Optimization of energy production

I. El kafazi, R. Bannari, A. Abouabdellah
Systems Engineering Laboratory, Research team 'Modelling and Optimization of Industrial Systems and Logistics'.
National School of Applied Sciences Ibn Tofail University-Kenitra-Morocco
elkafazi.ism@gmail.com, rachid.bannari@gmail.com, a.abouabdellah2013@gmail.com

Abstract

The integration of the renewable energies (the solar energy and the wind energy) is a current challenge that can improve the functioning of the electricity network. In this work, we aim to contribute to the modelling and the optimization of the energy production. However, in order to minimize the production costs, the quantity of the available green energy in the power system, should be defined, and if needed, combined with the other conventional energy sources. The model is implemented under the GAMS 24.7.1 environment, and was validated by using CPLEX. Good results are obtained, the presented model can easily combine different sources of energy, by scheduling the resources with high performance and flexibility.

Keywords
Modeling; optimization; GAMS modeling system; energy; solar; the wind.

Ismail Elkafazi is a Phd student at National School of Applied Sciences Ibn Tofail University, Kenitra, Morocco in industrial engineering. He obtained a master degree in engineering of industrial automation systems from Faculty of Sciences – Fes, Morocco.

Rachid Bannari is a professor of applied mathematics and industrial engineering at National School of Applied Sciences (ENSA) of Kenitra. He had his Ph.D at Sherbrooke University (Canada). He taught at the Mechanical Engineering Department of Sherbrooke University and previously worked for Hydro Quebec (Canada). His expertise is on mathematical modeling and numerical tools (CFD) with a large number of practical applications in applied sciences in industry. This has been recognized by publications in different international journals, presentations at international conferences and research visits to international research centers.

Pr. Abdellah ABOUABDELLAH Doctor of Applied-Science, member of the intelligent energy team, attached to laboratory of System Engineering and head of Team of Modelling, Optimization of Industrial Systems and Logistics (MOSIL) at the University IbnTofail, Kenitra, Morocco. Currently, Mr. Abouabdellah is a research professor and the coordinator of the Industrial Engineering and logistics Department at the National School of Applied Sciences of Kenitra. Mr. Abouabdellah is the author and co-author of several papers published in indexed journals. And has participated in national and international conferences. His researches concern the modeling of business processes, predictions systems and logistics.