EMR'23, Lille (France)

http://emrwebsite.org

« EMR-based simulation of an e-bike charging station »

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- Outline -

1 Introduction

2 Sizing

3 EMR of the system

4 Conclusion

« Introduction »

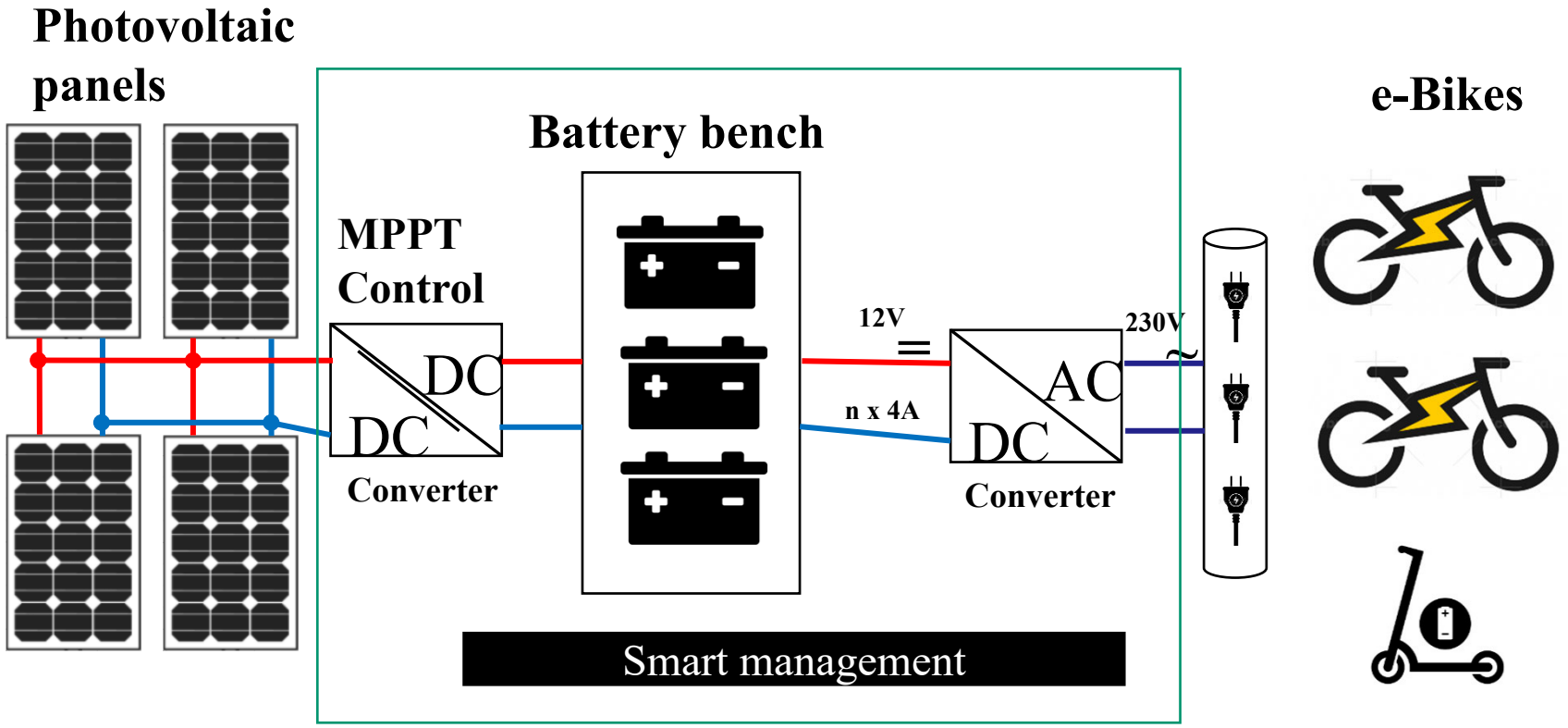
➡ Build a demonstrator of an autonomous charging station for light electric vehicles, based on renewable energy.

Demand

- The demonstrator would be placed at « cité scientifique » Campus.
- The charging station is completely off-grid.
- The energy needed is provided solely by photovoltaic panels.
- Docking for 3 e-bikes or equivalent.
- Room for 2 m² of PV panels.

Synoptic of the demonstrator

The demonstrator is flexible in terms of sizing, usage and placement and can be extended to fulfil different objectives for different projects.

