

# Second life battery use to support Electric Vehicles integration

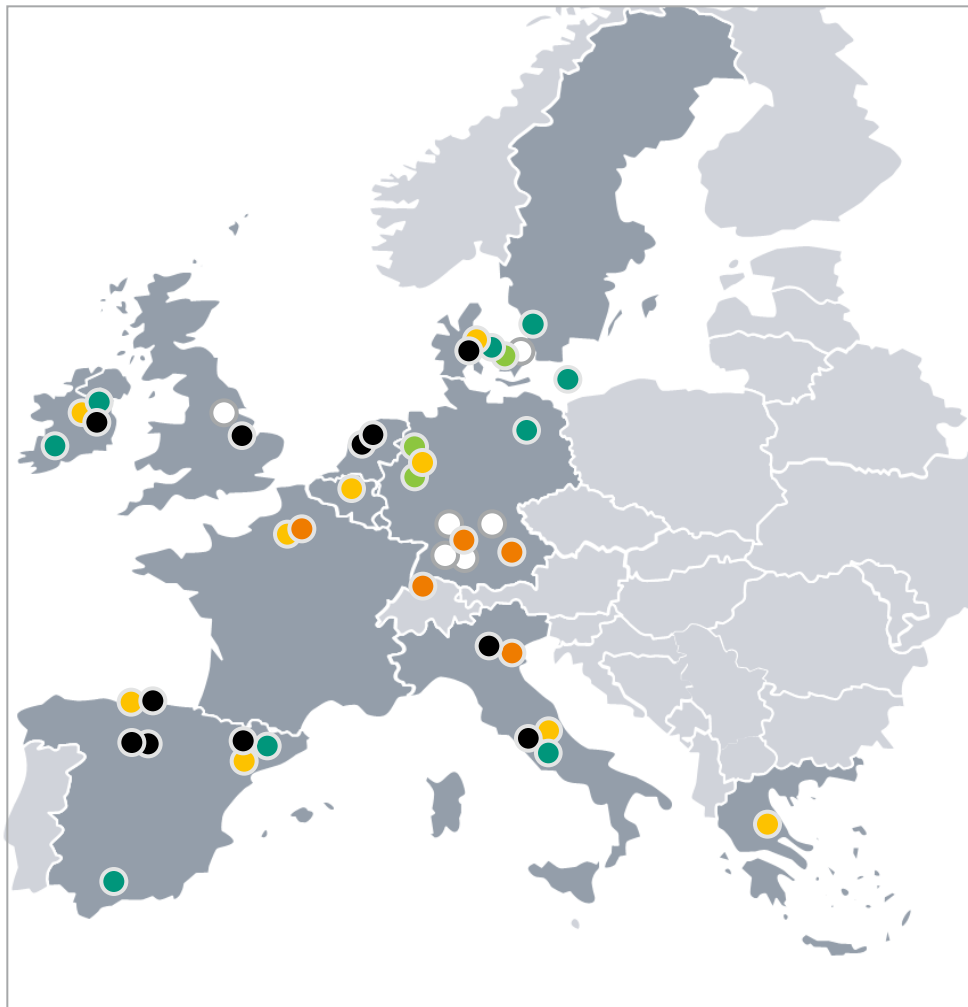
## ENDESA

Barcelona, January 8, 2014

Narcís Vidal



# Green eMotion with 43 Partners



## ○ Industries:

Alstom, Bosch, IBM, SAP, Siemens  
(Project Coordinator)

## ● Utilities:

Danish Energy Association, EDF,  
Endesa, Enel, ESB, Eurelectric,  
Iberdrola, RWE, PPC

