



GREENOMED NEWSLETTER

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DE & RE-MANUFACTURING OF MECHATRONICS: THE CASE OF ITIA PILOT PLANT IN LOMBARDY

The diffusion of mechatronics products and Printed Circuit Boards (PCBs) is constantly increasing in several domains of applications, triggered by their fast technological trend. End-Of-Life (EOL) management of these products is not currently globally approached in terms of processes efficiency and environmental impacts. This is due to the lack of integrated, automated and flexible systems enabling their treatment under economically and environmentally sustainable conditions.

To answer these challenges, ITIA-CNR has conceived an integrated pilot plant for the EOL management of mechatronics products. The “De-Manufacturing of Mechatronics” Pilot Plant was inaugurated in June 2013 and was developed in the framework of the Vanguard Initiative – New Growth Through Smart Specialisation. Within the Pilot, research activity is addressed to the development of modular low cost technological solutions, exploiting optimal human-machine cooperation, capable of processing heterogeneous products with a limited hardware and software reconfiguration effort, while self-adapting to the context variations. Furthermore, new Design for De-Manufacturing paradigms and new De-Manufacturing business models are also tackled.

Within the De-Manufacturing Pilot Plant, new technologies have been developed and integrated for repair, remanufacturing/upgrade, component re-use and materials recycling purpose. Specifically, the **De-Manufacturing Pilot Plant represents a fully automated, modular and reconfigurable solution** involving integrated PCB analysis, rework, testing, disassembly, shredding and mechanical separation technologies. A further key aspect of the pilot plant is the integration of testing and de-

welding, as important pre-treatment for effective subsequent shredding and separation stages.



The De-Manufacturing Pilot Plant is structured in three main cells: PCB sorting and disassembly cell, PCB analysis repair and testing cell, PCB material recycling cell. Besides demonstration and research activities, the overall pilot plant has been conceived to support also training activities, representing an ideal framework for advanced factory technologies learning. The pilot plant will be a unique example in Europe of a fully integrated automated plant for EOL PCBs management. It will support the training of new high-skilled workers with advanced competences in a disciplinary area that, beyond being fundamental for future sustainability, can potentially represent a distinctive success factor for national and European industry.

The de-manufacturing pilot plant of ITIA is an example of a pilot plant for efficient and sustainable manufacturing for GREENOMED partners, who are taking the first steps to design and implement pilot plants for green manufacturing in their regions.



APPLICATION OF NEW TECHNOLOGIES FOR RECOVERY OF ELEMENTS: THE CASE OF “ECOMET REFINING”

AFIL, the Lombardy cluster for advanced manufacturing, orchestrates a network (a set of working groups) of companies, universities, research centres and associations with the aim to support them in research and innovation actions in terms of advanced manufacturing technologies including sustainable and green technologies, while developing a structured interregional innovation ecosystem to exchange competences, methodologies and best practices.

Thanks to its Working Groups, AFIL fosters the creation of innovative companies' networks able to identify innovation priorities and develop project ideas. “De- and Remanufacturing” is one of the most active working groups in Lombardy region, and it mainly deals with innovative technologies for End-of-Life management of products and materials and sustainable processes and systems for the recovery of metals, plastics, rare earth and composite materials.

In this context, several local companies are contributing to the on-going discussions sharing their competences and best practices. **Ecomet Refining** is one of the companies that takes part into this regional network. Its core business is the recovery and the refining of precious metals content in WEEE and industrial waste.

The current technological development generates always more apparatus composed of metals and other elements. After the usage, these apparatuses generate a waste from which Ecomet Refining is able to recover some elements like Au Ag Pt Pd Ir Ru Rh Cu.

The ambition is now focusing on **innovative technologies that enable the recovery of other elements unrecovered before** (i.e. Y, Eu, Sb, Nd, La, Ni, Li, Sn, Zn).



The innovative solution proposed/adopted by the company involves:

- a selective technology for filtration dust fumes generated by thermal processes to obtain a consequent significant reduction of these elements in powders of depuration for disposal
- a hydrometallurgical technology destined for the chemical refining process which would allow to reduce their presence in wastewater destined for disposal.

