

NEW DESULFURIZATION TECHNOLOGY FOR SO_x REDUCTION WITH POSITIVE NET ENVIRONMENTAL IMPACT BASED ON MgO REAGENTS

Acronym: LIFEPOSITIVEMgOFGD



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DISSEMINATION LEVEL		
PU	Public	<input checked="" type="checkbox"/>
PP	Restricted to other programme participants (including the Commission Services)	<input type="checkbox"/>
RE	Restricted to a group specified by the consortium (including the Commission Services)	<input type="checkbox"/>
CO	Confidential, only for members of the consortium (including the Commission Services)	<input type="checkbox"/>

TABLE OF CONTENTS

1. INTRODUCTION	3
2. NETWORKING.....	3
2.1.1 1 ST R&T WORKSHOP.....	3
2.1.2 2 ND WORKSHOP “GREEN WEEK SATELLITE EVENT ORGANIZATION” -SPECIAL R&T SESSION	3
2.1.3 3 RD R&T SESSION	5
2.1.4 WORKSHOP “FINAL EVENT.....	5
2.2 MEETINGS AND RESULTS PRESENTATIONS.....	6
2.3 INITIATIVES IN RELATION WITH THE PROJECT	8

TABLE OF FIGURES

FIGURE 2: 2ND WORKSHOP'S INVITATION AND AGENDA	4
FIGURE 3: PHOTOS FROM THE 2ND WORKSHOP.....	5
FIGURE 8: FINAL EVENT PHOTOS.....	6
FIGURE 9:CONTRIBUTION TO THE CATALOGUE OF AIR QUALITY MEASURES	9



1. INTRODUCTION

The following LIFEPOSITIVEMgOFGD communication activities have been carried out during the period from Month 1 to Month 42 (01/07/16-31/12/19) and submitted in M42 (31/12/19).

This Deliverable compiled the dissemination activities carried out in the project during this period:

- ▶ Networking: Workshops, Final Event, Meetings, outcomes presentation, initiatives in relation with the project

2. NETWORKING

2.1 PROJECT NETWORKING WORKSHOPS

2.1.1 1ST R&T WORKSHOP

LIFEPOSITIVEMgOFGD project was presented in the Magnesia Producers Assembly at EUROMINES in Brussels on **19/03/19**.

Due to the presence of main Stakeholders that could potentially replicate the technology, GM took profit of this situation for a specific Meeting Session at the end of this Assembly. It was carried out to discuss replication and transfer potential (**Action B3**) (Special session).

A feasibility study considering the valorization of the by-product and other parameters will demonstrate the applicability of this technology.

The next CLM BREF revision and the need for the sector to present documented BREFs for both SO_x and NO_x abatement were mentioned. The magnesite producers expressed their interest for the development of a sustainable dry FGD technology using MgO reagents.

2.1.2 2ND WORKSHOP "GREEN WEEK SATELLITE EVENT ORGANIZATION" -SPECIAL R&T SESSION

A 2ND Communication and Dissemination Workshop took place on **28/03/2019** in SEV's (Hellenic Federation of Enterprises) offices in Athens. During February and March 2019 several activities have been carried out for the preparation of this Workshop. Find below invitation and Agenda. Figure 19 depicts the Invitation and the Agenda.

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LIFEPOSITIVEMgOFGD

FIGURE 1: 2ND WORKSHOP'S INVITATION AND AGENDA





FIGURE 2: PHOTOS FROM THE 2ND WORKSHOP

The 2nd Workshop was conducted in accordance to Action D's "Green week satellite Event Organization" programming. The workshop was very successful and generated a lot of discussions among the participants which were mainly from industry. According to the Action Plan outlined in Deliverable B.3.5 Transferability - Replicability Strategy Draft Plan, this workshop was designed to house a special R&T session. This was conducted with the participation of a many interested parties. More information is provided in what follows:

Special Replicability and Transferability Session

The GM team had an extensive discussion with the interested participants/stakeholders and the Advisory panel. The discussion was divided between a group meeting with the Advisory panel (GMEA, IGME, SEV) and several individual meetings with stakeholders.

2.1.3 3RD R&T SESSION

GM presented and discussed the LIFEPOSITIVEMgOFGD project RESULTS in the Magnesia Producers Assembly at EUROMINES (Magnesia Group) in Brno, Czech Republic on **05/11/19**. The results were also discussed in detail with the magnesia sector stakeholders.

Main outcome: To intervene to include the **proposed technology as BAT for the next CLM BREF** review that is to commence by **April 2021** through the CLM Technical Working Group set up by the European IPPC Bureau (EIPPCB). GM plans to secure participation through EUROMINES, the European Association of Mining Industries in the Technical Working Group (TWG) that will oversee the review process and push for the adoption of the technology. This process is expected to conclude by the end of 2022. The BAT candidate reference document has already been prepared and will be submitted it to the TWG as soon as the body forms.