## ● Electric Vehicle Manufacturers:

BMW, Daimler, Micro-Vett,  
Nissan, Renault

## ● Municipalities:

Barcelona, Berlin, Bornholm, Copenhagen,  
Cork, Dublin, Malaga, Malmö, Rome

## ● Research Institutions and Universities:

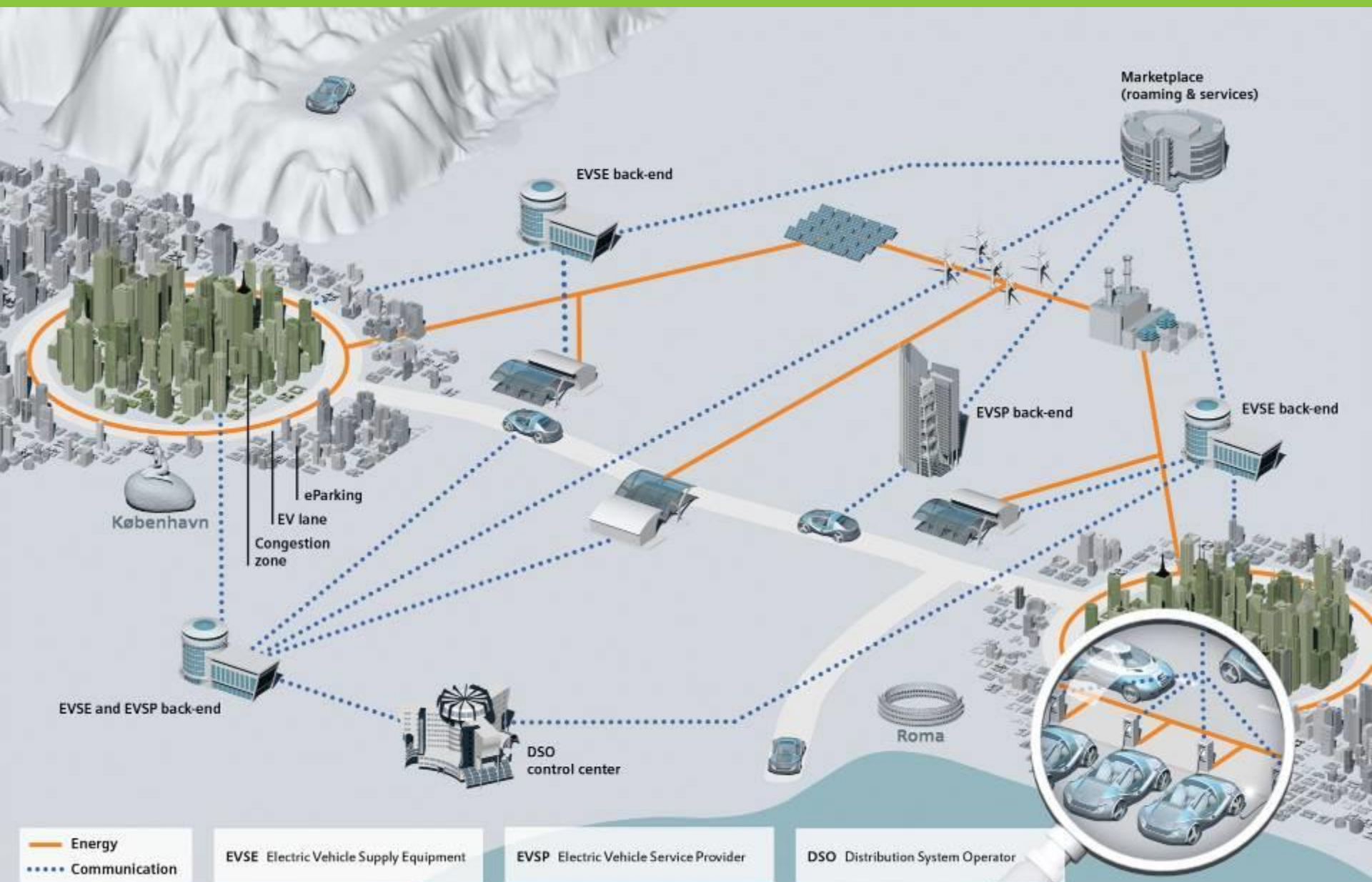
Cartif, Cidaut, CTL, DTU, ECN, Imperial,  
IREC, RSE, TCD, Tecnalia, TNO

