Renewable penetration levered by Efficient Low Voltage Distribution grids

# Power Electronics Device (PED)

## Hybrid Energy Storage Solution

**CITCEA-UPC**

*francisco.diaz-gonzalez@upc.edu*

# CITCEA-UPC

- **Technology transfer centre** of the Technical University of Catalonia (UPC BarcelonaTech), specialized in responding to the needs of enterprises to build functional prototypes that can be industrialized and commercialized
- Specialized in **power electronics and its applications**

CITCEA

No **fun** no **innovation**

www.citcea.upc.edu

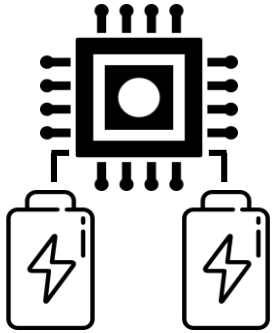
Av. Diagonal, 647. Planta 2
08028 Barcelona
T +34 93 401 67 27
citcea@citcea.upc.edu

| 20 years | 60 people | 250 proj | 4 M€ year |
|---|---|---|---|

# Main problems tackled

**Energy storage is a must** for reaching high penetration rates of renewables in energy grids, and should provide **power and energy related services**

**Energy storages are expensive** and the associated **environmental impact** should not be understate

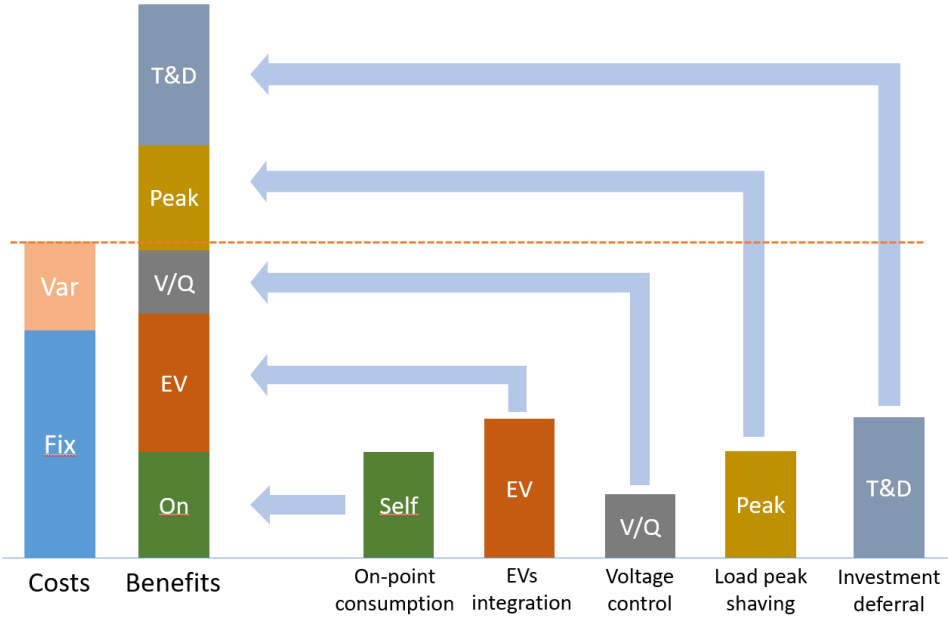


**Each battery type is best suited for** providing either energy or power related services. **There is no a unique optimal battery** type in the market **for everything**

# How does the PED mitigate the problems?

**The hybrid energy storage solution** **provides simultaneously energy and power related services** to a variety of end user(s) in energy grids

**The hybrid energy storage solution** minimizes the installed capacity cost (in €/kWh). In operation, it exploits batteries **extending lifespan and maximizing energy efficiency**



# The Power Electronics Device - PED

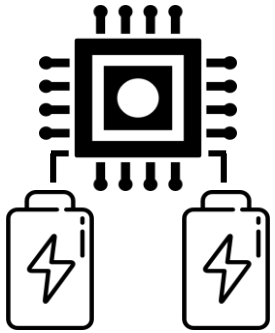
## User services

- Power quality improvement
- Security of supply
- Renewables integration
- Grid-connected and off-grid operation

