

**CHESS**  
SET UP

3rd International Conference on Smart Energy Systems and 4th Generation District Heating

# Combined HEat Supply System by using Solar Energy and heat pUmPs

Urban Ecology Agency of Barcelona

Mikel Monclús/Moisès Morató

Barcelona  
September 2017



Funded by the European Union

# Name/origin

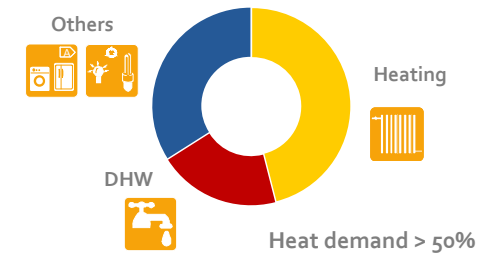
## SCACS MATE

Sistema d'acumulació i ACS  
Mitjançant Acumulació  
Tèrmica Estacional



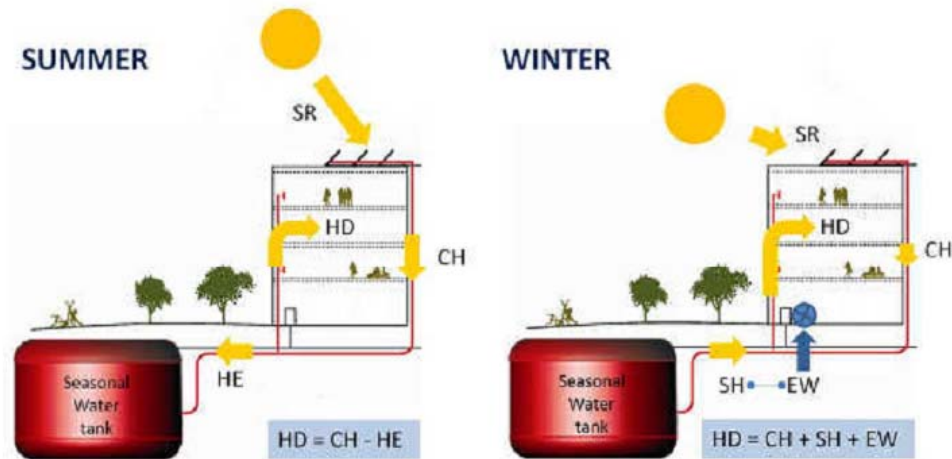
## CHESS SETUP

Combined HEat Supply  
System by using Solar  
Energy and heat pUmPs



### Based on two principles:

- Collection of solar energy, mainly in summer, into a water tank for a further usage during the cold season.
- Operation of the heat pumps under very favorable thermal conditions.



SR= Sun radiation; CH= Collected heat; HD= Heat demand;  
HE= Heat excess heat; SH= Stored heat; EW= Electrical work



