

# Abstract submission of RELIFE project for 1<sup>st</sup> International Circular Hydrometallurgy Symposium- ICHS 2024

## ReLiFe- Recycling Lithium Ferrophosphate in the RIS area

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Lithium iron phosphate (LFP) batteries will dominate both the stationary (i.e. Energy Storage Systems) and the mobility (i.e. electric vehicles and intralogistics) energy markets due to their low manufacturing cost and intrinsic safety with a global market forecasted to exceed 3000 GWh by 2030. This exponential increase will result into the generation of vast amounts of LFP manufacturing scrap and end of life (EoL) battery packs, particularly within EU region. However, the recycling of EoL at industrial scale is either limited or missing, mainly due economic considerations. Without proper management this waste stream can pose a threat to the environment and a significant loss of critical raw materials incorporated (i.e. lithium, phosphorus and graphite). EIT Raw Materials ReLiFe project aims to address this problem into a unique opportunity by demonstrating at pilot scale a sustainable metallurgical process for the treatment of LFP. Briefly the flowsheet entails a series of deactivation (pyrolysis), beneficiation (froth flotation) and hydrometallurgical operations, which recovers more than 80 wt% of input material as lithium carbonate, iron phosphate, graphite and metallic granules with the least possible waste output. This first-of-its-kind pilot plant is located within the industrial complex of Sunlight Group Energy Storage Systems S.A. in Xanthi (NE Greece) and will be fully operational by early 2025. The technology provider partners, TUBAF and HIF fine-tuned this holistic recycling process and Hatch-Kuettner engineered the most advanced plant in terms of equipment and energy efficiency. SE&C and Greenhouse Investment group elaborated a robust Go-to-Market Strategy and proved the sustainability of LFP recycling within EU. Hydrometallurgical upscaling conducted at Monolithos Facilities, will verify the basis for the scale-up of the industrial plant. The successful demonstration of this pilot plant will pave the way for scaling up a 66 ktn/year industrial unit, tailored made to LFP recycling and to the needs of Sunlight Group, a pioneer within stationery and traction battery packs market both in lithium and lead-acid technologies.

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