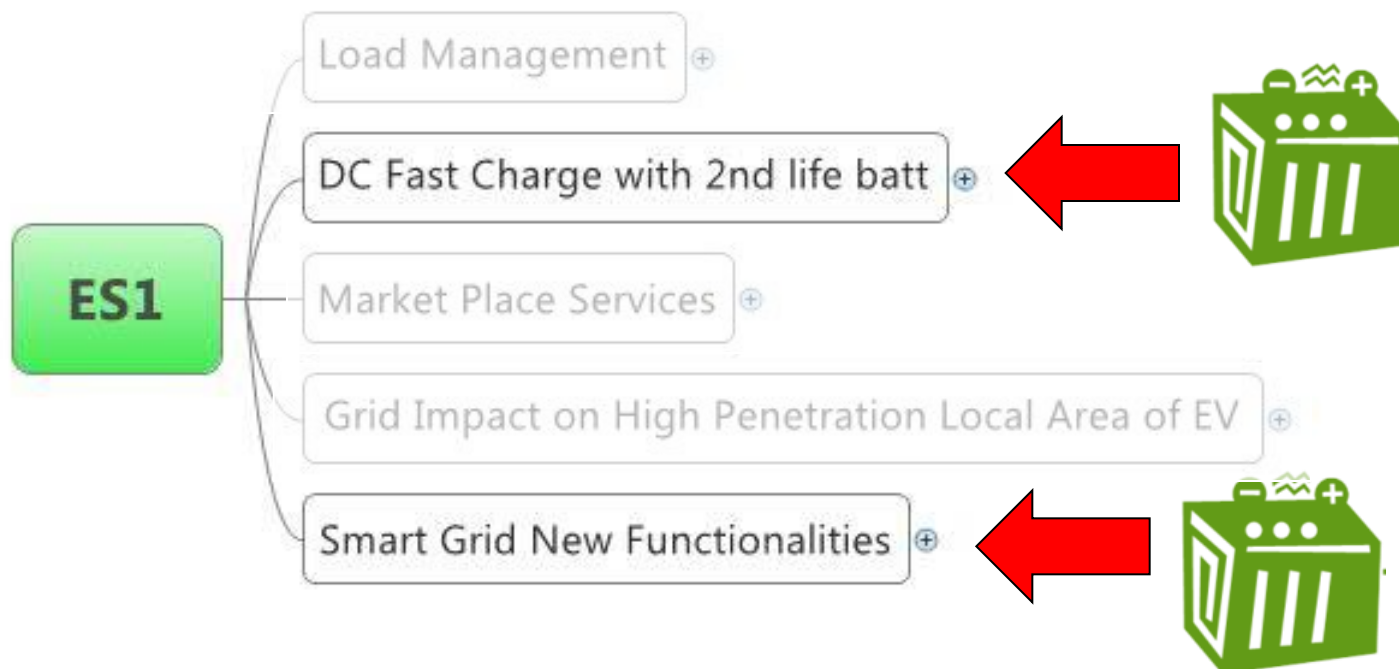


## ● EV Technology Institutions:

DTI, FKA, TÜV Nord

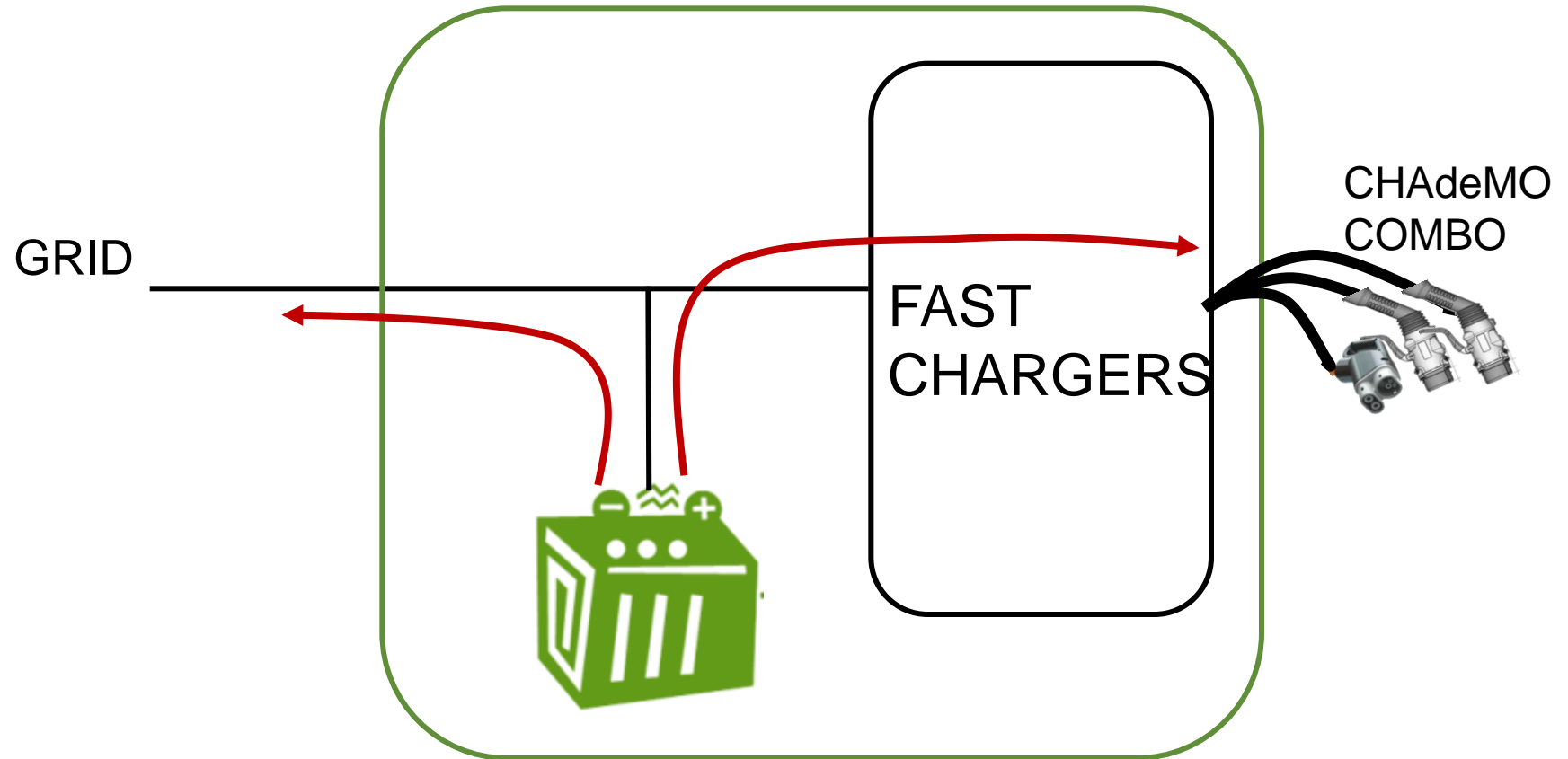
# European electromobility – the big picture