**CHESS**  
SET UP

# Partners (10 partners; 6 countries)



Design and testing of  
Advanced Heat Pumps



Switched on thinking  
Pilot project in Corby



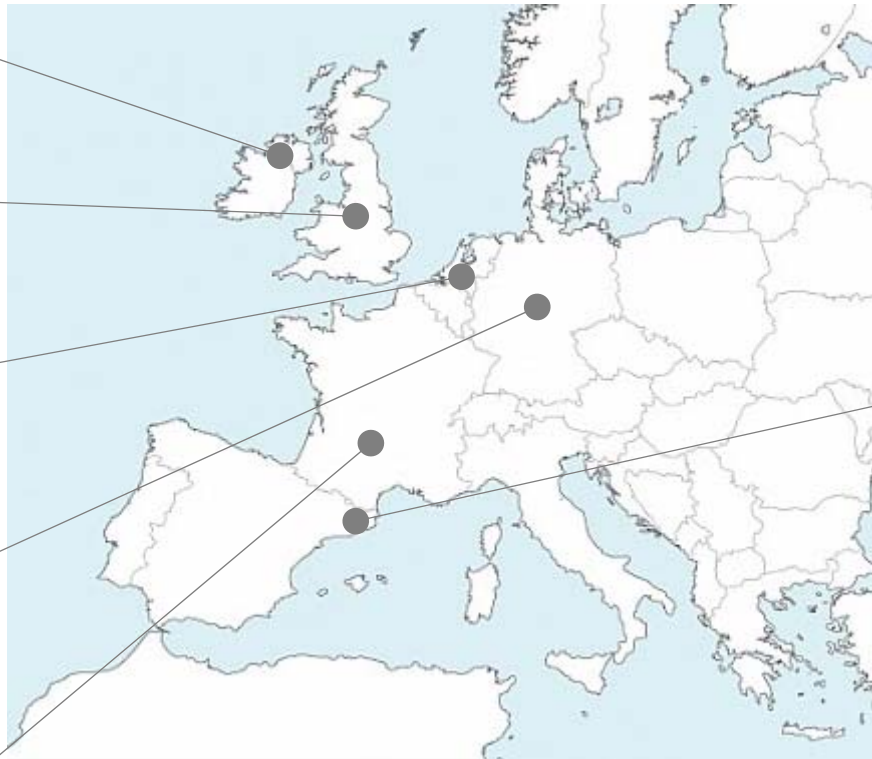
Seasonal Storage & Tank  
construction



Administrative and financial  
management



Communication



Agència  
d'Ecologia Urbana  
de Barcelona

PROJECT COORDINATOR



Technical advisor

Ajuntament  
de SantCugat



Pilot project in Sant Cugat



Monitoring and management  
system



VEOLIA