Thanks to this innovative solution, Ecomet Refining **recovers and puts in the market raw materials unrecovered before, safeguards natural deposits** by reusing metals and elements already extracted in the past and **reduces air and water pollution** resultant by the metals refinement process.

1ST GREENOMED CONFERENCE: GREEN MANUFACTURING & CITIZENS

On **7th of March 2018**, GREENOMED will held its first conference “Green manufacturing: Opportunities, challenges and impacts on citizens' lives” in **Aristotle University Research Dissemination Centre**, Thessaloniki, Greece.

The conference aims at raising awareness about green manufacturing and its opportunities and impacts on citizens' lives through implementing green innovations in manufacturing industry. In particular, the first GREENOMED conference **targets general public** aiming to make aware normal citizens on their role in enhancing sustainable innovations and green technologies. The conference is organized into two parts:



plenary morning sessions, and parallel sessions in the afternoon.

The **first morning session** focuses on the reasons why circular economy and green manufacturing could enhance a better quality of life, exploring the impacts on the everyday life of citizens. The **second morning session** will focus on the social and economic impacts that green manufacturing can bring to the society. In particular, the opportunities for job creation and local development, as well as the skills and competencies, will be the main topics of discussion during the second plenary session.

In the **afternoon**, some **parallel workshops** are foreseen where citizens can directly interact with different stakeholders (NGOs, companies, other modular projects, etc.) discussing about green manufacturing from different perspectives including:

- Green entrepreneurship and innovative ideas
- Urban waste management and strategy
- Innovation public procurement for green manufacturing
- Reducing carbon footprint of food manufacturers

Further information about the conference, agenda and registration link are available at: <https://greenomed.interreg-med.eu/news-events/events/detail/actualites/first-greenomed-conference-in-thessaloniki-greece/>

PROJECT PROGRESS

During December and January, project activities were on-going, mainly focusing on implementation activities of GREENOMED methodology. In particular, the main activities were as following:

- Activities for implementation of the developed methodology for design and implementation of pilot plants for green manufacturing were accelerated. In particular, first steps of methodology to raise awareness about Vanguard Initiative and network of pilot plants as well as identification of key topics were started and progressed in several regions including **Marche Region, Slovenia, and Rhône-Alpes**. To this end, events were organised and held in these regions engaging different types of stakeholders such as companies, universities, policy makers, clusters, etc. Meanwhile, required support were provided to these regions by coaching partners including CNR-ITIA, AFIL, EURECAT and FRAUNHOFER. Other regions are planning their events in February and March 2018;
- Dissemination activities of the project were on-going during the last two months and partners disseminated GREENOMED in several occasions;
- Organisation of the first conference has been intensively on-going involving CNR-ITIA, EURECAT and i-BEC having regular meetings;
- Interaction with SYNGGI (Green Growth Horizontal Project) was in progress and contribution were provided for the Programme MED mid event “MADE IN MED”.





WHAT'S HAPPENED IN GREENOMED? (DEC 2017-JAN 2018)

VANGUARD ESM DEMO- CASES WORKSHOP, MILAN, ITALY

The pilot on Efficient and Sustainable Manufacturing (ESM), launched by the Vanguard Initiative, presented its demo-cases in an event in **Politecnico di Milano**, held on the 30th of November and the 1st of December 2017, with the objective to strengthen and deepen the trans-regional cooperation. The event aimed at building a critical mass of regional actors for a project regarding an upscaling of the use of new, innovative materials based on plastics. The event was an opportunity for GREENOMED partners to get to know better the ESM demo-cases of Vanguard and explore potential opportunities for their regions. ACMM, HGK and TPLJ took the opportunity to attend the event. GREENOMED was presented in the event by CNR - ITIA and AFIL.

The first event, held on the **30th of November 2017**, was a strategic workshop organized by the demo-case Advanced Sustainable Surface and Coating Manufacturing Technologies. The objective of the workshop was to connect regional stakeholders and to aid them in the drive to build a critical mass of actors that will enable the partnership to develop further.

Following the strategic workshop, a so-called Collaboration LAB organized by the demo-case Smart & Adaptive assembly and manufacturing System took place on the **1st of December 2017**. The session functioned as a one-day focus group meeting that aimed to help the partnership to finalize the demo-case through moderated discussions.