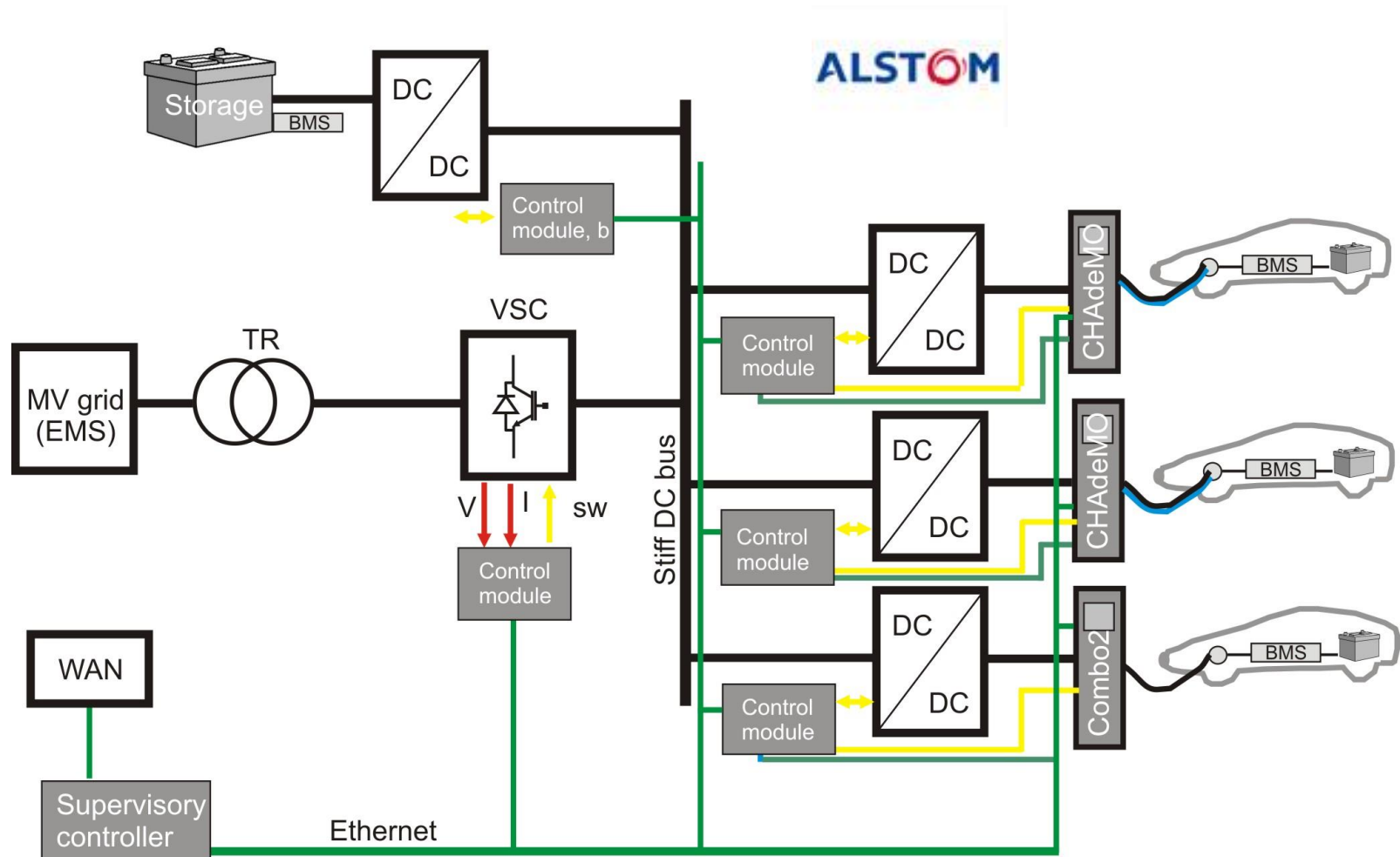




## 2. DC Fast Charge with batteries



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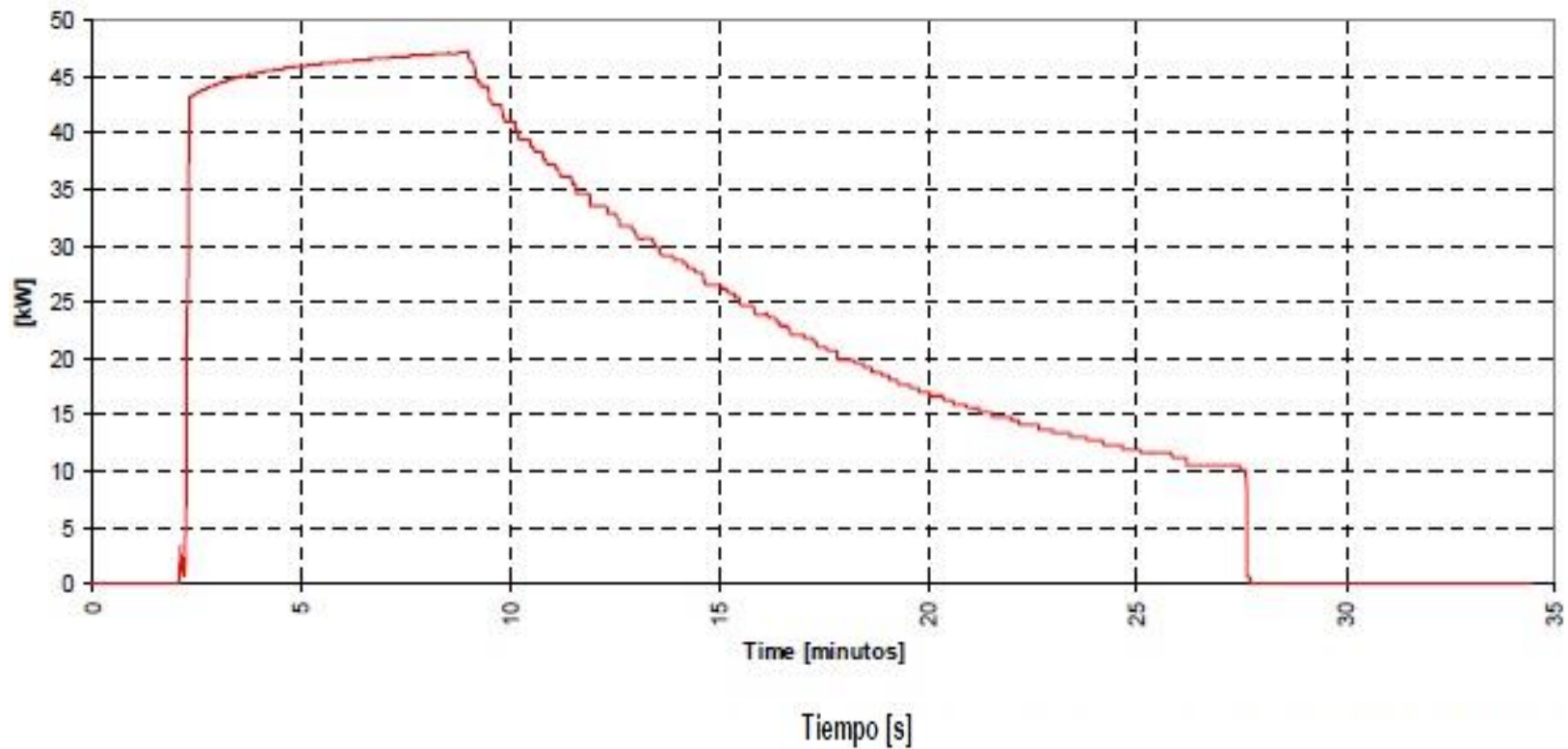
\* signal lines are only indicative