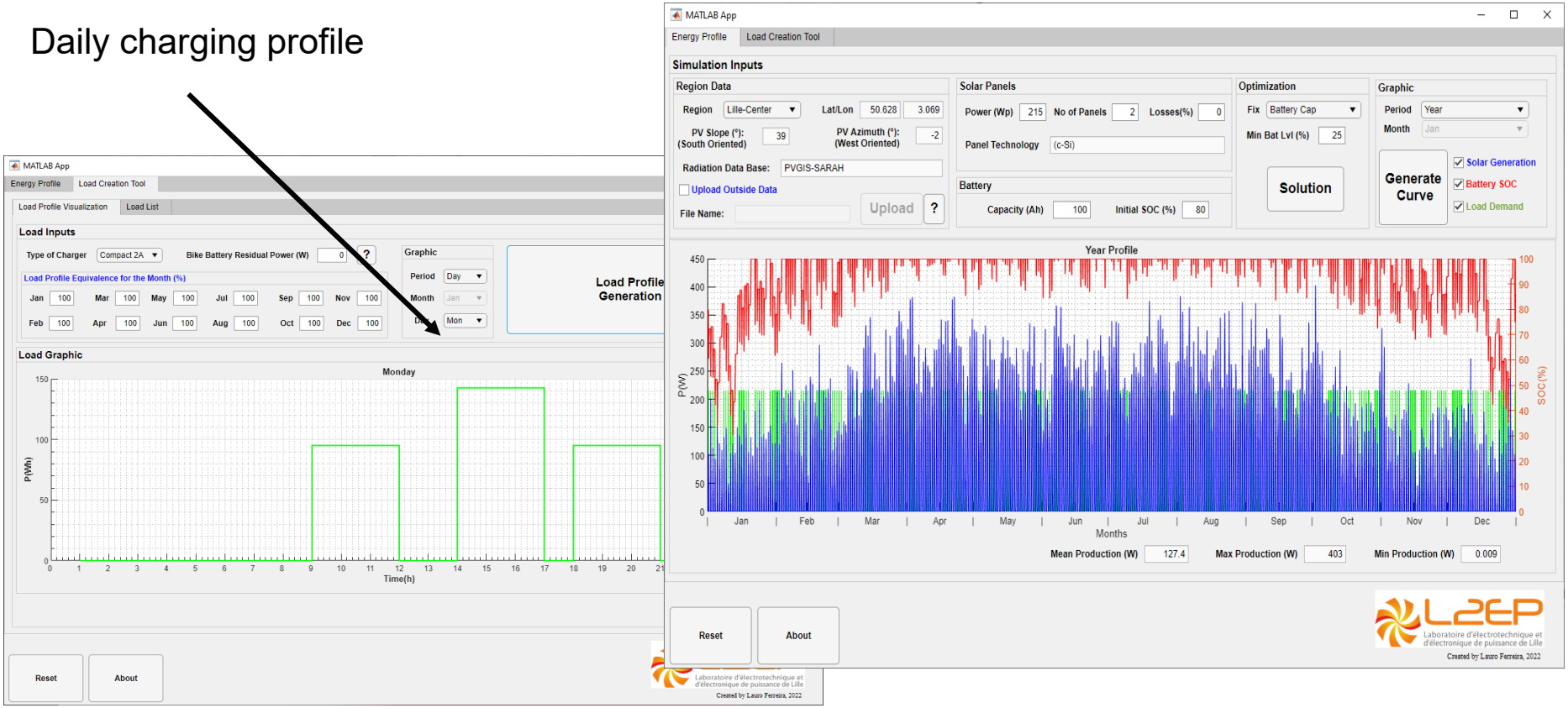


Flexible surface | Adapted storage | Multiusage system

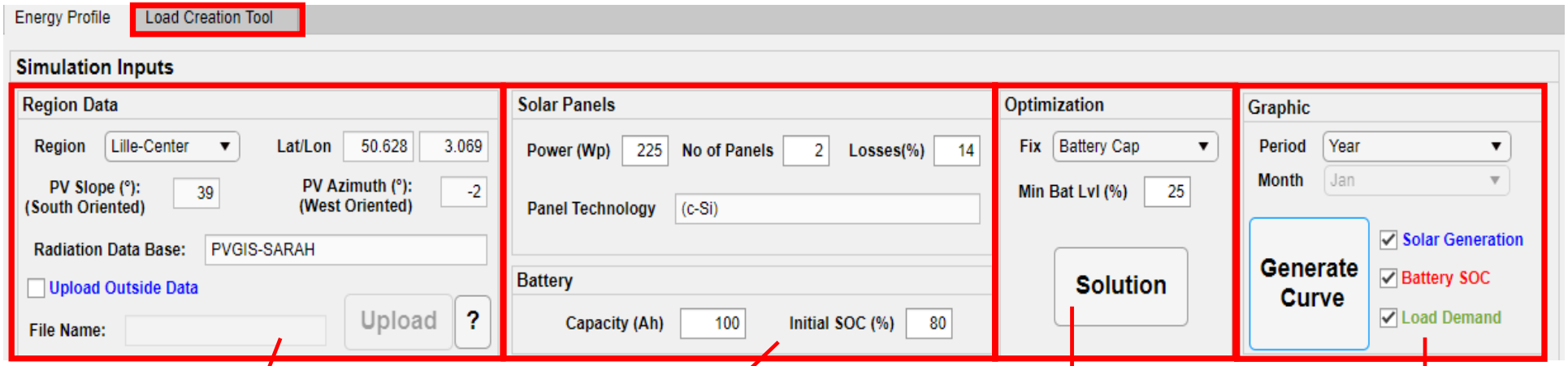
« Sizing »

