

WEBINAR- SOLUCIONES ENERGÉTICAS

SOLUCIONES ENERGÉTICAS PARA
LA MOVILIDAD SOSTENIBLE

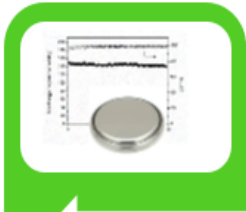
*Sostenibilidad e innovación en las baterías
del futuro de la movilidad eléctrica*

Alberto Gómez

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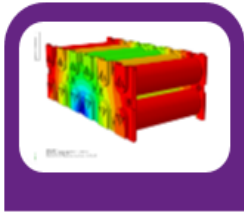
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Materials & Cells R+D

- Li-ion, Na-ion, Li-S batteries, All Solid-State batteries, Redox flow batteries, Supercapacitors and hybrid systems
- Synthesis-structure-properties correlation of (nano)electrodes
- Electrode coating
- Ionic liquid cell electrolytes
- Polymer electrolyte membranes



Module & Battery Pack development

- Housing BP
 - Multi-material
 - Light materials (Composites, AHSS)
- Battery Management Systems (BMS)
 - BMS Development
 - Power converter & controls design
 - Energy systems hybridization
- Sensor's integration



Testing & Characterization of Cells, Modules and Battery Packs

- Benchmarking
- Quality control
- Safety
- Accelerated ageing
- Cell to Battery validation (standards or tailor-made)
- Abusive tests following standards for safety (UN, UL and R100)
- User-defined tests



Modelling & Simulation

- Model generation:
 - Empirical
 - Electrochemical
 - Ageing
 - Thermal
- Algorithms for State-of-charge (SOC), State-of-health (SOH)
- Cell, module and battery mechanical and thermal simulation



Power Electronics & Grid Integration

- Battery Management Systems (BMS) validation
- Power electronics & Grid integration
 - Grid integration studies & validation
 - Smart Charging/V2G, AC/DC charging points design



Energy Systems Analytics

- Charging point management
- V2G, Smart charging & EMS integration
- EMS including electromobility services
- EV forecasting
- Data management: usage of EV data for BM evaluation, SOH & EoL, new services.
- Digital Twin



2nd and End of life batteries

- Reuse and recovery battery and cells
- 2nd life studies
- Post-mortem analysis
- Safe dismantling and preparation for recycling
- Metal recovery
- Battery Passport
- HAZOP Analysis



Circular Economy

- Eco-design/Design for Circularity
- Safe dismantling and preparation for recycling