## 2. DC Fast Charge with batteries

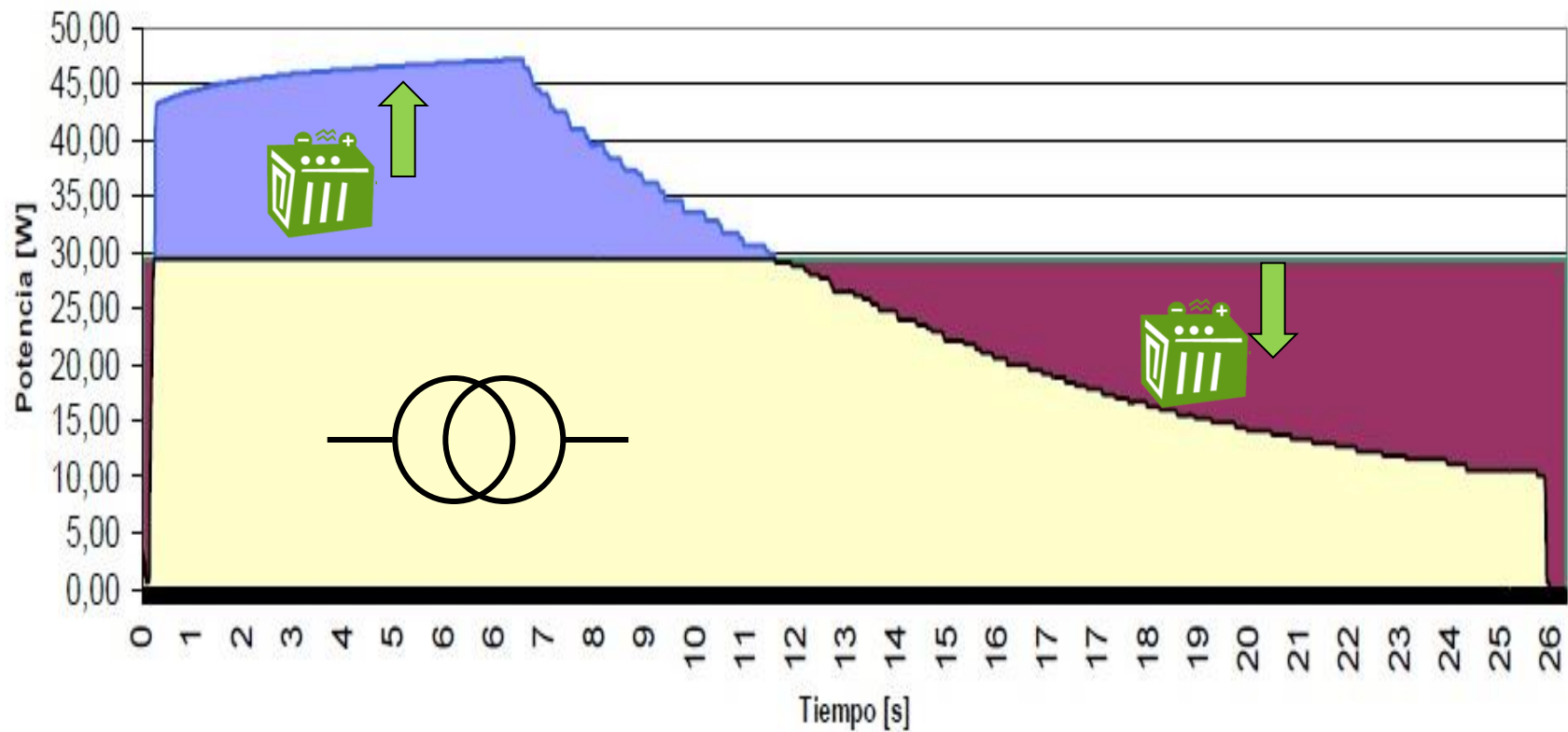
		Fast Charge Malaga
Funcionalidad	Application	
Time Shift	Energy Arbitrage (Cost Minimization)	
	CO <sub>2</sub> Emission Minimization	
	Peak Shaving	X
Power Quality	Instantaneous DSO Power Balancing	
	Islanded Mode	
	Reactive Power Balancing	X



