

Modeling and simulation of a Web-of-Cells architecture using Matlab/Simulink

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Abstract

Nowadays, the Web-Of-Cells (WOC) represents an alternative strategy for solving communication, generation and distribution problems in smart grids that integrate Hybrid Renewable Energy Sources (HRES). In this paper a simulation method of WOC architecture with a new voltage control model have been proposed.

The proposed method is summarized in three main points: First modeling of the WOC taking into account the voltage control model has been developed. Then, simulation of the WOC in Matlab/Simulink software is realized. During the simulation of the WOC architecture, profiles of data are considered. Finally, simulation results and explanations are discussed.

The study proved that the integration of voltage control technique in WOC architecture allows optimizing the reverse power flows, local congestions and voltage problems.

Keywords: *Web-Of-Cells Modeling, Smart grids, Hybrid Renewable Energy Sources, voltage control strategy, Matlab/Simulink.*