2.1.4 WORKSHOP "FINAL EVENT"

A successful Discussion performed together with the Final Event of the project was carried out. This was conducted on **December 17th, 2019** at the Centre for Research and Technology (CERTH) in Thessaloniki to present the final

results, mainly attended by students, researchers and academia (50 participants). This was followed by an organized pilot plant visit, which included a detailed tour of the installation, the control room and the rotary kiln (Figure 1). GM focused on technical details to initiate academic discussion towards the improving of the plant's performance, through further research in the field.



FIGURE 3: FINAL EVENT PHOTOS

2.2 MEETINGS AND RESULTS PRESENTATIONS

A strong networking activity has been carried out during this period with a high participation in specific events/conference and meetings.

- ▶ Concerning policy/CLM BREF, DG Env/C.4 Industrial Emissions was contacted and informed on the project on **19.12.2016** but did not provide a specific contact to JRC/EIPPCB since it is still too early for the next BREF revision and indicated that any new information will be collected through the TWG process, which will start no sooner than 2021. GM can provide further details through the functional e-mail jrc-ipts-eippcb@ec.europa.eu.
- ▶ On **10.3.2017** EIPPCB replied to GM request for a meeting in Seville or at the local point in Greece. The Bureau is busy with other due BREF revisions and does not see the need for a meeting at this stage. The reporting of progress by e-mail will suffice. He will be GM contact point.
- ▶ GM actively participated in the **Greek Life Task Force Event** for the Celebration of 25 years of LIFE, on May 25th 2017 with a stand, including dissemination material and during the **Greek LIFE Task Force Events** in the cities of Xanthi and Thessaloniki made a project presentation. The audience included local government officials,

academics, state employees and private organizations/companies interested in LIFE. Presentation is published in **GR-LTF web page**. Follow the links for details:

<http://www.lifetaskforce.gr/index.php/en/events/gr-ltf/eventdetail/22/-/ekdilosi-enimerosis-kai-ekpaidefsis-gia-to-programma-life-call-2017-ksanthi-27-03-17>

<http://www.lifetaskforce.gr/index.php/en/events/gr-ltf/eventdetail/21/-/ekdilosi-enimerosis-kai-ekpaidefsis-gia-to-programma-life-call-2017-thessaloniki-29-03-17>

Main outcome: Promotional video

During the project period, A GREEK LIFE TASK FORCE (GLTF) PROMOTIONAL VIDEO has been developed, prepared with the contribution of LIFEPOSITIVEMgOFGD and available in Youtube and other web pages (<http://www.lifetaskforce.gr/en/information-material/videos>).

Youtube link: <https://www.youtube.com/watch?v=lqRugA1D-I&t=2m22s> (**51 visits**)

This short video has been filmed with the initiative of the Greek Life Task Force which includes footage from the plant's construction and an **interview from the project's Dissemination Manager**. The video will be used by both the GLTF and GM in their dissemination activities. GM has included the video in the web page, social media and upload it in Youtube.

- ▶ On **May 31st** GM met at Zubiri, Navarra, Spain with Stakeholders to inform and discuss about the LIFE project.
- ▶ Meeting held with a **major fertilizer producer** on 7/11/2017. Presentation of LIFEPOSITIVEMgOFGD. Expressed interest in receiving samples from the plant by-product. Meeting and plant demonstration on 12/09/18 at Yerakini.
- ▶ During the **EUROMINES** (11/01/18, Brussels) **Meeting**, participants were updated on project progress and Transferability and Replication potential. The project was presented by GM to the whole Magnesia Group. Discussion with representatives of producers on 11/01/2018 during the event organized by EUROMINES in Brussels on topics related to the project's progress.
- ▶ Dissemination Manager attended the **21st European Forum on Eco-innovation for Air Quality (5-6/02/2018, Sofia, Bulgaria)**, taking the opportunity to present and discuss the project to several contacts. He also participated in the FGD Workshop organized by SOLVAY.
- ▶ **MgO producer** and kiln technology developer Meeting on 16/02/18 in GM's R&D Center. Meeting and plant demonstration on 19/06/18 in Yerakini. R&T collaboration and use of **high reactivity grades in the FGD pilot plant** (September 2018).
- ▶ Participation of the project's communication manager the **Magforum 2018** (Magnesium Minerals and Markets Conference) that was held in Hamburg, 17-19/06/2018. The LIFE Project was presented to other MgO producers at a dedicated roundtable discussion. Transferability and Replication objectives were presented.



- ▶ Meeting held with an abrasives customer at Yerakini on **27/06/2018** to discuss the perspectives, presentation of the LIFEPOSITIVEMgOFGD and the possibility for a cost effective MgO By-product discussed.
- ▶ GM participated in the **EIT Raw Materials event**, EIT RawMaterials: 3rd Greek Raw Materials Community Dialogue, organized by the EIT RawMaterials HUB – Regional Center Greece – (RCGREECE), in **December 4-5, 2018**, in Athens, Greece. **GM presented its activities in Magnesite recovery from old tailings and how this ties in with the LIFEPOSITIVEMgOFGD project.**

Main outcome: The main target of the Regional Center Greece is to engage and stimulate the Greek Raw Materials Community through actions on multiple directions (technical as well as non-technical), in order to resolve issues and strengthen the overall position of the sector in Greece as well as internationally. GM contact point is EIT RawMaterials Hub – Regional Center Greece.