## 2. DC Fast Charge with batteries



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### Location: Malaga Municipality Bus depot





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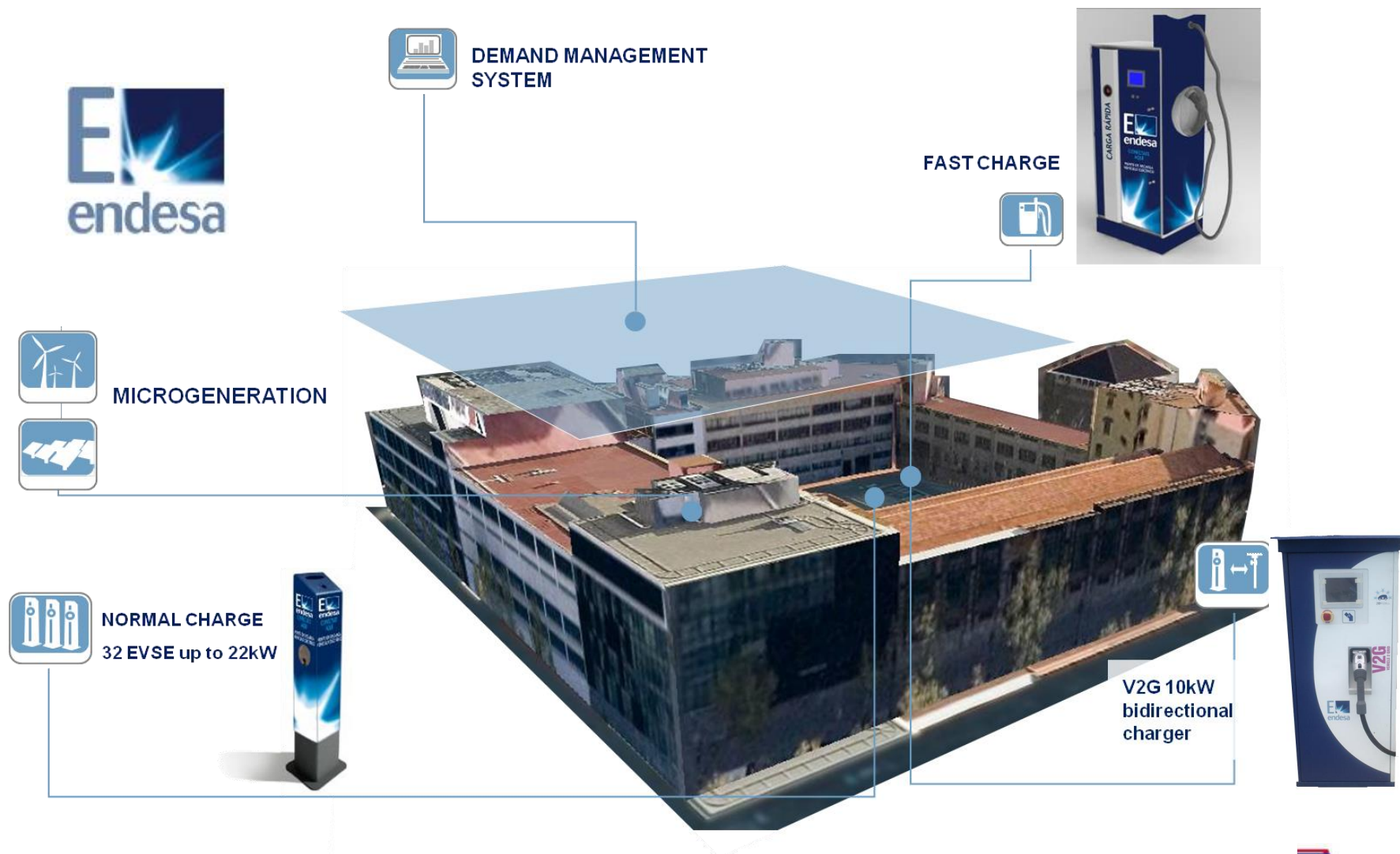




