

# **El Almacenamiento Energético en el Programa Horizon Europe: Retos y Oportunidades Tecnológicas**

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**22 de Marzo de 2021**





## Reto 1

Transformar el **transporte por carretera** en movilidad con cero emisiones. Se prioriza el desarrollo de sistemas de propulsión para **vehículos pesados de larga distancia** con cero emisiones, donde el progreso es menor en comparación con otros sectores del transporte por carretera.



# Reto 1: Transporte por carretera

HORIZON-CL5-2021-D5-01-01: “Nextgen vehicles: Innovative zero emission BEV architectures for regional medium freight haulage (2ZERO)”

Deadline	Type of action	Indicate project budget	Number of grants	Budget
07/09/2021	IA	10.00 to 15.00	3	45.000.000

- **TRL:** Activities are expected to achieve TRL 7-8 by the end of the project
- **Scope:** The action will focus on validation of **full electric N2 and/or N3-category vehicle(s)**, specific regional, suburban and urban freight transport applications seamlessly integrated into fleets.
  - Validation of zero emissions vehicle(s) in the above mentioned categories.
  - Demonstration of high efficiency powertrains capable of **at least 300 km range** between recharging events.
  - Demonstrate **at least 200 km average daily operation in real conditions** over a period of at least 6 months.
  - Projects should deliver digital twin models of the demonstrator vehicles.
  - Develop and validate **tools for zero tailpipe emission vehicles integration in fleets** (and mixed fleets) for efficient assignment of tasks (routes, charging strategies, assignments etc.).
- **Expected outcome:**
  - Demonstrate the vehicle’s functionality and performance in real world conditions.
  - Demonstration of **fast charging concepts** capable of fitting established regulations and business practices, particularly at load/unload points enabling efficient operations
- **Required partners:** OEMs, Fleet owners, Battery manufacturer, Digital Twin developers, Experts on electricity and energy management, etc.



# Reto 1: Transporte por carretera

HORIZON-CL5-2021-D5-01-03: “System approach to achieve optimised Smart EV Charging and V2G flexibility in mass-deployment conditions (2ZERO)”

Deadline	Type of action	Indicate project budget	Number of grants	Budget
07/09/2021	RIA	7.00 to 10.00	3	25.000.000

- **TRL:** Activities are expected to achieve TRL 5-7 by the end of the project
- **Scope:**
  - The **impact of the different bidirectional charging profiles on the life of the EV battery** and power electronics are expected to be quantified, used to define the damage cost and, therefore, the right level of incentives for the users in allowing their battery to be used.
- **Expected outcome:**
  - A better understanding of the operational and economic trade-offs for the user and the vehicle (e.g; **cost of battery damage**, additional cost for electronics to enable V2G), and on the charging (e.g. installation cost, battery damage/degradation) infrastructure of the different smart and bidirectional (V2G) charging approaches and technologies (for instance AC vs DC), as well as the costs for the different actors involved.
- **Required partners:** Charging infrastructure manufacturers, Battery Manufacturers, etc.



## Reto 2

Acelerar el desarrollo y preparar el despliegue de soluciones limpias y climáticamente neutrales en el sector del **transporte marítimo**, reducir su impacto ambiental y mejorar la eficiencia



## Reto 2: Transporte marítimo

HORIZON-CL5-2021-D5-01-11: “Hyper powered vessel battery charging system (ZEWT Partnership)”

Deadline	Type of action	Indicate project budget	Number of grants	Budget
07/09/2021	IA	7.00	2	14.000.000

- **TRL:** Activities are expected to achieve TRL 6-7 by the end of the project
- **Scope:** Focusing on the ship and shore side interface, R&I will deliver solutions and technology to minimise high power recharging times at port, **explore the applicability of charging solutions to a variety of batteries and their usefulness for different ship types.**

The following aspects need to be addressed: Ease and required connection time, flexibility regarding power levels and energy transfer whilst minimising impacts on electrical grid infrastructure (cables, switchboards, etc.), addressing **potential battery degradation during fast charging**, impacts on materials through e.g. corrosion and thermal stress.

- **Expected outcome:**
  - Increase Europe’s technological lead in fast charging systems for batteries that can be applied to a wide range of vessel types in the medium term.
  - At least **two full scale demonstrators** in two European ports showing the practical use for an end-to-end service between these ports (without a proprietary solution, the system needs to be compatible with charging in other ports as well).
- **Required partners:** Ports, Ship owners, Charging infrastructure, Battery manufacturers, etc.



## Reto 2: Transporte marítimo

HORIZON-CL5-2022-D5-01-01: “Exploiting electrical energy storage systems and better optimising large battery electric power within fully battery electric and hybrid ships (ZEWT Partnership)”

Deadline	Type of action	Indicate project budget	Number of grants	Budget
26/04/2022	IA	8.00	2	16.000.000

- **TRL:** Activities are expected to achieve TRL 7 by the end of the project
- **Scope:** Projects will develop solutions for the **on-board integration** (including the optimisation of the electrical distribution grid) **and control of batteries** which will maximise the operational flexibility of different ships under electric-driven zero-emission operations, **focussing on an optimal operation and the longest lifetime and lowest weight of the electrical systems and its key components**. While ensuring the ship's energy balance and efficiency, solutions need to address one of these two cases:
  - The hybrid arrangement for zero local pollution (long and complete discharge cycles), or
  - The full electric arrangement, plug-in charging (charging strategy and battery size adapted to route).
- **Expected outcome:**
  - Contributions to two full scale vessel demonstrators, hybrid and fully electric, by 2027 covering a sailing distance of at least 300 nm in the case of a fully electric vessel.
  - Development and validation of electrical architectures for large battery systems on-board.
  - Proof of the safe integration of battery systems into the ship's electrical grid for a relevant number of ship types (e.g. IWT, short sea vessels, cruise ships, ferries) and operational scenarios.
- **Required partners:** Ship owners, Battery manufacturers, etc.



## Reto 2: Transporte marítimo

HORIZON-CL5-2022-D5-01-02: “Innovative energy storage systems on-board vessels (ZEWT Partnership)”

Deadline	Type of action	Indicate project budget	Number of grants	Budget
26/04/2022	RIA	5.00	3	15.000.000

- **TRL:** Activities are expected to achieve TRL 5 by the end of the project
- **Scope:** Projects will focus on low TRL solutions for waterborne transport, preliminary integration, safety studies and the potential combination with other disruptive technologies such as super conductors and the wider use of DC grids. It will address the **integration on-board of innovative energy storage systems** (excluding storage of fuels and conventional batteries), including control systems and optimised operational deployment, and the connection to the on-board electrical grid.
- **Expected outcome:**
  - Contributions to at least two full scale on-board demonstrators for two different electrical energy storage solutions by 2027.
  - Ensuring European leadership for energy storage solutions based on different technologies that will be fit-for-purpose for diverse waterborne applications.
- **Required partners:** Innovative energy storage systems, etc.



# ¡Muchas gracias!

¿ALGUNA DUDA?

Puedes contactarnos a través de:



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