

COBALT AND LANTHANIDE RECOVERY FROM BATTERIES

> PROJECT OBJECTIVE

The use of rechargeable batteries continues to increase, driven by consumer electronic applications and the development of electric vehicles. This increasing use of batteries consumes increasing amounts of valuable materials and generates more waste, so the **CoLaBATS project** is about finding improved technology for battery recycling. The aim is to develop hydrometallurgical (as opposed to pyrometallurgical) processes for the recovery of materials including rare earth metals. These new processes will be applicable at small scale and more widely than existing processes. Novel physical and chemical recovery processes will be developed, including the use of ionic liquids and ultrasonics.

> CEDRAT TECHNOLOGIES (CTEC) CONTRIBUTION

CTEC's role in COLABATS deals with the ultrasonic (US) system to be used in the main reactor and final tank. CTEC will design, manufacture and test an appropriate US system, including the vibration generator, sonotrode, and electronics that will be adapted to the specific ionic liquid to produce homogeneous ultrasonic vibrations to promote breaking the battery electrode structure.

CTEC will provide a US laboratory system to study the behaviour of US in ILs, and determine optimum US levels to achieve efficient break-up of the LiCoO₂ structure and minimise sonotrode material wear. In addition CTEC will lead a simulation and optimisation task to find the best solution in terms of US system topology (shape, number of transducers, power, tank position) for the main reactor and the secondary tank. A US system will be integrated in a prototype system (with CTEC and TECN), and scaled up to demonstrator level.

CTEC has worked for more than 10 years on ultrasonic & acoustic systems, based on piezoelectric or magnetostrictive materials. Previous successful Seventh Framework (FP7) activity includes the **SONO project**, where CTEC develops, manufactures, integrates and tests a pilot line based on a novel sonochemical reactor.

> PARTNERS

CTEC is working in collaboration with **C-Tech Innovation Ltd** (coordinator), **Fundacion Tecnalia Research & Innovation**, **Solvionic SA**, **University of Leicester**, **A3 Aprofitament Asseorament Ambiental SL**, **Env-Aqua Solutions Ltd**, **G&P Batteries Ltd**, **Technische Universitaet Wien**, **Chalmers Tekniska Hogskola AB**.




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