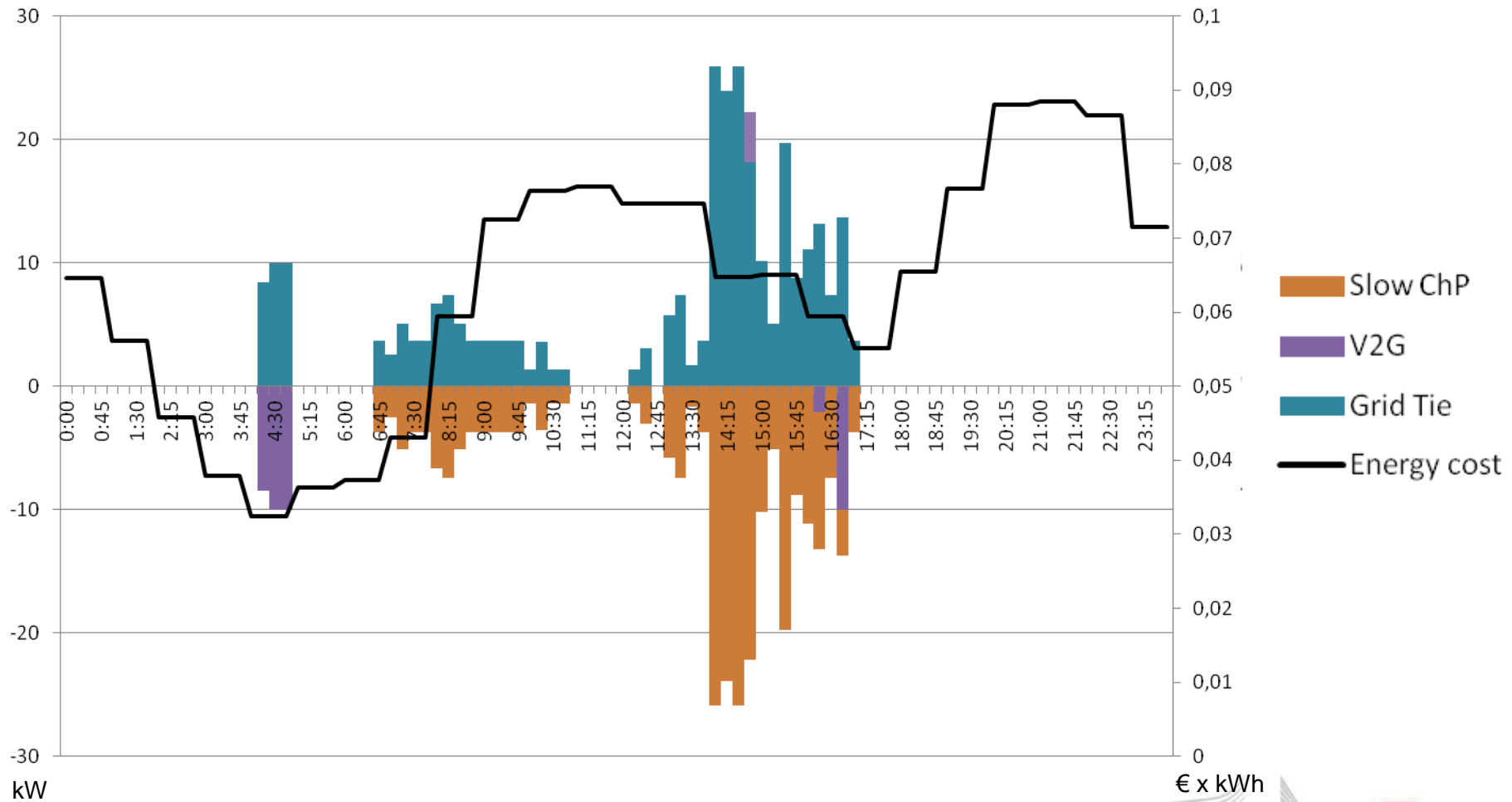
**2nd life batt +  
40kW converter +  
50kW Charger**



