat.2021.122786	https://zenodo.org/record/5126745#.YPqM7-gzY2w	https://www.mastro-h2020.eu/wp-content/uploads/2021_Temperature-and-humidity-influence-on-the-strain-sensing-performance.pdf
25	UA	Heating and de-icing function in conductive concrete and cement paste with the hybrid addition of carbon nanotubes and graphite products	Pedro Garcés	Smart Materials and Structures	2021	https://doi.org/10.1088/1361-665X/abe032	https://zenodo.org/record/5126767#.YPqQuegzY2w	https://www.mastro-h2020.eu/wp-content/uploads/2021_Heating-and-de-icing-function-in-conductive-concrete-and-cement-paste.pdf
26	UA	The Effect of Different Oxygen Surface Functionalization of Carbon Nanotubes on the Electrical Resistivity and Strain Sensing Function of Cement Pastes	Pedro Garcés	Nanomaterials	2021	https://doi.org/10.3390/nano10040807	https://zenodo.org/record/3941500#.YQKJREBCO2w	https://www.mastro-h2020.eu/wp-content/uploads/2020_The-Effect-of-Different-Oxygen-Surface.pdf

5. Conclusions

Overall, MASTRO has managed to excel significantly in the scientific field of smart materials development making the proposed MASTRO solutions highly innovative and promising. Through the effective dissemination and communication of the project's results, the MASTRO project reached out to a wide range of different stakeholders from academia and researchers to industry and society.

The creation of the various dissemination material was a collaborative task within the MASTRO consortium, where each partner contributed significantly by providing relevant and required material to AXIA Innovation in order to design the final versions. An overview of all the material is provided in the below list:

Table 2 MASTRO Dissemination Material- Summary

Dissemination Material	Website Link	Zenodo Link	YouTube Link
Project Brochure	https://www.mastro-h2020.eu/wp-content/uploads/MASTRO_PPT_WP9_project_brochure_AXIA_fin5.pdf	https://zenodo.org/record/4779062#.YKfNGKFCQ2w	/
Roll up	https://www.mastro-h2020.eu/wp-content/uploads/Mastro_Rollup_final-1.pdf	https://zenodo.org/record/4778907#.YSTKUN9CQ2w	/
QR Code	https://www.mastro-h2020.eu/wp-content/uploads/qrcode.pdf	/	/
Newsletter Issue 1	https://www.mastro-h2020.eu/wp-content/uploads/MASTRO_WP9_PUB_Newsletter1_fin.pdf	https://zenodo.org/record/4557063#.YKfDpqFCQ2w	/
Newsletter Issue 2	https://www.mastro-h2020.eu/wp-content/uploads/Mastro_Newsletter_FINAL.pdf	https://zenodo.org/record/4557113#.YKfDxaFCQ2w	/
Newsletter Issue 3	https://www.mastro-h2020.eu/wp-content/uploads/Mastro_Newsletter.pdf	https://zenodo.org/record/4557120#.YKfD4KFCQ2w	/
Newsletter Issue 4	https://www.mastro-h2020.eu/wp-content/uploads/MASTRO_Newsletter_4.pdf	https://zenodo.org/record/4557132#.YKfD_6FCQ2w	/

Newsletter Issue 5	https://www.mastro-h2020.eu/wp-content/uploads/210712_Mastro-Final-Patent-Mapping.pdf	https://zenodo.org/record/5105647#.YO_6fkxCQ2w	/
Newsletter Issue 6	https://www.mastro-h2020.eu/wp-content/uploads/6th-Newsletter-editing.pdf	https://zenodo.org/record/5288343#.YSjs0N9CQ2w	/
Project Poster 1	https://www.mastro-h2020.eu/wp-content/uploads/MASTRO_WP9_PPT_poster_fin.pdf	https://zenodo.org/record/4778776#.YKfEHKFCQ2w	/
Project Poster 2	https://www.mastro-h2020.eu/wp-content/uploads/MASTRO-Poster_final.pdf	https://zenodo.org/record/4778843#.YKfETaFCQ2w	/
Project Poster 3	https://www.mastro-h2020.eu/wp-content/uploads/210826_Mastro-poster-final-small.pdf	https://zenodo.org/record/5288465#.YSjsi44zY2w	/
Infographic Video	https://www.mastro-h2020.eu/	https://zenodo.org/record/4486596#.YKfFaaFCQ2w	https://youtu.be/Re2z3IEPZaM?list=TLGGb4uUnO-2unIxODA4MjAyMQ
Dissemination material Video	https://www.mastro-h2020.eu/	https://zenodo.org/record/5290713#.YSjsMI4zY2w	https://www.youtube.com/watch?v=R4S8dgLy810
Final Video	https://www.mastro-h2020.eu/	https://zenodo.org/record/5336122#.YSyPa44zY2w	https://www.youtube.com/watch?v=Efb5OUBWh ek