ELIBAMA

European Li-Ion Battery Advanced Manufacturing for Electric Vehicles

**Funding:** European (7th RTD Framework Programme)

**Duration:** Nov 2011 - Oct 2014

**Status:** Complete with results

**Total project cost:** €15,335,679

**EU contribution:** €8,999,615

**Call for proposal:** FP7-2011-GC-ELECTROCHEMICAL-STORAGE

**CORDIS RCN:** 101578

**Background & policy context:**

Europe faces strong competition from Asia and the USA where more investments and production capacities for Li-ion batteries currently exist.

**Objectives:**

The global objective of the ELIBAMA project is to enhance and accelerate the creation of a strong European automotive battery industry structured around industrial companies already committed to mass production of Li-ion cells and batteries for electric vehicles.

**Methodology:**

The ELIBAMA project will exploit advanced eco-design methods of manufacturing battery cells in order to guarantee drastic gains in cost reduction and environment-friendliness across the value chain of the battery production. This will allow the production of competitively priced electric vehicles while improving the overall safety and efficiency of the battery pack in use. Specifically, the project will focus on the development of eco-friendly processes for electrode production, electrolyte manufacturing, fast and homogeneous electrolyte filling processes, cell design and assembly. Moreover, the project will develop new technologies that will allow to improve downstream quality and reduce the rate of defective products at the end of the manufacturing chain. Such technologies include introducing clean room manufacturing processes, on-line high resolution monitoring and inspection solutions and non-destructive testing processes for Li-ion cells.

The recycling and refurbishing of end-of-life Li-ion batteries will be realized in three ways: (a) defining schemes for their safe take back and transportation, (b) developing diagnostic methods for the monitoring of used commercial batteries to assess their second life potential, and (c) defining best practices for the eco-design conception and easy dismantling of batteries in order to maximize their recycling potential.

All these technical improvements will be closely monitored and validated from the environmental point of view by providing an integrated environmental assessment of the different technologies developed in the course of the ELIBAMA project.

**Parent Programmes:**

FP7-TRANSPORT - Transport (Including Aeronautics) - Horizontal activities for implementation of the transport programme (TPT)

**Institute type:** Public institution

**Institute name:** The European Commission

**Funding type:** Public (EU)
**Lead Organisation:**

Renault Represented By Gie Reginov  
**Address:**  
Quai Alphonse Le Gallo 13/15  
92100 BOULOGNE-BILLANCOURT  
France  
**Organisation Website:**  
[http://www.renault.com](http://www.renault.com)  
**EU Contribution:** €1,791,985

**Partner Organisations:**

- **Maschinenfabrik Max Kroenert Gmbh & Co Kg**  
  **Address:**  
  Schutzenstrasse 105  
  22761 Hamburg  
  Germany  
  **EU Contribution:** €101,500

- **Entegris Cleaning Process (Ecp) Sas**  
  **Address:**  
  RUE DU ROCHER DE LORZIER 196  
  38430 MOIRANS  
  France  
  **Organisation Website:**  
  [http://www.entegris.com](http://www.entegris.com)  
  **EU Contribution:** €142,526

- **Fraunhofer Gesellschaft Zur Foerderung Der Angewandten Forschung E.v.**  
  **Address:**  
  Carl-Zeiss-Str. 18-20  
  55129 Mainz  
  Germany  
  **EU Contribution:** €1,779,129

- **Commissariat A L Energie Atomique Et Aux Energies Alternatives**  
  **Address:**  
  RUE LEBLANC 25  
  75015 PARIS 15  
  France  
  **Organisation Website:**  
  [http://www.cea.fr](http://www.cea.fr)  
  **EU Contribution:** €510,136

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<td><strong>The University Of Newcastle Upon Tyne</strong></td>
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<td><strong>Societe Nouvelle D'affinage Des Metaux-Snam</strong></td>
<td>Avenue Jean Jaures 12110 Viviez France</td>
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**Euro Dieuze Industrie Sas**

**Address:**  
Rue Roger Husson Parc D 24  
57260 Dieuze  
France  

**EU Contribution:** €80,000

**Rhodia Operations**

**Address:**  
Rue De La Haie Coq 40  
93306 Aubervilliers  
France  

**EU Contribution:** €206,097

**Umicore**

**Address:**  
Broekstraat 31  
1000 Brussel  
Belgium  

**EU Contribution:** €113,381

**Prayon S.a**

**Address:**  
RUE JOSEPH WAUTERS 144  
4480 Engis  
Belgium  

**Organisation Website:** [http://www.prayon.com](http://www.prayon.com)  

**EU Contribution:** €65,200

**Saft**

**Address:**  
Rue Sadi Carnot 12  
93170 Bagnolet  
France  

**Organisation Website:** [http://www.saftbatteries.com](http://www.saftbatteries.com)  

**EU Contribution:** €1,626,411

**Technologies:**  
Electric vehicle batteries (and energy management)  
Lithium-ion batteries with novel anode/cathode materials

**Development phase:** Research/Invention

**Key Results:**
Lithium batteries for electric vehicles

EU-funded scientists are working on eco-design methods to produce battery cells for alternative fuel vehicles and ultimately reduce cost and environmental impact.

European automotive industry urgently needs companies that will massively produce lithium (Li-ion) batteries for electric vehicles (EVs) to face the strong competition, especially from Asia. To this end, scientists in the 'European Li-ion battery advanced manufacturing for electric vehicles' (http://elibama.wordpress.com/ (ELIBAMA)) project are forging ahead on multiple fronts to improve battery manufacturing processes.

One of the main components scientists are working on is the battery electrodes. Focus is placed on implementing cleanroom electrode manufacturing processes and eliminating the need for expensive and harmful organic solvents for anode and cathode coating.

To decrease cell cost and increase production yield, scientists seek to reduce the electrolyte filling time and minimise the particle contamination risk during the filling process. Work is also geared toward improving the cell joining, stacking and assembly. Non-destructive testing algorithms should help distinguish between healthy and defective cells.

Project members will collaborate on a lifecycle assessment study to provide an integrated environmental assessment of different technologies developed from electrode to cell level. Models have been developed to benchmark battery manufacturing processes and the ELIBAMA improved processes.

A workshop has been devoted to battery recycling, refurbishing and recirculation with emphasis on logistics aspects, secure handling and cost-effective methods for battery disassembly. Furthermore, a lab-scale programme has been initiated on how to improve recycling efficiency.

ELIBAMA paves the way for significantly improving manufacturing processes for EV battery electrodes and cells and making them more eco-friendly and less expensive.

Documents:
Periodic Report Summary 2 - ELIBAMA (European Li-Ion Battery Advanced Manufacturing for Electric Vehicles)

STRIA Roadmaps: electrification
Transport mode: Road transport
Transport sectors: Passenger transport, Freight transport
Transport policies: Environmental/Emissions aspects
Geo-spatial type: Other