# Grid Impact on Local High Penetration Area of EV

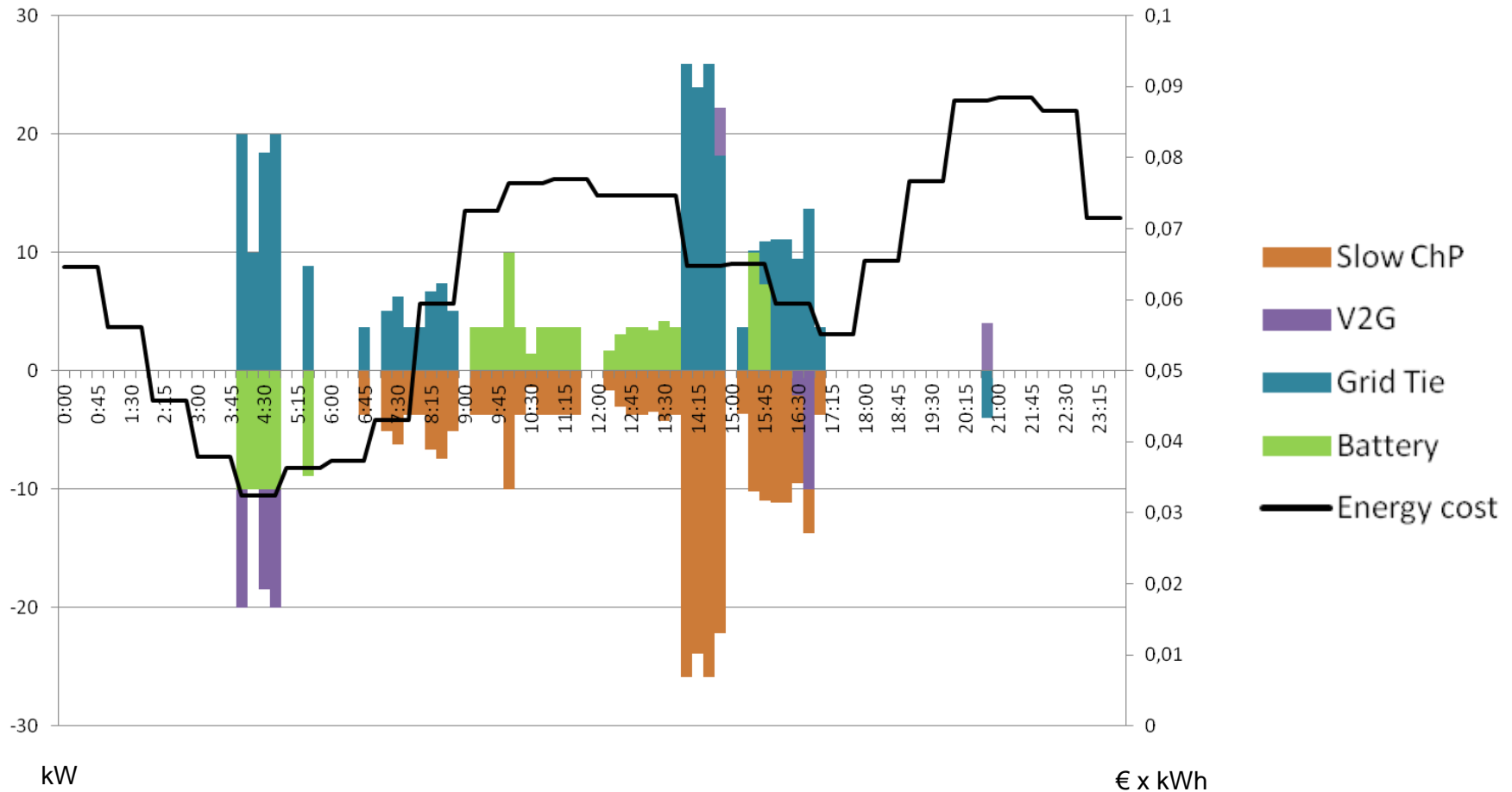


# Smart Grid Management Schemes New Functionalities

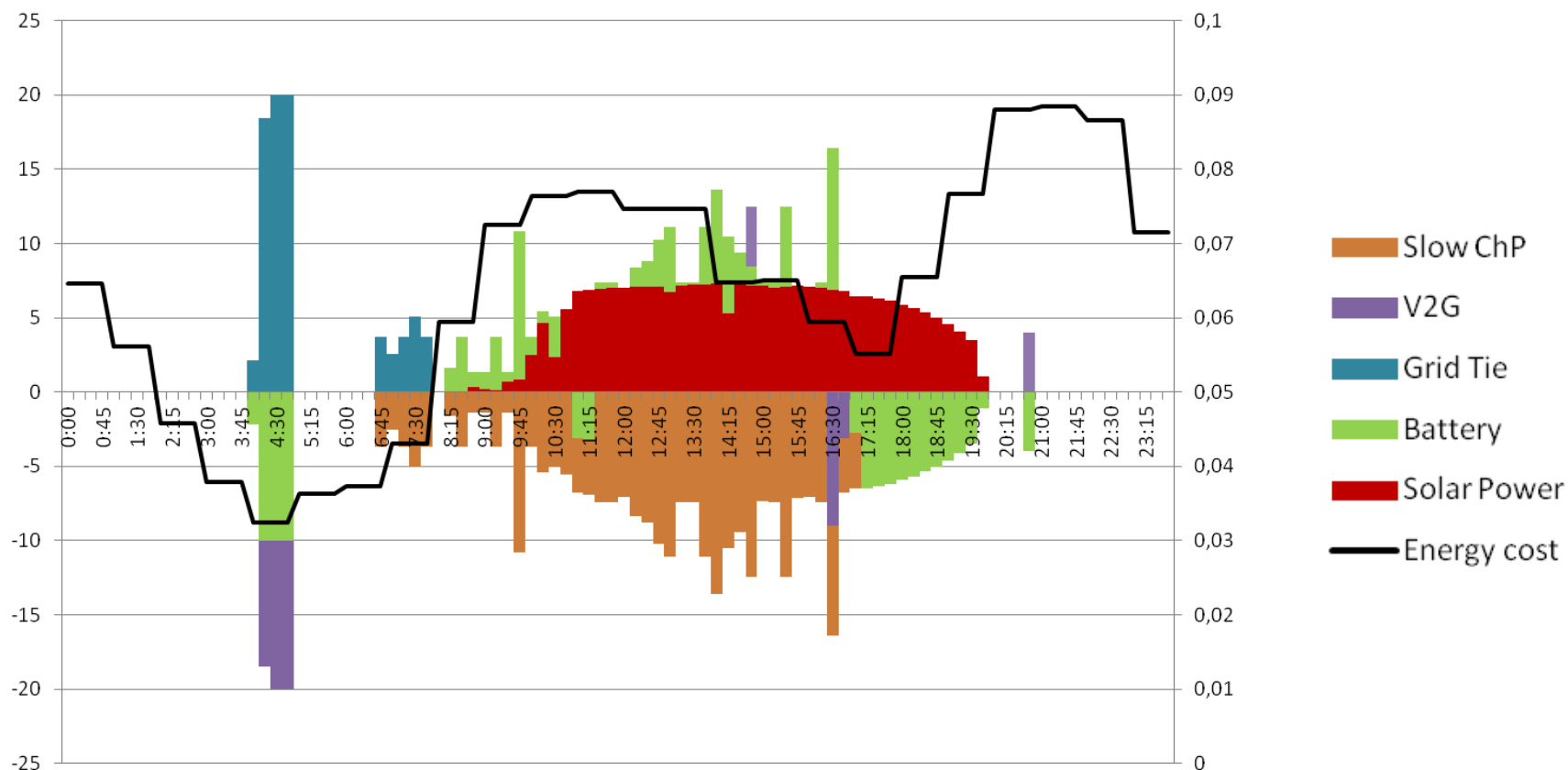




# Smart Grid Management Schemes New Functionalities



# Smart Grid Management Schemes New Functionalities



# Thank you for your attention.

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