

Renewable Energy in Morocco: Photovoltaic Water Pumping System

Sarah Abdourraziq

Sidi Mohamed Ben Abdellah University, LESSI Lab, FSDM,
REEPER Group, EST, Fez-Morocco
sarah.abdourraziq@usmba.ac.ma

Med.Amine Abdourraziq

University Mohamed V, Rabat-Morocco
med.amine.abdourrazeq@gmail.com

Abstract—Renewable energies have a major importance of Morocco's new energy strategy. The geographical location of the Kingdom promotes the development of the use of solar energy. The use of this energy reduces the dependence on imports of primary energy, meets the growing demand for water and electricity in remote areas encourages the deployment of a local industry in the renewable energy sector and minimizes carbon emissions. Indeed, given the importance of the radiation intensity received and the duration of the sunshine, the country can cover some of its solar energy needs. The use of solar energy to pump water is one of the most promising applications; this technique represents a solution wherever the grid does not exist. In this paper, we will present a presentation of photovoltaic pumping system components, and the important solar pumping projects installed in Morocco to supply water from remote areas.

Keywords—Renewable energy, Morocco, photovoltaic pumping system (PVPS), PV panels.

REFERENCES

- [1] Abdourraziq Sarah, ElBachtiriRachid, "Modeling and Simulation of photovoltaic pumping system using centrifugal pump and DC motor", Special Edition - Mediterranean Green Energy Forum 2013 (MGEF-13) : Vol.2 : pp.1-6 : mgf13s-002.
- [2] Royer, J. Djiako, T, IEPF/Université d'Ottawa/EIER/CREPA, Le pompage photovoltaïque, 1988.
- [3] Proposed article by Neil Packer, Staffordshire University, UK, in February 2011.
- [4] ESRAM, T. and P.L. Chapman, "Comparison of Photovoltaic Array Maximum Power Point Tracking Techniques", Energy Conversion, IEEE Transactions on, 2007. 22(2): p. 439-449.
- [5] Yongheng Yang, FredeBlaabjerg, "A modified P&O algorithm for single-phase PV systems based on deadbeat control", IEEE Press. 2012. p. 1-5.
- [6] Morocco 2014," International Energy Agency, 2014, <https://www.iea.org/publications/freepublications/publication/Morocco2014.pdf>.
- [7] "La loi n°58-15 amendement et complétant de la loi n° 13-09 Relative aux énergies renouvelables," Ministry of Energy, Mines, Water and Environment, <http://www.mem.gov.ma/SitePages/TestesReglementaires/loi%20n13-09ver23dec15.pdf>. 01/01/2017
- [8] "Energy & Mines: Renewable for Mines Driving Competitive, Secure and Low-Carbon Power Stations for Mines," Ministry of Energy, Mines, Water and Environment, January 28 – 29, 2016, <http://www.mem.gov.ma/SiteAssets/Discours/Discours2016/London%20speech%20English.pdf>. 06/01/2017
- [9] Articles: "Solar Water Pumping for Irrigation in Oujda, Morocco", Case Study 5/01/2013, LORENTZ.
- [10] Centre de Développement des Energies—CDER-<http://www.cder.org.ma>
- [11] L'AFD (Agence Française de Développement) Et Le Secteur De L'énergie Au Maroc. <http://www.afd.fr/home/pays/mediterranee-et-moyenorient/geo/maroc.10/10/2015>
- [12] Royaume Du Maroc Ministère De L'énergie, Des Mines, De L'eau Et De L'environnement, « Les Energies Renouvelables au Maroc: Stratégie et plan d'action », 20 novembre 2012.
- [13] Djamil Rekioua, Ernest Matagne, "Optimization of Photovoltaic Power Systems", Modelization, Simulation and Control, ISBN 978-1-4471-2403-0. 2012.
- [14] Minister of Energy, Mines, Water and Environment "<http://www.mem.gov.ma/SitePages/Default.aspx>". 04/01/2017
- [15] Ministry of Agriculture and Fisheries "<http://www.agriculture.gov.ma/>". 10/01/2017