Technical advisor



Funded by the European Union

## 3 Pilot Projects



**CORBY (UK) / 47 homes**  
Earth Energy Bank (EEB) heat storage system



**SANT CUGAT (SP) / Sport center**  
Sport center including swimming pools  
Large storage tank (around 200 m<sup>3</sup>)

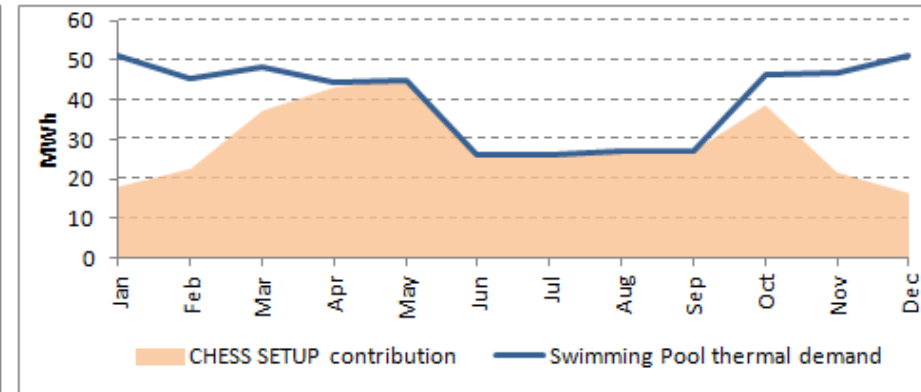
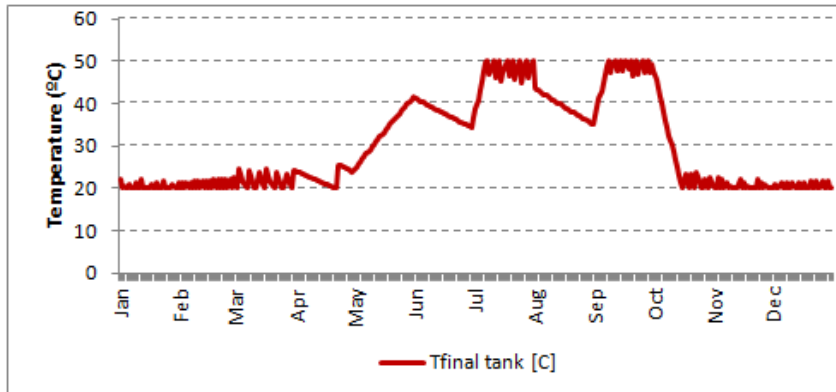
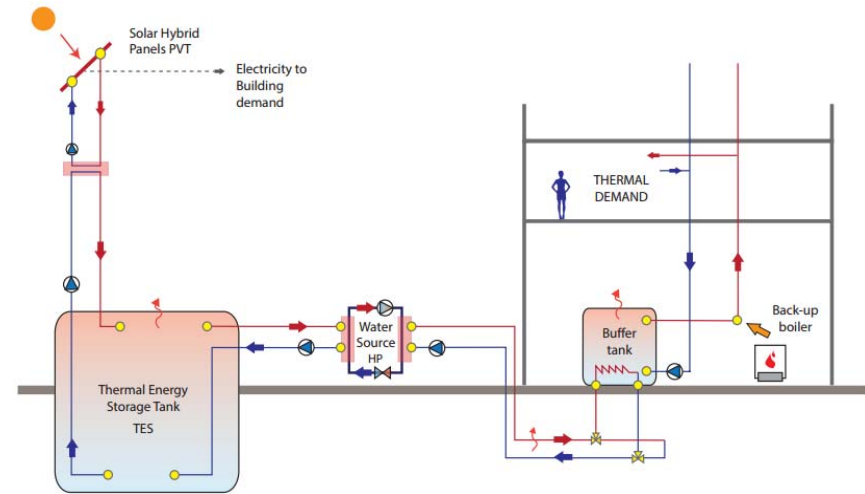
**MANLLEU (SP)**  
**(Ecoedifici Lavola)**  
/ Office  
Small scale pilot  
Short term storage





