

PROJECT

Hydra

Hybrid power-energy electrodes for next generation lithium-ion batteries

Funding: European (Horizon 2020)

Duration: May 2020 - Aug 2024

Status: Ongoing

Total project cost: €9,401,701

EU contribution: €9,401,701



Call for proposal: H2020-LC-BAT-2019

[CORDIS RCN : 228009](#)

Objectives:

The core technological approach of the HYDRA project consists of using hybrid electrode technology to overcome the fundamental limits of current Li-ion battery technology in terms of energy, power, safety and cost to enter the age of generation 3b of Li ion batteries.

HYDRA, taking its name from the mythological beast, will use a multi-headed integrative approach: In addition to novel material development and scale-up of components and battery cells manufacturing, assisted by modelling, HYDRA will build a synergy with strong investments by the project's industrial partners and foster reaching and keeping a significant market share for Europe.

The necessary competitiveness will be obtained by hybridizing high energy with high power materials.

These materials will be implemented at the cell/electrode level, via sustainable, eco-designed scaled-up manufacture and safe electrolyte systems, demonstrated in pilot scale to TRL6, and will be ready for commercialisation 3 years after the project end.

To reach this target, HYDRA mobilizes a strong industry commitment: the partners include a strong value-chain of suppliers with global competitiveness for xEV batteries and a direct liaison to the market in sectors such as automotive and maritime transport, ensuring a fast-uptake of results, with an added value of 1BN € in the next decade.

Ecological and economical sustainability also keep a strong importance, as HYDRA will be performing life cycle assessments and value-chain analyses on local and global scales. All aspects from raw materials via battery cell production and end-use/market to recycling and 2nd life usage will be evaluated.

The HYDRA concept uses abundant electrode materials like iron, manganese and silicon, and eliminates the use of the CRMs cobalt and natural graphite, with a net CRM reduction of >85%. The new materials will be produced in an environmentally friendly, energy-efficient manner, and using water in place of organic solvents.

Parent Programmes:

[H2020-EU.3.4. - Horizon 2020: Smart, Green and Integrated Transport](#)

Institute type: Public institution

Institute name: European Commission

Funding type: Public (EU)

Lead Organisation:

Sintef

Address:

Strindveien 4
7034 TRONDHEIM
Norway

Organisation Website:

<http://www.sintef.no>

EU Contribution: €2,168,749

Partner Organisations:

Corvus Norway As

Address:

Sandbrekkesletta 30
5224 NESTTUN
Norway

EU Contribution: €672,500

Solvionic

Address:

195 RTE D'ESPAGNE SITE BIOPARC SANOFI
31100 TOULOUSE
France

Organisation Website:

<http://www.solvionic.com>

EU Contribution: €523,625

Commissariat A L Energie Atomique Et Aux Energies Alternatives

Address:

RUE LEBLANC 25
75015 PARIS 15
France

Organisation Website:

<http://www.cea.fr>

EU Contribution: €696,506

Universite Catholique De Louvain

Address:

Place De L Universite 1
1348 Louvain La Neuve
Belgium

EU Contribution: €1,152,030

Uppsala Universitet

Address:

Sankt Olofsgatan 10 B
751 05 Uppsala
Sweden

Organisation Website:

<http://www.uu.se>

EU Contribution: €776,000

Lithops Srl**Address:**

CENTRO AZIENDALE QUERCETE SNC
81016 SAN POTITO SANNITICO
Italy

Organisation Website:

<http://www.lithops.it>

EU Contribution: €507,688

Deutsches Zentrum Fr Luft Und Raumfahrt E.v**Address:**

Linder Hoehe
51147 KOELN
Germany

Organisation Website:

<http://www.dlr.de>

EU Contribution: €833,320

Politecnico Di Torino**Address:**

Corso Duca Degli Abruzzi
10129 Torino
Italy

Organisation Website:

<http://www.polito.it>

EU Contribution: €435,750

**National Research And Development Institute For Cryogenics And Isotopic Technologies
Icsi Rm Valcea****Address:**

Strada Uzinei 4
240050 RAMNICU VALCEA
Romania

EU Contribution: €379,063

Elkem As**Address:**

DRAMMENSVEIEN 169
0277 OSLO
Norway

Organisation Website:

<http://www.elkem.com>

EU Contribution: €321,981

Johnson Matthey Fuel Cells Limited**Address:**

FARRINGDON STREET 25
LONDON

EC4A 4AB
United Kingdom

Organisation Website:

<http://www.matthey.com>

EU Contribution: €934,490

Technologies:

Electric vehicle batteries (and energy management)
Ionic electrolyte components and aqueous binder for lithium-ion battery electrodes

Development phase: Demonstration/prototyping/Pilot Production

STRIA Roadmaps: Vehicle design and manufacturing

Transport mode: Multimodal transport

Transport sectors: Passenger transport, Freight transport
Environmental/Emissions aspects, Other

Transport policies: specified

Geo-spatial type: Other