GREENOMED EVENT “NEW GROWTH THROUGH SMART SPECIALISATION”, LJUBLJANA, SLOVENIA

On the **12th of December 2017**, Technology park Ljubljana, with support of the Ministry of Education of the Republic of Slovenia, Science and Sport; the Ministry of Economic development and Technology and the Government office for development and European Cohesion Policy – Smart specialization coordination body, organized a GREENOMED event and a thematic workshop on opportunities for Slovenian stakeholders to be included in transnational S3 Initiatives as well as the Vanguard initiative.



The thematic workshop was the first step of implementation of GREENOMED methodology in **Slovenia** by raising awareness about Vanguard Initiative and pilot plants.

The central part of the event was in the form of a roundtable composed of Dr. Peter Wostner from the Government office for development and Regional Cohesion policy, Aleš Hančič from TECOS cluster, Iztok Lesjak from Technology park Ljubljana Ltd., Giacomo Copani from ITIA-CNR Lombardy, Valentina Pinna – chair of Vanguard and Maja Ferlinc – Slovenian



Business & Research Association. The roundtable focused on understanding the impact and opportunities of the Vanguard initiative for companies, intermediaries and decision makers. Participants in the event stressed the need for resources and expertise for innovation in companies and underlying of Vanguard and GREENOMED as an excellent opportunity for supporting companies by presenting networking and collaboration opportunities.

VANGUARD ESM PLENARY MEETING, BRUSSELS, BELGIUM

Vanguard “ESM-PILOT PLENARY MEETING” event was held **on the 13th of December 2017** in Lombardy delegation office **in Brussels**. It was an important opportunity for GREENOMED to be presented in Extra-MED area.

Participants attended the event from different regions all over Europe including Lombardy region, Catalonia, Wallonia, Tuscany, Slovenia, Varazdin, etc. along with participants from the European Commission.

3 demo-cases of ESM pilot were presented during the event and best practices of demo cases were shared and discussed. Moreover, GREENOMED was presented by CNR-ITIA and AFIL as an opportunity for new regions which are not a part of Vanguard Initiative to design and establish the pilot plants for green manufacturing and take the steps to join the network of pilot plants in Vanguard. Apart from CNR-ITIA and AFIL, HGK from GREENOMED consortium participated in the event.

LAUNCH OF WORKING TABLES IN MARCHE REGION, ITALY

On **15 December 2017**, in **Civitanova Marche**, a GREENOMED event was held by Cluster Marche Manufacturing. The event aimed at taking the first steps of implementation of GREENOMED testing methodology through raising awareness among local entrepreneurs, universities, companies, researchers on the issues of green and sustainable manufacturing, and pilot plants.

Apart from Cluster Marche Manufacturing, as the organiser of event, CNR-ITIA, AFIL and HGK attended the event too.



The event was kicked off with the GREENOMED presentation made by Giacomo Copani, CNR-ITIA. Moreover, AFIL presented the case of Lombardy region to the audience, to demonstrate the benefits and applicability of the measures.

“SMART PLASTICS” EVENT IN LYON, FRANCE

On **January 30th 2018**, Plastipolis co-organized with the Auvergne Rhône-Alpes development agency (Auvergne Rhône-Alpes Entreprises), and with the support of WATIFY and the Regional government, an event dedicated to Smart Plastics, **in Lyon**. The event offered a great opportunity to introduce the GREENOMED project to French attendees, but also to European community interested in Smart Plastics.

Following the GREENOMED methodology, Plastipolis has identified different potential topics of regional interest to develop a pilot plant.

