

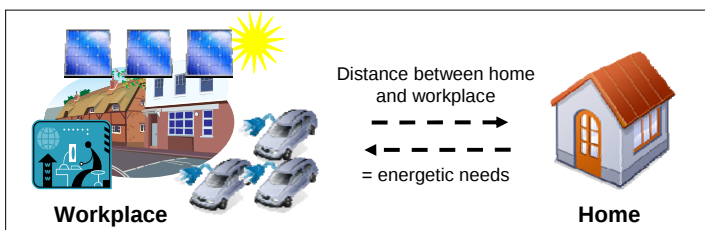
Optimization method for recharging electric vehicles with a photovoltaic production in the workplace

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Purposes

- Minimize electric grid impact of:
 - Photovoltaic (PV) production
 - Electric vehicle (EV) recharge
- Rationalize PV production
- Guarantee quasi-zero emission transport

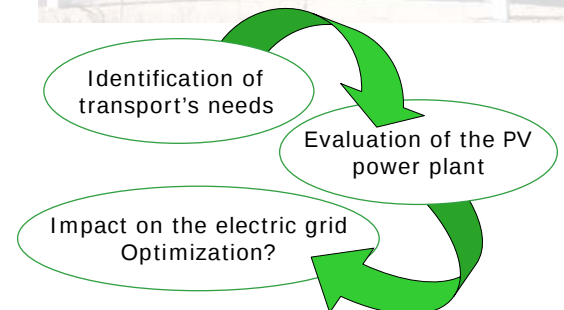
Correlate in time PV production and charge of EVs in the workplace



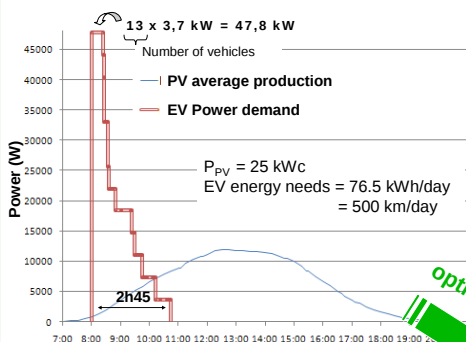
Methodology

- Recharge scenario where employees use EVs to go at work
- Study of a real configuration using data from INES (Chambéry, France)

Method:



Main results

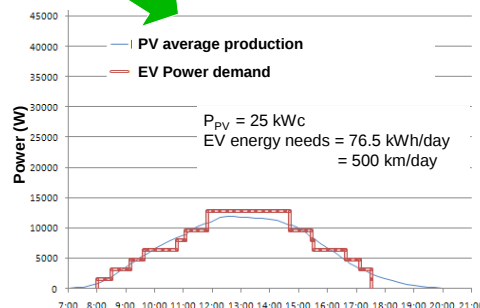


Initial conditions (without any optimization)

- EVs recharge stops after only 2h45
- High pic of power demand
- No correspondence in time between EVs recharge and PV production.

Final conditions (after optimization algorithm)

- 90% of PV production (average curve) used
- According to 2 years data, half recharge of EVs is supplying by PV production 70% of time.



Followings

- Include stationary storage
- Consider other recharge places (homes, commercial centres...)
- Develop a real smart command system to manage vehicle's recharge:
 - ✓ Arrival/departure of vehicles
 - ✓ Meteorological data
 - ✓ Electricity market prices
 - ✓ ...

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