**CHESS**  
SET UP

# Sant Cugat's pilot

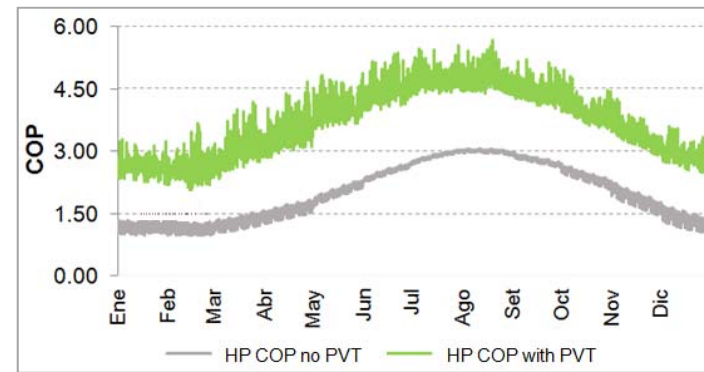
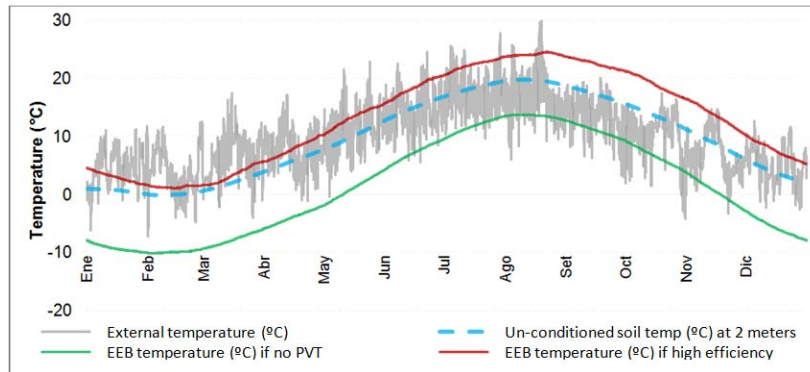
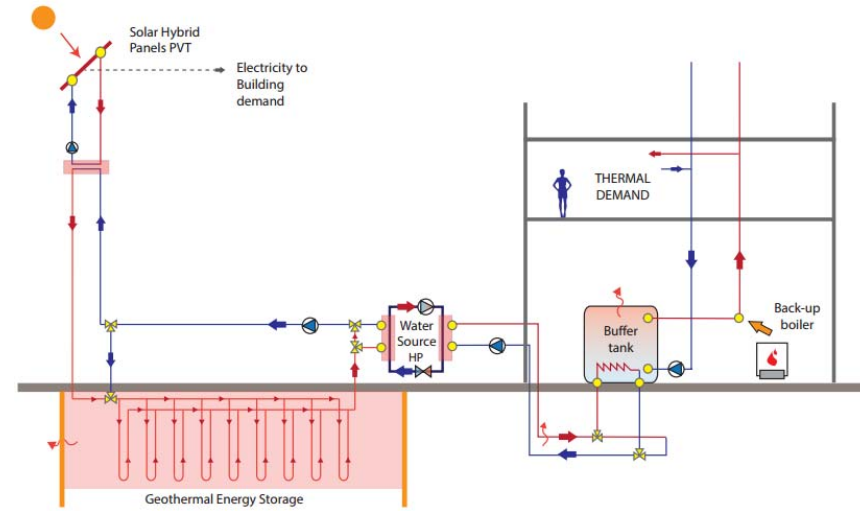


