



Life DRONE

LIFE19 ENV/IT/000520



EU co-funded project
LIFE+ 2019
Environment and Resource
Efficiency

Total budget: € 1.752.705

EU Contribution: € 946.111

Start of the project: 30/11/2020

End of the project: 31/12/2023

Direct pROduction of New Electrode materials from battery recycling

Environmental problem targeted

The application of batteries has been steadily increasing over the past two decades driven by the growing market of consumer electronics. Electrodes materials including strategic or critical raw materials such as graphite, cobalt, nickel and manganese, which account for more than 50% of the battery cost, need to be recovered from EU resources and recycled into the batteries manufacturing chain to reduce the environmental impact and prevent the dispersion of hazardous elements into the environment. A major bottleneck hindering the recovery of batteries materials at large scale today is the elevated cost of implemented recycling processes, such as pyro and hydrometallurgical recycling.

Project partners



Technosind srl is the project coordinator, a research and development Italian company specialized in the field of treatments and recovery of raw and innovative materials and in the field of renewable energy.



Eco Recycling srl is an Italian spin-off aiming at technology transfer in the field of innovative processes for treatment and recycling of e-wastes.



Theory of Development of Chemical Processes is a research group of the Chemistry Dept. (Sapienza) developing innovative processes for waste valorization.



SEVal srl is the biggest Italian company involved in collection, treatment, and disposal of WEEE including batteries.



FAAM Research Center is the R&D company of Seri Industrial S.p.A. dealing with the development of lead-acid and lithium-ion technologies.



Project objectives

Demonstration of a novel recycling route for different EoL lithium-ion battery types showing significantly lower processing cost and better environmental impact as compared to the alternative state of the art processes.

Actions

- ❖ Design and construction of a mobile plant to perform the synthesis of the Nickel, Manganese and Cobalt (NMC) oxide
- ❖ Process demonstration
- ❖ Validation of produced materials by preparation of 10 Li-ion cells (capacity 10-20 Ah)
- ❖ Evaluation of the process economic feasibility
- ❖ Life cycle assessment of the proposed recycling route
- ❖ Elaboration of a replicability plan in a different EU member state
- ❖ Elaboration of a business plan large scale industrial application

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