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X-Ray Fluorescence, Shape recognition & Machine Learning for Efficient and Economic Recycling of Mixed Metals from Co-mingled Waste.

HORIZON 2020 X-Ray Fluorescence, Shape recognition & Machine Learning for Efficient and Economic Recycling of Mixed Metals from Co-mingled Waste.

Sprawozdania

Informacje na temat projektu

OMR

Identyfikator umowy o grant: 945922

Strona internetowa projektu 🗹

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Projekt został zamknięty

Data podpisania przez KE 17 Marca 2020

Data rozpoczęcia 1 Kwietnia 2020 Data zakończenia 31 Grudnia 2022 **Finansowanie w ramach** INDUSTRIAL LEADERSHIP - Innovation In SMEs

Koszt całkowity € 3 002 468,75

Wkład UE € 2 101 728,00

Koordynowany przez RECRESCO LIMITED

Ten projekt został przedstawiony w...



Periodic Reporting for period 2 - OMR (X-Ray Fluorescence, Shape recognition & Machine Learning for Efficient and Economic Recycling of Mixed Metals from Co-mingled Waste.)

Okres sprawozdawczy: 2021-04-01 do 2022-12-31

Podsumowanie kontekstu i ogólnych celów projektu

Problem being addressed by OMR

Recycling is a key battleground in combating climate change. By reducing the volume of materials that need to be removed from the ground and processed, significant emissions reductions can be achieved. The EU circular economy initiative, is targeting an extremely challenging municipal recycling rate of 65% over the next 15 years. Metals such as Copper, Tin, Aluminium, Gold, Silver and Zinc are infinitely recyclable and are key elements in the green energy sector where significant manufacturing will be needed in the coming years. Currently these metals cannot be economically recovered resulting in recycling rates for these crucial materials being far lower necessary to meet EU recycling targets linked to the circular economy.

OMR will create a unique combination of technologies and Machine Learning (ML) techniques to enable efficient and economic recycling of mixed metals from comingled. waste. This will enable wide scale rolling out of simple, easy recycling solutions and so increase recycling rates across the EU. It will enable the recycling of mixed metal streams in existing and already efficient recycling markets that cannot currently recycle those materials. Co-mingled collection results in a significantly higher recycling rate and yield of material owing to convenience/ease of use especially in areas with "low recycling ethic". Further advances in sorting technology (such as that proposed here) will significantly mitigate any drawbacks of using the otherwise preferable co-mingled schemes.

Importance to Society

Non-ferrous metals addressed by the project are important for the EU's manufacturing industries, sustainability, and economic growth. They are irreplaceable for many products in the automotive, aerospace, mechanical engineering, and construction sectors. Their unique thermal, electrical, and

isolating characteristics coupled with endless recyclability and low weight make them indispensable to achieving the EU's energy and resource efficiency goals.

Overall Objectives

The OMR project has been focussing on the following objectives:

- 1. Optimise the prototype design to enable full scale sorting operations
- 2. Assembly of the prototype OMR process on site
- 3. Software programs developed and outputs quality tested.
- 4. Identify and address any product purity, software or flow issues that arise.
- 5. Deliver equipment use and maintenance training for all staff.
- 6. Wide dissemination of project results achieved within recycling and metals industries.
- 7. Generate sufficient interest and user willingness to pay/adopt.
- 8. Achieve market penetration.
- 9. Reach projected market volumes and geographic target markets.
- 10. Achieve/exceed forecast company growth.

Prace wykonane od początku projektu do końca okresu sprawozdawczego oraz najważniejsze dotychczasowe rezultaty

During this reporting period the work carried out towards the achievement of these objectives is as follows:

• Development of 2D drawings to establish layout of the proposed plant to optimise the capability and throughput potential for the project

- Development of 3D models with the proposed equipment step files being collated and the technology and hardware suppliers being identified and selected
- Successful installation and commissioning of the prototype OMR process
- Coding and Parameters established with the plants being mechanically and electrically completed.
- Machinery training successfully completed by operatives
- Validation trial runs successfully completed to establish purity and flow of infeed material
- OMR process producing pucks containing 99% aluminium which is first of its kind
- Discussions with target market sector organisations within UK, Europe and India taken place to discuss the upcoming sale of the produced pucks.

Innowacyjność oraz oczekiwany potencjalny wpływ (w tym dotychczasowe znaczenie społeczno-gospodarcze i szersze implikacje społeczne projektu)

The impact achieved by the OMR project remains relevant. Recresco's geographical target markets for the non-ferrous materials from the OMR prototype were initially the south and the midlands regions of the UK. EU countries that have a glass container industry especially wine making/beer brewing regions were then targeted. Areas where waste glass is processed and cleaned prior to remelt are

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usually around glass manufacturing centres. Those facilities will in turn feed into our OMR projects. Benelux, Spain, Portugal, Germany and France being the prime locations. Whilst we could licence others to use our processes it is our intention to set up facilities in these EU countries to fully exploit the opportunity. Current facilities are very basic and do not address the fundamental problems (quality/purity, densification, residual elements/metals). An estimated 60,000 tonnes of aluminium closures are used in EU alone. These are currently extracted by 'eddy current' systems and will produce our feedstock. This non- stream includes the other metals that must be separated and can also be recovered by our process.

The success of the OMR project will boost sales of Recresco's non-ferrous materials and the produced aluminium pucks. This will create growth in the company and create jobs in Recresco's supply chain.



Aluminium Pucks produced by OMR Briquetter

Ostatnia aktualizacja: 1 Kwietnia 2024

Permalink: https://cordis.europa.eu/project/id/945922/reporting/pl

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