Funded by the European Union



**CHESS**  
SET UP

# Corby's pilot

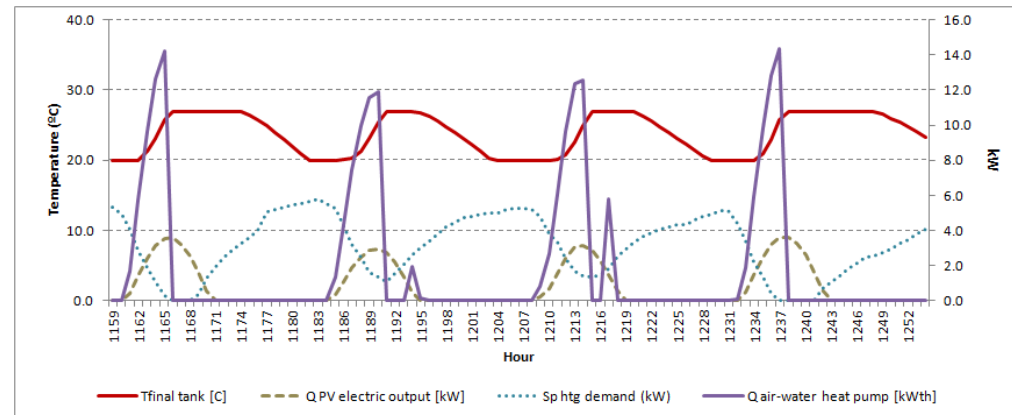
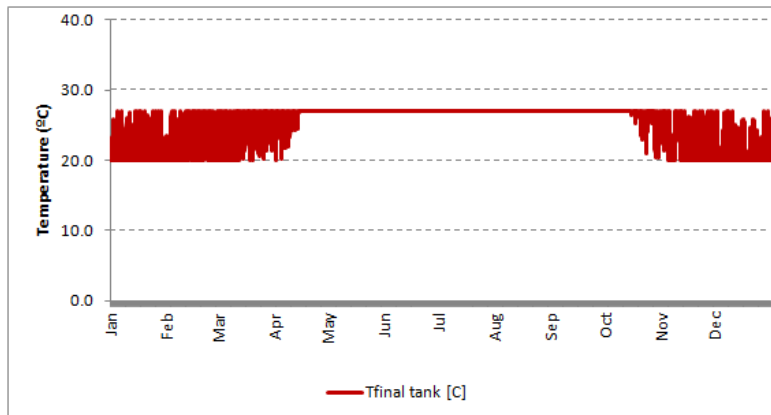
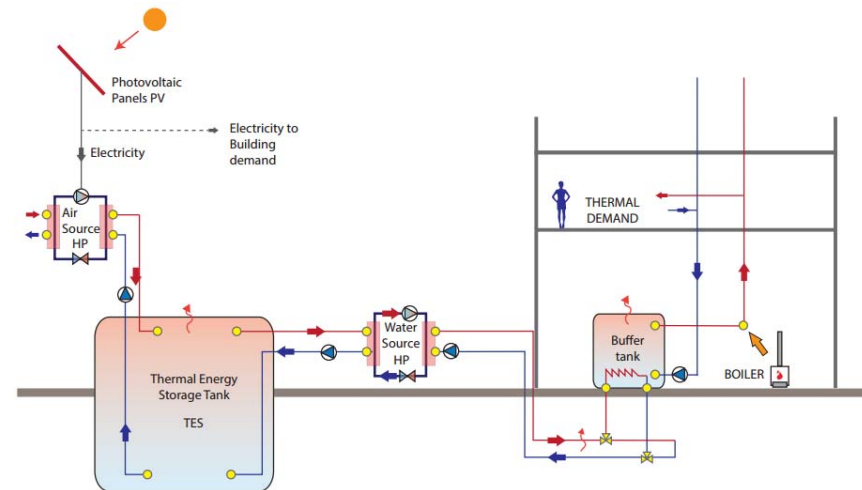
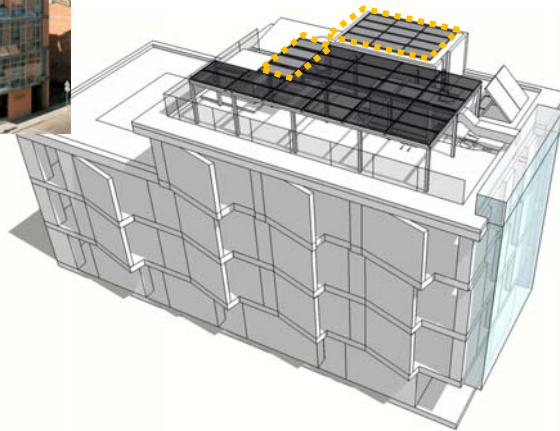