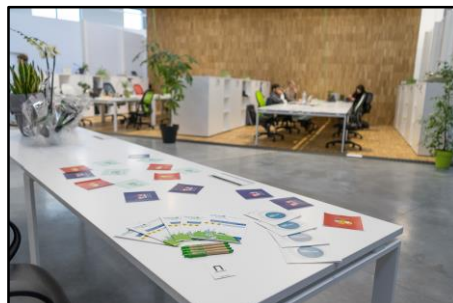


The event started with a welcome speech of Anabel Laurent, Vice-President of the Auvergne



Rhône-Alpes Region, reminding the importance of local action on Smart Plastics and the role of project such as GREENOMED. After the presentation of GREENOMED and Vanguard initiatives by Giacomo Copani (CNR-ITIA), Jordi Romero Mora (EURECAT) presented existing demo cases on Advanced Sustainable Surface and Material Technologies 4 Functional Polymers. Patrick Vuillermoz (Plastipolis), introduced the idea for a Smart Plastics pilot plant with the support of Sinaa Thabet, who developed the project of “Cité de la plastronique”, a facility to host companies, start-ups, and researchers on Smart Plastics in Oyonnax. As a conclusion of the morning session, clear examples of Smart Plastics technologies were introduced by Maël Mogudet (S2P). In the afternoon, parallel working sessions were held to discuss about the potential interest of French stakeholders in the development of regional pilot plants.

working space connecting private and public entities to exchange knowledge and best practice.



GREENOMED AT NAVITAS COWORKING IN MARCHE REGION, ITALY

On **26 November 2017** Cluster Marche Manufacturing presented GREENOMED project during the inauguration of Navitas Coworking at **Civitanova Marche**. More than 100 participants among companies, start-ups, freelancers, co-workers and young people participated to the event dedicated to initiate the new co-working space, located in the centre of the industrial area of Civitanova Marche.

The event focused on the importance of collaboration and networking to enhance own capabilities and resources. Within this framework, Cluster Marche Manufacturing presented its internal organization, with their innovative model, and the projects developed. In particular, a special presentation of GREENOMED was held focusing on the importance of building a European network.

Since co-working is considered as a working space where people share ideas and cooperate, GREENOMED is an example of virtual co-



WHAT'S NEXT?

1ST GREENOMED CONFERENCE

07 MAR 18	 GREENOMED First GREENOMED conference in Thessaloniki
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First GREENOMED conference will be held on the **7th of March 2018** in Aristotle University Research Dissemination Centre, **Thessaloniki**, Greece. The conference aims to raise awareness about green manufacturing and its opportunities and impacts on citizens' lives. Further information about the conference, agenda and registration link are available at: <https://greenomed.interreg-med.eu/news-events/events/detail/actualites/first-greenomed-conference-in-thessaloniki-greece/>

PROGRAMME MED: MADE IN MED EVENT


18-19 APR 18	 PROGRAMME MED Interreg MED Community: "Made in MED" event in Rome, Italy
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The mid-event of Programme MED "MADE IN MED" will be held on the **18-19th of April 2018** in **Rome**, Italy. The event aims to demonstrate, through the concrete results of Modular, Horizontal and Governance projects, how the Interreg MED Programme architecture has become a "living" integrated process with tangible results, where thematic communities share a uniform approach. The overall ambition is to deliver focused messages to policy level, therefore influencing future perspectives and planning actions, both at transnational and national levels. Along with other modular and horizontal projects, GREENOEMD will be in Rome to present the results of the project.

GREENOMED METHODOLOGY EVENT IN CROATIA

Croatian Partners of GREENOMED will hold their first event to implement GREENOMED methodology in Croatia in mid-March. The event hosted by Croatian Chamber of Economy Varaždin will be an occasion to raise awareness about Vanguard Initiative and pilot plants to a wide variety of stakeholders in Croatia. Several stakeholders are expected to attend the event including ministry of economy, Entrepreneurship and Crafts, University of Zagreb, and several companies in the region. More information about the event will be available on GREENOMED website.

GREENOMED METHODOLOGY EVENT IN THESSALONIKI, GREECE

20 FEB 18	 GREENOMED GREENOMED methodology event in Thessaloniki, Greece
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Interbalkan Environment Centre (i-BEC) is organising the first Greek event to test GREENOMED methodology in Region of Central Macedonia, Greece to explore the relevant topics for green manufacturing. The event, planned for the second half of February, will be an opportunity to raise awareness about GREENOMED, Vanguard, Pilot plants and Smart Specialisation Strategy of Macedonia region. More information about the event will be available on GREENOMED website.



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