

# Project newsletter No.1 December 2014

## Welcome!



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The EU co-funded project REWASTEE (ECO/13/630286) is aimed at the industrial validation, market deployment and replication of a developed technology for recycling steelmaking wastes and manufacturing multifunctional building products. What is unique about REWASTEE is that the project recycles specifically **Electric Arc Furnace Dust** – transforming it from a hazardous material to an inert non-hazardous building product for construction applications. What is also unique about REWASTEE is the integration of phase change materials into the recycled material resulting in a product with high thermal inertia. Similar to a dense rubber in composition, the project is designing and testing specific construction products and applications such as sound insulation boards, multilayer wall partitions, underflooring and other uses where thermal inertia and acoustic insulation are needed.

Initiated in July 2014, the project has eight partners spanning the entire value chain from research (chemists, building research experts) to manufacturing (material and product realization) to end users (sustainability consultants and construction companies). Four European countries are represented and the project will seek to identify and develop market opportunities for deploying REWASTEE's innovative material in these countries (Spain, France, Italy and the United Kingdom). For more information about the project, please feel free to visit our webpage at [www.rewastee.eu](http://www.rewastee.eu) or contact us at [bgutierrez@ascamm.com](mailto:bgutierrez@ascamm.com).

### Project Fast Facts

Start: July 2014  
 Finish: Dec 2016  
 Budget: €1.387.287 (EU contrib. 50%)  
 Program: Eco Innovation  
 Keywords: EAFD, steel making, recycling, sustainable construction  
 Website: [www.rewastee.eu](http://www.rewastee.eu)

## Better steel making and construction practices

Europe is the world's 2<sup>nd</sup> largest steel producer with a production of 168 million tons worldwide. 46% of that production is made using electric means generating 10-20 kg of electric arc furnace dust (EAFD) per ton of steel produced. Untreated, this dust is considered a hazardous waste and the handling costs for the approximate 1.3 million tons of EAFD Europe produces annually is over €100 million per year for EU steelmakers. What if these EAFD costs could effectively be eliminated and a value added product produced instead? That's exactly what REWASTEE will do through the realization of a new shape stabilized phase change material (PCM). Did you know in some countries public construction works are mandated to use up to 30% of their materials containing recycled elements? This, combined with the need to handle EAFD in a better way, provides a compelling market pull for such a solution.



*Formula for success and a new construction material*

## Project Objectives

- Introduce into the market an innovative building material and set up the industrial methodology required for the efficient processing of steelmaking waste.
- To contribute to greater efficiency and comfort in buildings and reduce their carbon footprint through the introduction of alternative building products.
- To manage over 2000 tons of EAFD during the project and up to over 9.000 tons two years after the project in Spain, Italy, France and the UK.
- To meaningfully reduce or eliminate the economic cost for steelmaking sector associated with EAFD waste management.
- Reduction of risks surrounding the handling and landfilling of EAFD for persons and the environment.
- To establish the business plan and relationships for post project uptake.
- To demonstrate the use of a recycled waste product and evaluate its positive environmental impact.

## Partner Highlight: Trimdelson Trade S.L.

Located near Barcelona, Trimdelson Trade S.L. is a manufacturer of rubber and specialized rubber like materials that are characterized by their high density. To manufacture such materials and also the REWASTEE membrane, a Bambury Mixer is utilized which mixes the material components under high pressure and heat. The resulting mixture then goes through cylinder cooling and batch-off processing to produce mats of various widths and thicknesses depending on the application's requirements.



The existing infrastructure at Trimdelson can process up to 200 tons of EAFD per day which equates to the production of 40,000 m<sup>2</sup> of REWASTEE membrane per month. To expand production to local area markets, the project will identify and set the conditions for similar manufacturing capabilities in the targeted countries either by licensing IP or new plant setup close to concentrations of steel makers. Local production is a project goal and competitive advantage to select REWASTEE recycling because there are only a few recycling centres in Europe capable of handling EAFD. As such, steel makers are currently required to transport EAFD by combinations of truck, rail and ship across multiple EU countries before reaching a recycling facility.



Batch-Off of the REWASTEE Membrane at Trimdelson Trade S.L.

## Focus on Applications

Applications such as the following are under development, assessment and testing:

- *Aerial sound proofing boards and panels for walls and ceilings.*
- *Under flooring, masonry separator, piping insulation, shutter systems.*
- *Wall partitions, thermal barrier spacer, mechanical equip soundproofing.*

## REWASTEE Patent Published

Congratulations to Dr. Ana Ines Fernandez of the University of Barcelona and Dr. Luisa F. Cabeza and Dr. Camila Barreneche of the University of Lleida for the publication of patent application WO 2013014318 A1 (Inertization of electric-arc furnace dust by means of the stabilizing integration thereof in a construction material). This patent is the foundation and starting point of the REWASTEE project. You can read about it at: [www.google.com/patents/WO2013014318A1](http://www.google.com/patents/WO2013014318A1)

## EAFD Sample Collection Complete

A special thank you to the steel companies that have provided EAFD samples to the REWASTEE project. Over the first six months of the project, samples were collected from 8 steelmakers in 4 EU countries representing a significant share of EU steel production. These samples are currently being characterized at the Materials Science and Metallurgical Engineering Dept. of the University of Barcelona for their suitability to become REWASTEE membrane. Each steel company will receive a follow up report in the first quarter of 2015. Pictured is Ing. Donida of R2M Solution visiting the Feralpi Group in Lonato del Garda, Italy.



## Notes & Highlights

- Keep updated on project progress at [www.rewastee.eu](http://www.rewastee.eu)
- Interested in learning more? Contact us at [bgutierrez@ascamm.com](mailto:bgutierrez@ascamm.com)
- We're publishing scientific papers:  
<http://dx.doi.org/10.1016/j.enbuild.2013.02.026>  
<http://dx.doi.org/10.1016/j.enbuild.2013.09.004>
- Up & Coming - June REWASTEE workshop in steelmaking centre of Italy (Brescia Area)

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