Funded by the European Union



**CHESS**  
SET UP

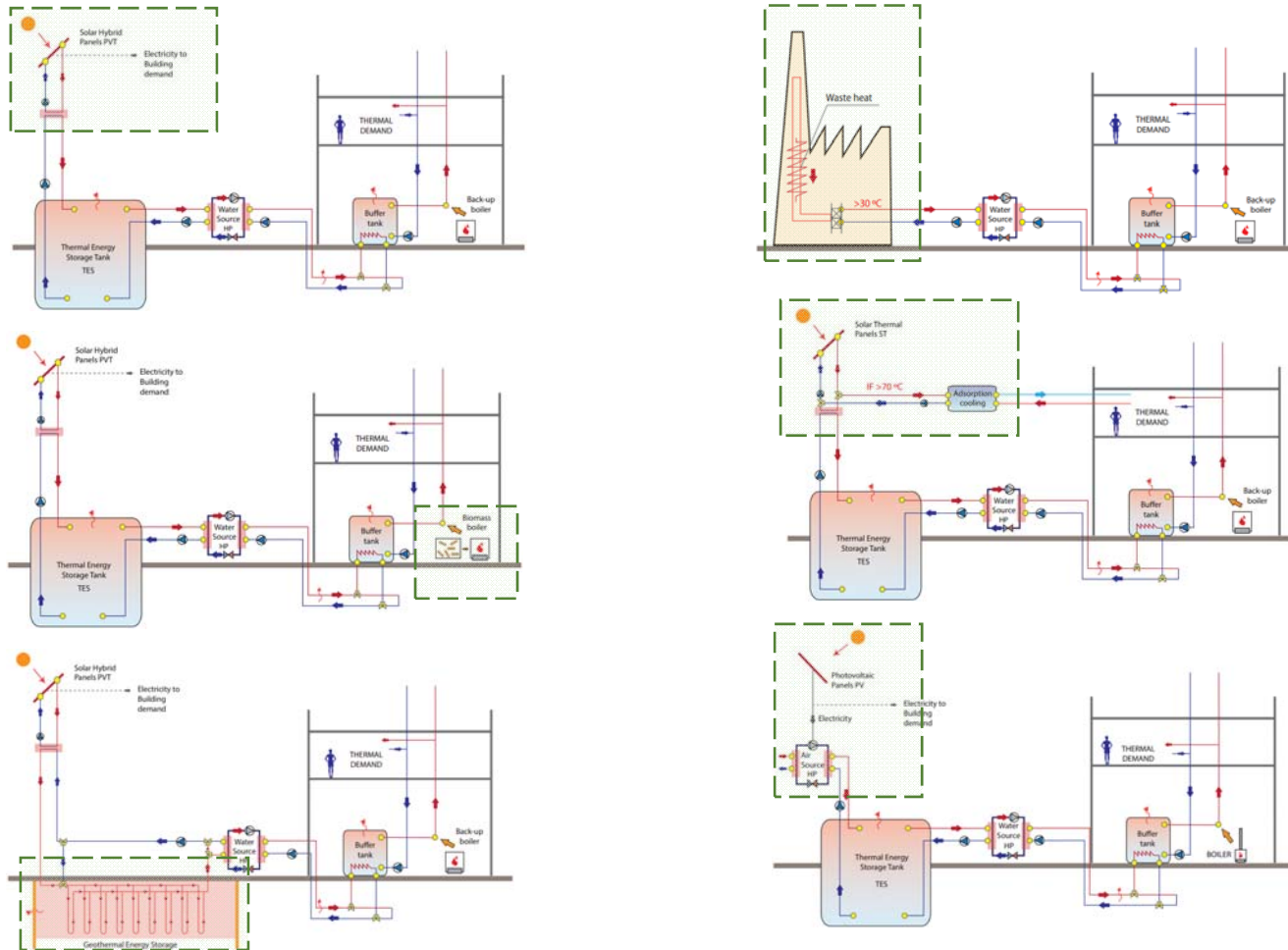
# Lavola's pilot



Funded by the European Union



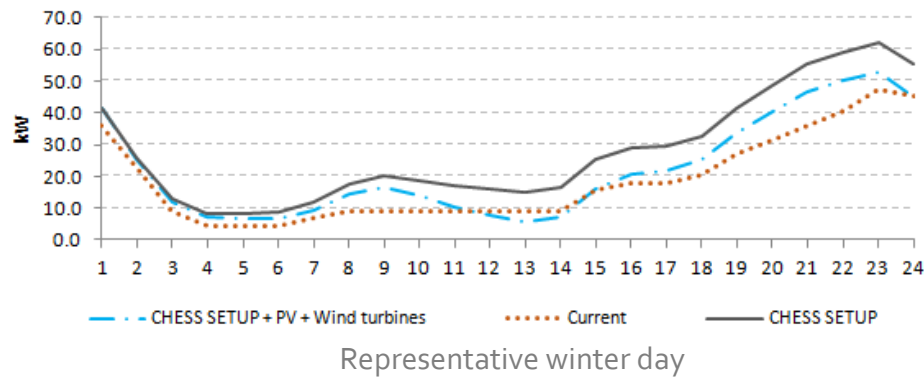
# Integration with other energy sources and technologies