- Interface tool developed with MATLAB GUI (Graphical User Interface)
- Based on the PVGIS satellite database

Daily charging profile



Load Profile creation tool



Irradiation Data Input

European Commission - PVGIS

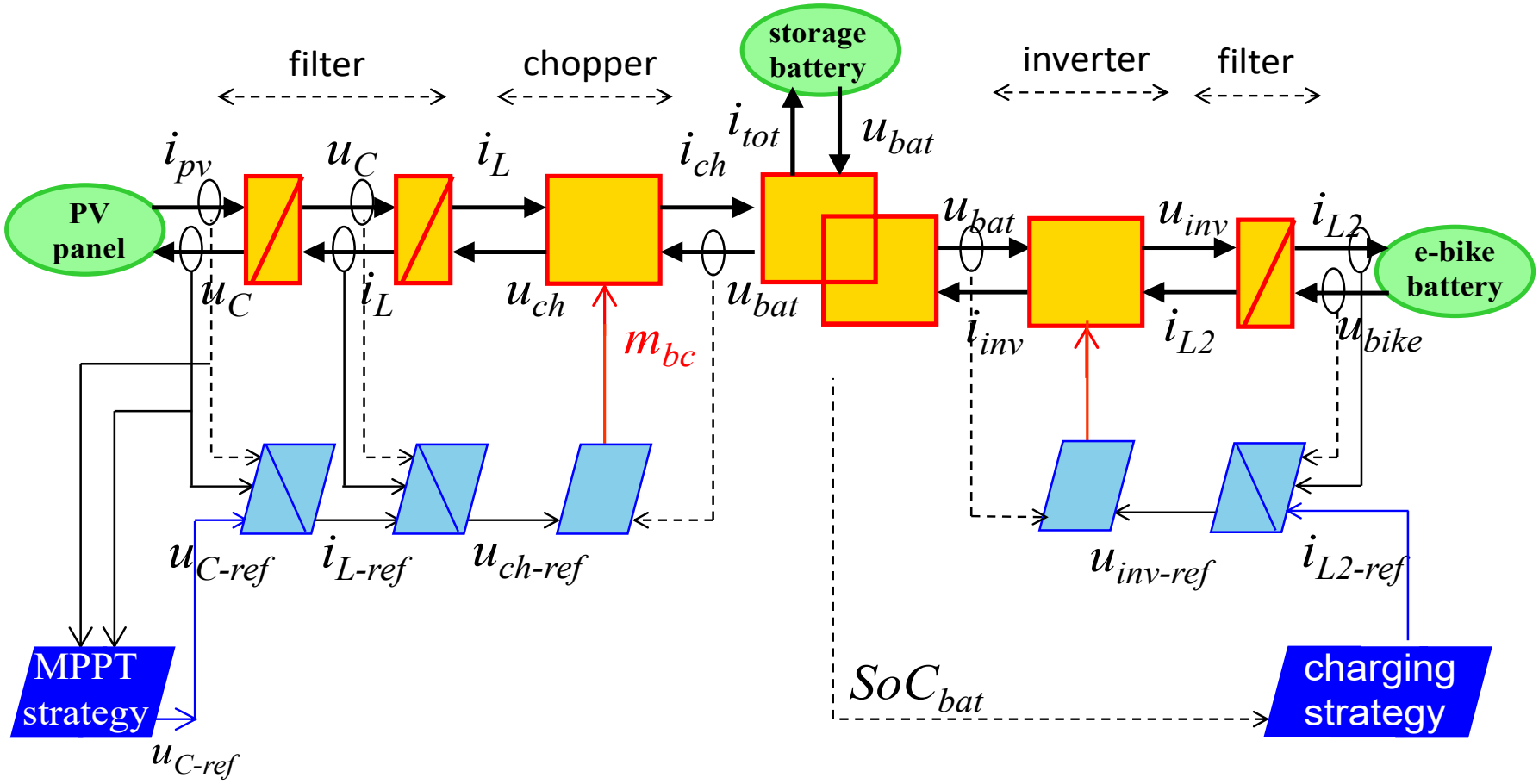
System Characteristics

Optimized definition of parameters

Output Customization

« EMR of the system »

