INNOVATION DAY ENERGIA 2023

V2H Pocket: Vehicle to Home Pocket

Ponent

Macià Capó Lliteras (CITCEA-UPC)

23 NOVEMBRE

CITCEA

UPC

CEEC Clúster de l'Energia Eficient de Catalunya

XRE4S XARXA d'R+D+I ENERGY FOR SOCIETY

IREC Shaping Energy for a Sustainable Future

Descriu el teu equip/entitat

RESEARCH GROUP CITCEA

UPC Technology transfer center

FOUNDED	EMPLOYEES	PATENTS
2001	80	10

SPIN-OFF	CURRENT PROJECTS (28)	
2	6	2

Macià Capó Lliteras *macia.capo@upc.edu*

Senior and PhD electrical engineer

Background

- 9-year experience on hardware and firmware design
- Experience in h-ware and f-ware design in previous EV chargers.
  - RACC workshop car for the assistance of EVs.
  - 10 kW 3-ph bidirectional charger

Knowledge field

- Hardware design
- Firmware design
- Control strategies in high-frequency bidirectional converters.

Repte a solucionar

V2H pocket

Energy demand peaks

EV penetration in the market is increasing the potential for peak power demand if charging operations occur in coincidence with current demand peaks.

EV as balance to the grid

The possibility of using EVs as flexible loads that can provide balancing services to networks with a large proportion of intermittent or fluctuating renewable energy generation..

Energy prices

Energy prices in the wholesale market continue to reach record highs and consumers are looking for options to reduce their bill.

Innovation

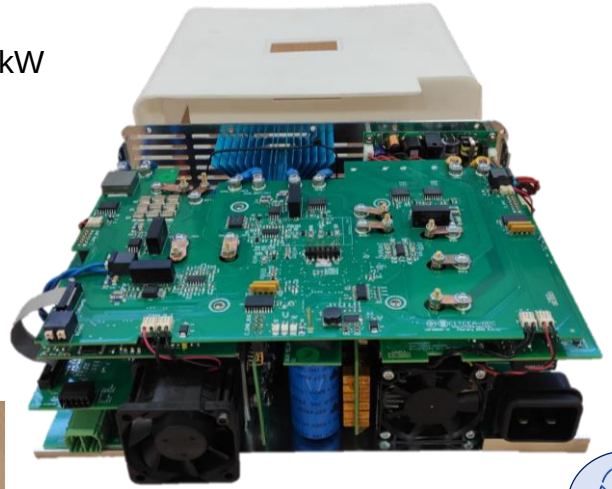
Technological development is one of the pillars for the growth of many companies in the electric vehicle sector at all levels. The commitment to new technologies provides added value to companies..

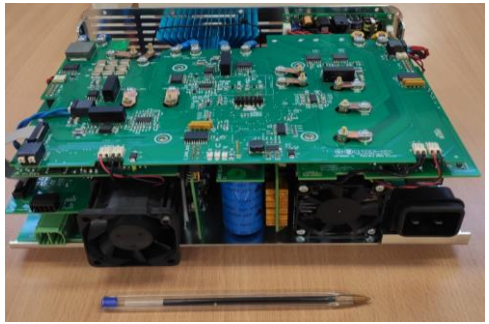
V2H pocket technology can meet these industry challenges and offer a versatile solution for customers.

Descripció de la solució o producte

V2H pocket

- Bidirectional vehicle charger
- Single phase, 230 V, 16 A, 3,7 kW
- DC output 50 V – 550 V, 16 A
- Size: 270x210x90 mm
- GaN and SiC devices for high frequency losses with soft-switching strategies
- DAB high-frequency isolation
- Wifi connectivity
- Anti-islanding algorithm





	Efficiency	Savings	Emissions	Management
V2H pocket	Up to 94% of efficiency in terms of power transfer	Savings up to 90% of energy bills	Reduction of CO2 emissions up to 30%	V2Hpocket could incorporate an EMS.

Pla de desenvolupament / Properes passes/necessitats futures

	2022			2023-2024		2024-2025		
Technology	**TRL 4**	**TRL 5**	**TRL 6**	**TRL 7**	**TRL 8**	**TRL 9** (Commercial application)	Product launched ★	**R&D on new areas** **Improve existing product**
Intellectual Property	**Seek NDA signing with potential partners**					Asses the best way to **protect the know-how** developed during the collaboration		
Commercial-ization	**Find potential partners** to co-develop commercial products					Signing of a commercialization contract or **technology transfer with the partner**		
Fund raising	**UPC**	**Public funding projects** (e.g., Horizon Europe, Innovation Fund, National and local programs)				**Revenues through different commercialization strategies**		
		Private funding through partner support (e.g., EV charger manufacturers)						

Key short-term actions

1 Keep contact with the market

- Events, workshops, associations
- Market interviews

2 Develop a business case

- Conclude the prototype within the framework of FEVER.
- Obtain measurable KPIs from the prototype test

Final objective:
Achieve a partner to co-develop a final solution