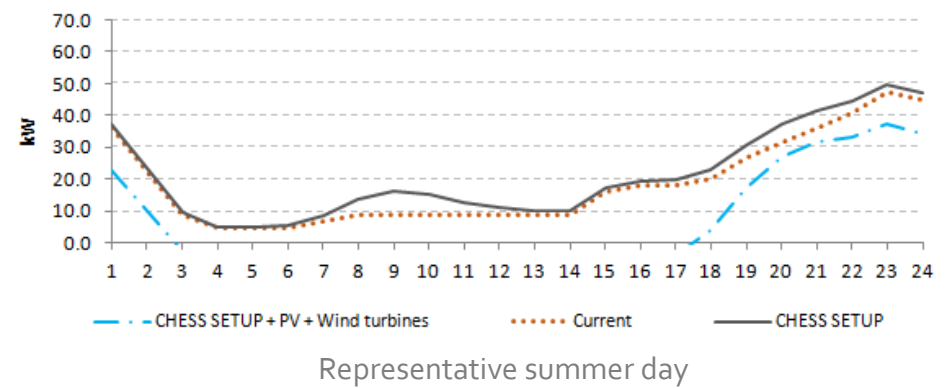
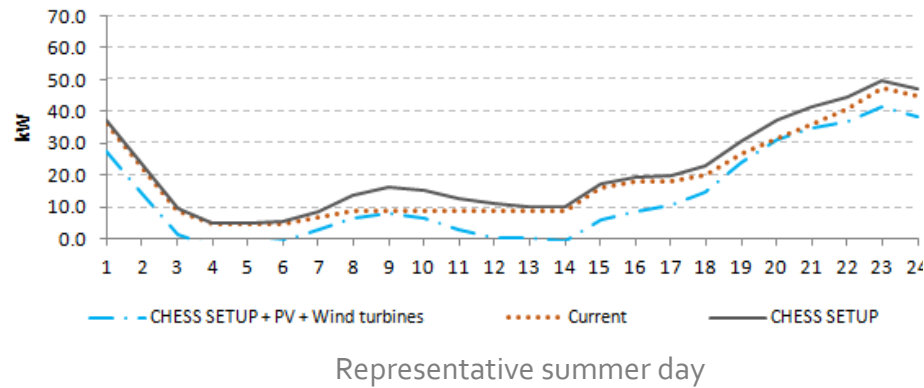
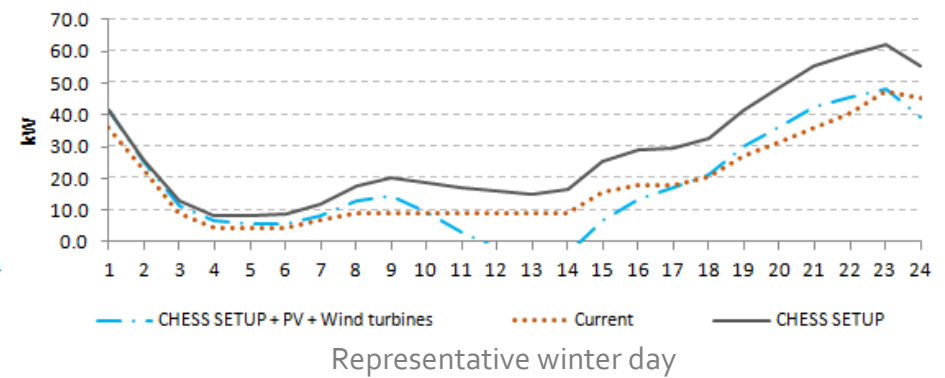


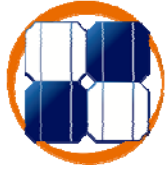
# Integration with the electrical grid - Corby

Renewables contribution to electrical consumption:  
Wind turbines: 30%, PV: 5%



Renewables contribution to electrical consumption:  
Wind turbines: 30%, PV: 15%





**CHESS**  
SET UP

# Thanks for your attention!

Mikel Monclús

[mikelmonclus@bcnecologia.net](mailto:mikelmonclus@bcnecologia.net)

Moisès Morató

[morato@bcnecologia.net](mailto:morato@bcnecologia.net)



Funded by the European Union