

## License

This simulation model and code is subject to the terms of the Mozilla Public License, v. 2.0.

If a copy of the MPL was not distributed with this file, you can obtain one at

<http://mozilla.org/MPL/2.0/>. The most important grants and limitations are summarised below.

- The code can be freely used, altered and redistributed (§2.1.a). All distribution of the source code, including any modifications, must be under the terms of the MPL (§3.1).
- If used in a licensed software, you must ensure access to or provide all source-code files covered by the MPL, even if the software is offered as an executable (§3.2) or combined with other code under a proprietary license.
- Code under the MPL may be combined with files under any license in a "larger work", so long as the above conditions are still met for all components under the MPL (§3.3).
- You may not remove or alter the substance of any license notices contained within the source-code files (§3.4).
- No warranty of any kind is provided, especially not for the absence of defects in the code. The entire risk of using the code is with you. (§6)
- No liability is assumed for any direct, indirect or even incidental damages of any character, including commercial losses, work stoppage or computer failure (§7).

Over and above the legal restrictions imposed by this license, if you use this testbed for an academic publication then you are obliged to provide proper attribution.

**Cite as:** Solano, J.; Jimenez, D.; Ilinca, A. A Modular Simulation Testbed for Energy Management in AC/DC Microgrids. *Energies* 2020, 13, 4049.

## Content

1. Energies Microgrid SG - This folder contains the following archives:

- 1.1 Energies\_Solano\_MicroGrid\_SG.slx - Simulink file that contains the microgrid model
- 1.2 EnergiesMicroGrid\_with\_SG.m - Script file to start the simulation
- 1.3 Figures\_EMS\_MG1.m - Script file with the code to produce the figures presented in the paper
- 1.4 init\_batt - Script file with contain the battery parameters
- 1.5 init\_droop - Script file with contain the droop control parameters
- 1.6 init\_FC - Script file with contain the droop control parameters
- 1.7 init\_Load - Script file with contain the Load parameters
- 1.8 init\_PVP - Script file with contain the PVP system parameters
- 1.9 init\_SC - Script file with contain the Super Capacitor parameters
- 1.10 init\_sm - Script file with contain the Synchronous Machine parameters
- 1.11 init\_VSC1 - Script file with contain the Voltage Source Converter 1 parameters
- 1.12 init\_VSC2 - script file with contain the Voltage Source Converter 2 parameters

2. Energies Microgrid wo SG - This folder contains the following archives:

- 2.1 Energies\_Solano\_MicroGrid\_wo\_SG.slx - Simulink file that contains the microgrid model
- 2.2 EnergiesMicroGrid\_withouth\_SG.m - Script file to start the simulation
- 2.3 Figures\_EMSb\_MG1.m - Script file with the code to produce the figures presented in the paper
- 2.4 init\_droop - Script file with containt the droop control parameters
- 2.5 init\_Load - Script file with containt the Load parameters
- 2.6 init\_VSC1 - Script file with containt the Voltage Source Converter 1 parameters
- 2.7 init\_VSC2 - script file with containt the Voltage Source Converter 2 parameters

Simulate in accelerator mode recommended. It may require installing a MinGW-w64 compiler.

All models were created in MATLAB R2019b

Last modification on the 28th of July 2020

New versions and updates can be found at Matlab File Exchange following the link below:

<https://www.mathworks.com/matlabcentral/fileexchange/78919-a-modular-simulation-testbed-for-energy-management-in-ac-dc>