## Features

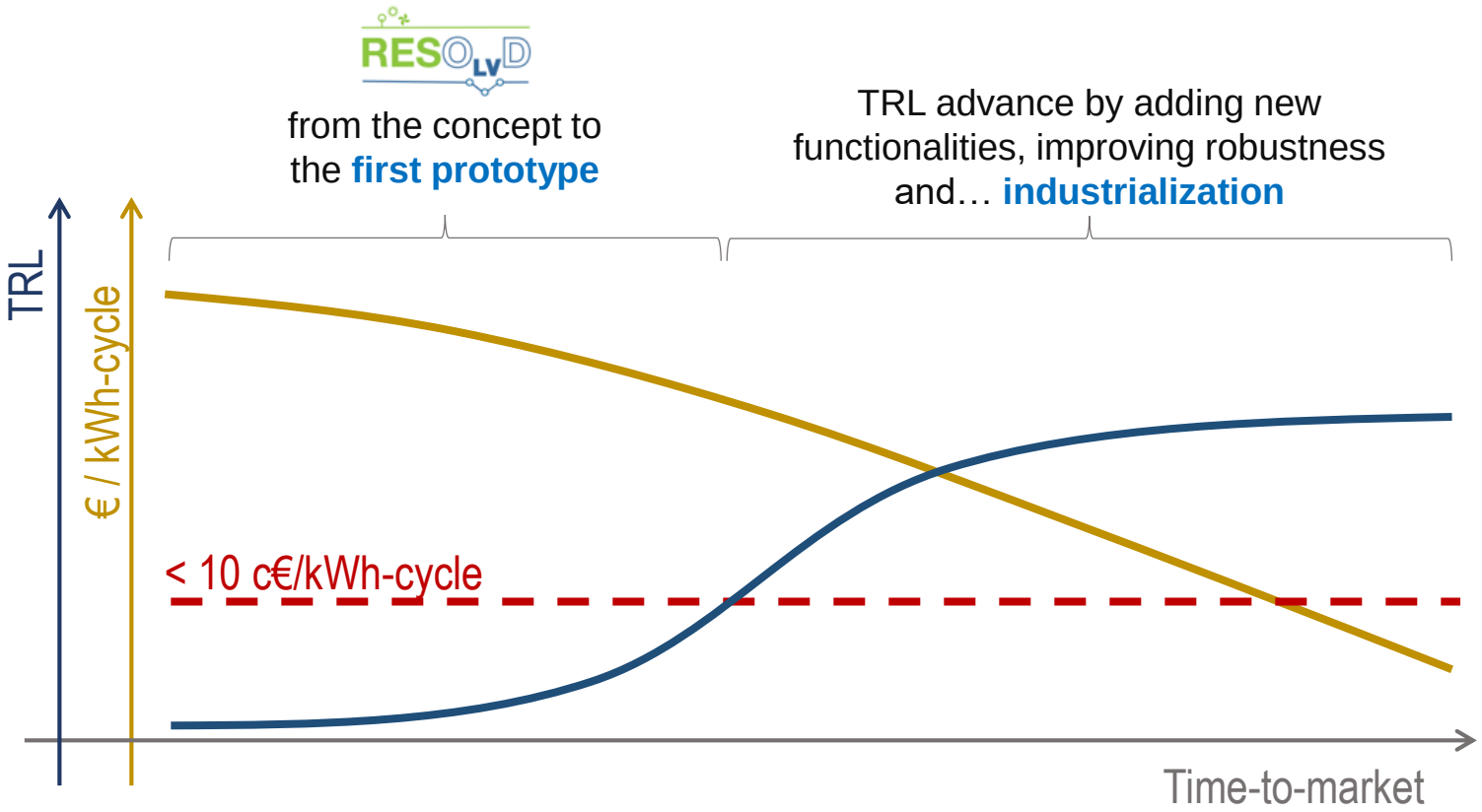
- Modular & scalable design triggering hybrid storages
- One 3-phase 4-wire 400 Vac port
- 2 dc ports at voltages between 400 – 150 Vdc
- Optimal management of the batteries

# The PED’s competitive advantage



**A proprietary logic for the operation of the power electronics, enabling batteries to be charged and discharged synergistically**

# PED's further development and exploitation






Contribution to the **EU strategic goal** of leading industrial development of energy storages

# Thank you!

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