

# Modelling, control and integration of energy storage systems

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Abstract (Arial 11)

Energy storage systems are of vital importance for the implementation of renewable energy sources. The most popular are those of an electrochemical nature, batteries, hydrogen-based systems or redox flow batteries (see Figure 1). Their correct operation requires being able to operate them efficiently, safely and in coordination with the different elements of the network (see Figure 2). The talk will present various works that the research group is carrying out in this area.

## REFERENCES

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- [3] An analysis of multi objective energy scheduling in PV-BESS system under prediction uncertainty U. R. Nair, M. Sandelic, A. Sangwongwanich, T. Dragicevic, R. Costa-Castelló, and F. Blaabjerg. *IEEE Transactions on Energy Conversion*, 2021. DOI: [10.1109/TEC.2021.3055453](https://doi.org/10.1109/TEC.2021.3055453).
- [4] Grid congestion mitigation and battery degradation minimisation using model predictive control in PV-based microgrid U. R. Nair, M. Sandelic, A. Sangwongwanich, T. Dragicevic, R. Costa-Castelló, and F. Blaabjerg, *IEEE Transactions on Energy Conversion*, 2021. DOI: [10.1109/TEC.2020.3032534](https://doi.org/10.1109/TEC.2020.3032534).

## FIGURES

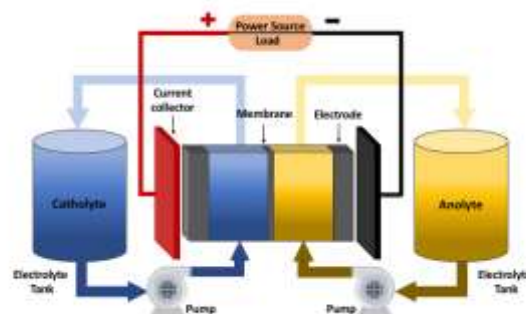


Figure 1: Vanadium Redox Flow Battery component scheme

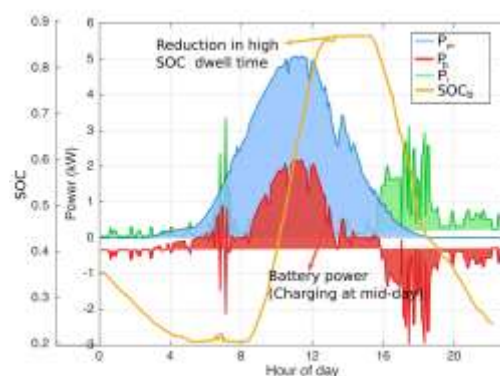


Figure 2: Battery energy scheduling with MPC for the complete day