EMR based simulation of an e-bike charging station



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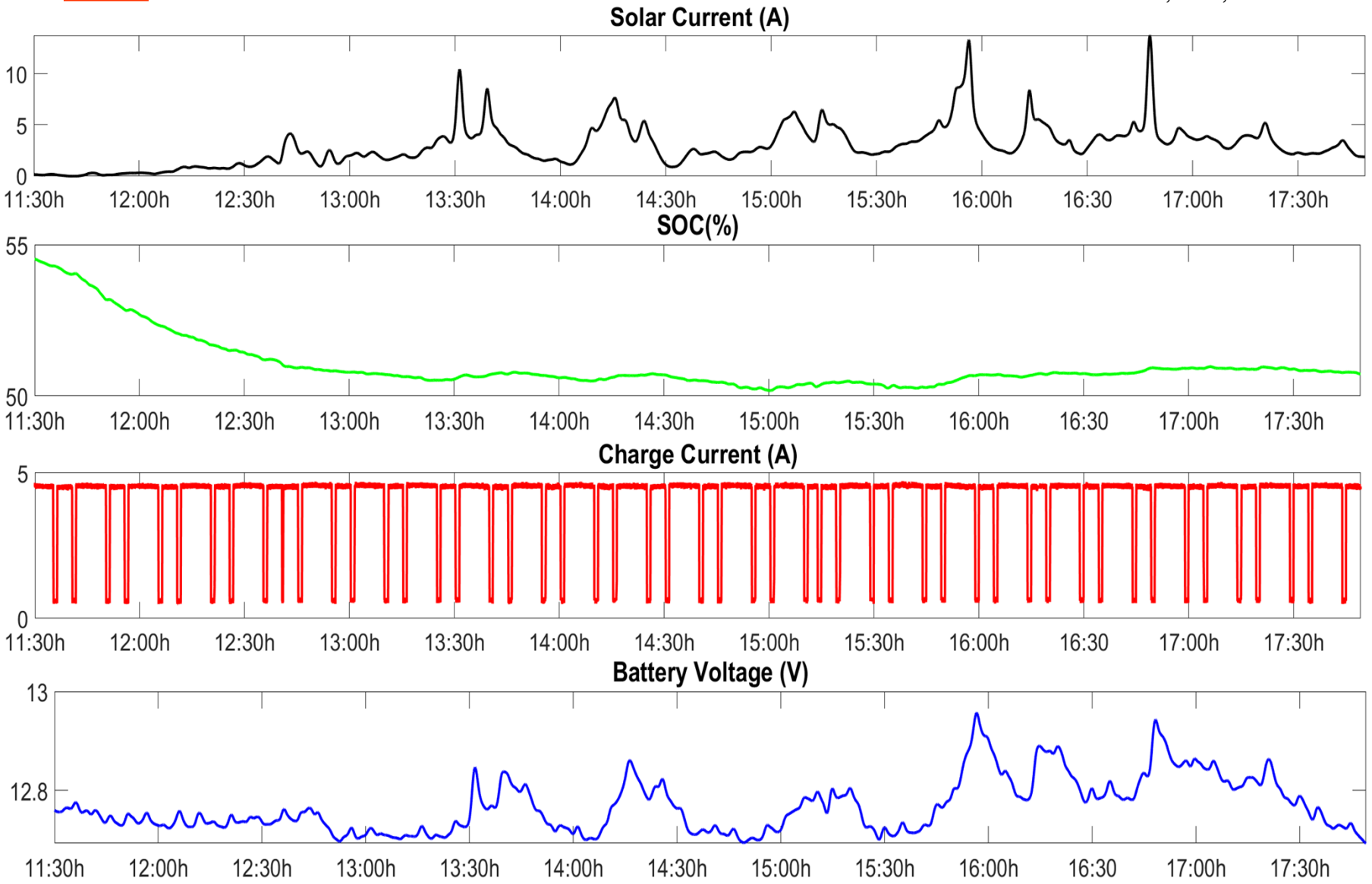
Simulation results



Final prototype

« Conclusion »

Conclusion

- A demonstrator is built at campus 'Cité Scientifique'
- Sizing is done using a graphical user interface
- EMR was used to simulate the system
- The results show the sizing is correct