Circular Economy

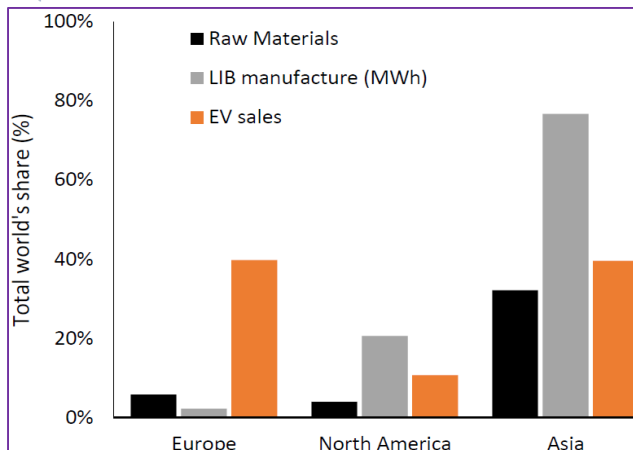
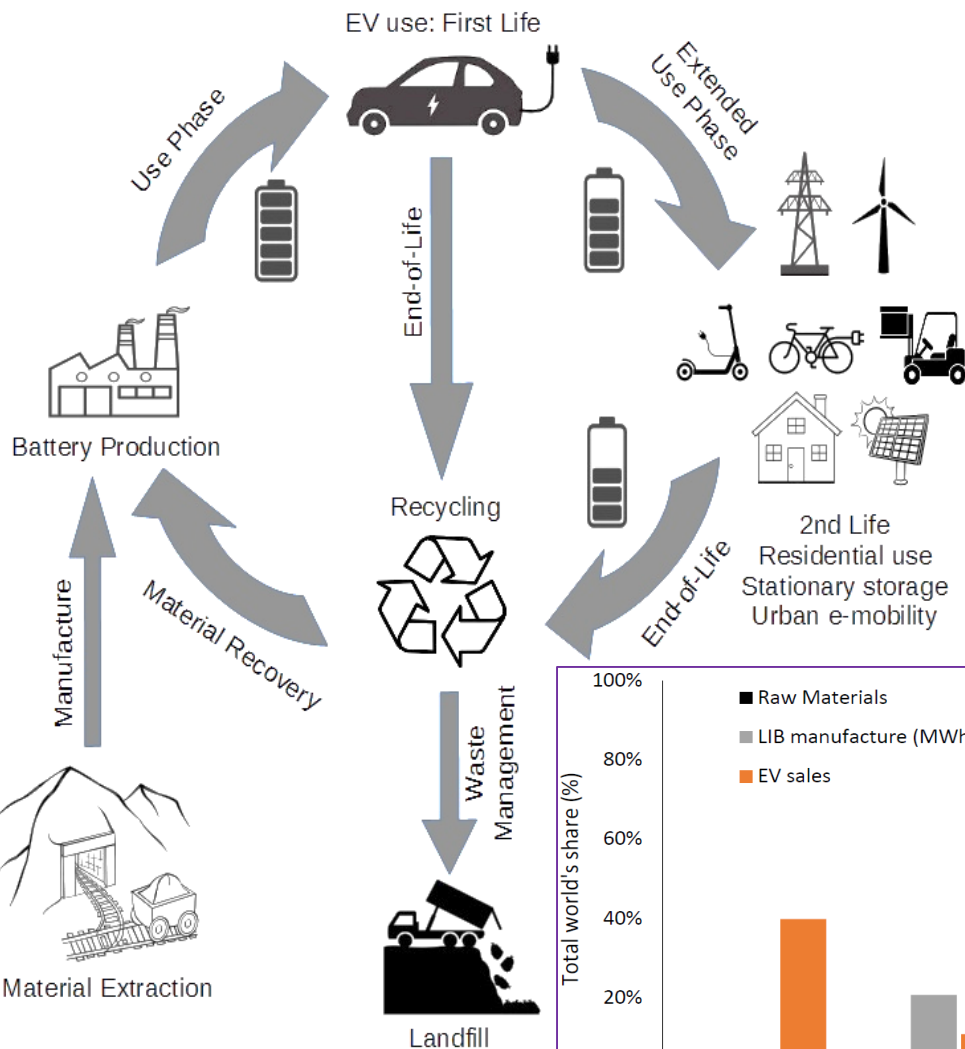
- Life Cycle Cost & Social Life Cycle Assessment
- Levelized cost of energy (LCOE)



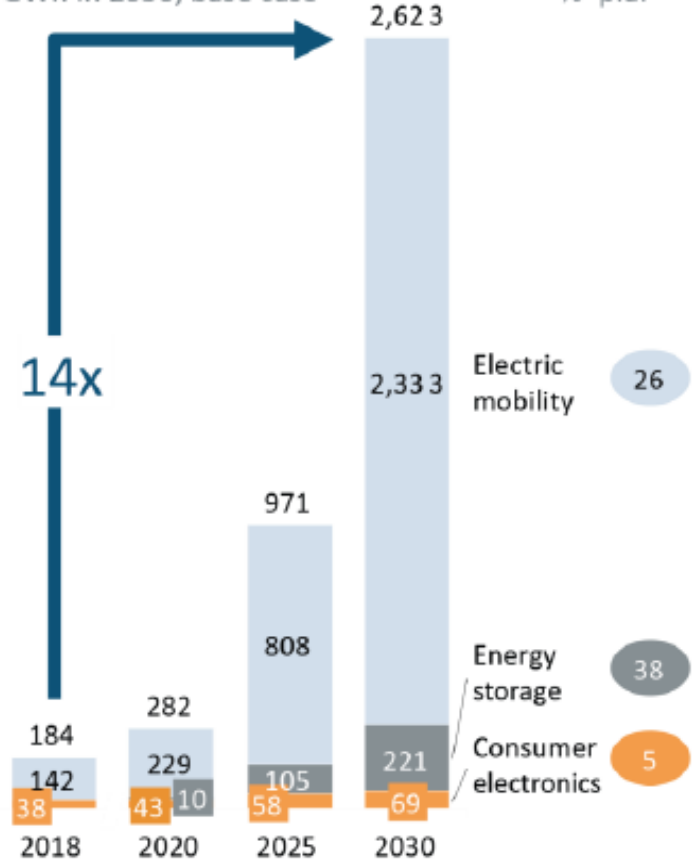
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LA SOSTENIBILIDAD DE LAS BATERÍAS



Global battery demand by application
GWh in 2030, base case



CAGR, % p.a.