- ▶ Magnesium cement tests were completed, and the by-product has been initially approved by a major European panel producer).

2.3 INITIATIVES IN RELATION WITH THE PROJECT


- ▶ Concerning JRC's Catalogue of Air Quality Measures Database, **Project results have been included in the "The Catalogue of Air Quality Measures"** (Joint Research Center): <http://fairmode.jrc.ec.europa.eu/measure-catalogue/>. It is possible to find easily project contribution *Checking under "D", for "Dry flue gas desulfurisation technology using magnesium oxide - Yerakini, Greece"*. The project coordinators have been re-contacted via their specific e-mails (i.e. not through the catalogue's contact form) and finally LIFEPOSITIVEMgOFGD results could be included in the catalogue.



Catalogue Of Air Quality Measures

This "Catalogue of measures" supports the implementation of the Air Quality Directive by providing a selected number of successful (best practice) and unsuccessful Air Quality measures. This database is intended for officials responsible for air quality assessment, planning and management on the national, regional and local level.

View all ▼

 73 measures available in the database

★ Dry flue gas desulfurisation technology using magnesium oxide - Yerakini, Greece

LIFE project concerning the pilot application of an industrial desulfurisation technology utilising magnesium oxide in a magnesite calcination plant in Greece, currently ongoing.

<p>Description</p> <p>In 2016, Grecian Magnesite S.A. launched LIFE15 ENV/GR/000338 concerning a dry technology for SOx reduction with positive net environmental impact based on MgO reagents which also produces useful desulfurisation by-products. The project involves the design, construction, operation and optimisation of a FGD pilot plant in one of the company's calcination kilns in the Yerakini Mine, N. Greece. Main project target is to achieve adequate desulfurisation efficiency for the technology to be included as BAT in the next Cement, Lime and Magnesia BREF amendment and replicate it within the magnesia and other industrial sectors. The project is ongoing and will end by December 2019. So far, the project has accomplished successfully its deliverables.</p>
<p>Classification</p> <p>other measures not specified in code list</p>
<p>Type</p> <p>Other</p>

FIGURE 4: CONTRIBUTION TO THE CATALOGUE OF AIR QUALITY MEASURES

- ▶ European Circular Economy Stakeholder Platform Contribution: GM submitted information in the Good Practice section of the website <https://circulareconomy.europa.eu/platform/en/good-practices> on April 9th 2019. 29th August a communication has been received indicating that it was not accepted to be published due to it will be require complete results. Then, GM will send final project results in order to be published.
- ▶ Synergies with new project “Boosting new Approaches for flexibility Management By Optimizing process Off-gas and waste use (BAMBOO)” <https://cordis.europa.eu/project/rcn/218188/factsheet/en> CE-SPIRE-03-2018/IA/SEP-210505375 - Horizon 2020 during the KoM (11-12/09/18, Brussels). Presentation of LIFEPOSITIVEMgOFGD Project Results to BAMBOO Participants.
BAMBOO aims at developing new technologies addressing energy and resource efficiency challenges in 4 intensive industries (steel, petrochemical, minerals and pulp and paper). BAMBOO will scale up promising technologies to be adapted, tested and validated under real production conditions focus on three main innovation pillars: waste heat recovery, electrical flexibility and waste streams valorisation. These technologies include industrial heat pumps, Organic Rankine Cycles, combustion monitoring and control devices, improved burners and hybrid processes using energy from different carriers (waste heat, steam and electricity) for upgrading solid biofuels. These activities will be supported by quantitative Life Cycle Assessments.
- ▶ **Climate Change Mitigation in Energy Intensive Industries – LIFE Platform Meeting** (26-27/09/2018, Utrecht). **Participation in Networking session** (<http://lifeoptimelt.com/pdf/agenda.pdf>)
The European Union has set ambitious targets for reducing greenhouse gas (GHG) emissions by 2020, 2030 and 2050, in response to global efforts spearheaded by the United Nations Framework Convention on Climate Change (UNFCCC), its Kyoto Protocol and the recent Paris Agreement. Energy intensive industries play a critical role in achieving these targets. This LIFE platform meeting will bring together beneficiaries of the LIFE programme and other EU funding mechanisms, policymakers and stakeholders to discuss how energy intensive industries can contribute to realising the EU roadmap to eventual decarbonisation. The discussions and networking will facilitate exchange of good practices and synergies between projects that are designed to increase energy efficiency and reduce GHG emissions, in particular in the cement, ceramic, glass, steel and metal

industries. The meeting was hosted by **LIFE OPTIMELT**, a project that is recovering waste heat in glass manufacturing, and is organised in cooperation with the Executive Agency for Small and Medium-sized Enterprises (EASME) and the European Commission's Directorate-General for Climate Action (DG CLIMA). The two-day gathering included plenary sessions on the policy context, industry commitments and technological solutions; workshops; a poster session; and field visits to the OPTIMELT project at the Libbey Leerdam glassware factory and Tata Steel's Horizon 2020 project, Hlsarna, both in the Netherlands.