World Economic Forum - A Vision for a Sustainable Battery Value Chain in 2030

<https://www.weforum.org/reports/a-vision-for-a-sustainable-battery-value-chain-in-2030>

SOLUCIÓN PROPUESTA: H2020 - MARBEL



Manufacturing & Assembly of modular & Reusable EV Battery for Environment - friendly & Lightweight mobility

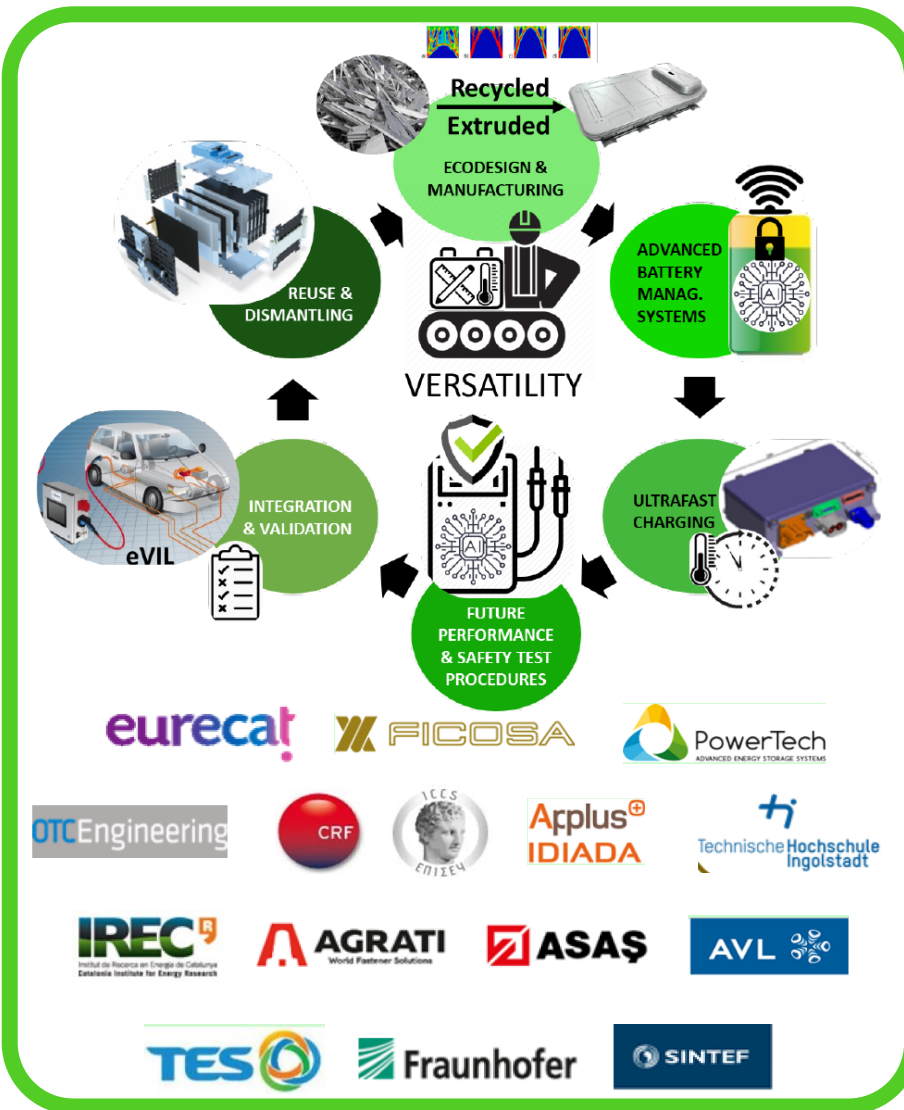
- > 20% weight reduction
- > 25% charging time reduction
- > 40% LCA improvement by using modularity

Useful Battery life up to 300,000 km

Easy & Safe (dis-)assembly automatization

Reparability and 2nd life transition

Adaptable to all cells and vehicles



The project is coordinated by EURECAT. **Total budget ~ 12 M€**



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