EuroSciCon

August 13-14, 2018
Paris, France

Annual Summit on
Renewable & Sustainable Energy

Salih N Akour, Trends in Green chem 2018, Volume: 4
DOI: 10.21767/2471-9889-C1-008

PUMPED HYDROELECTRIC ENERGY STORAGE SYSTEM BY UTILIZING THE EXISTING DAMS IN JORDAN

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Renewable energy sources particularly wind energy is becoming immensely popular throughout the world. Jordan is one of the countries that are interested in increasing the integration level of the wind energy on the national electrical grid. The main drawback of wind power is its inherent variability and uncertainty of source making wind energy a difficult resource to dispatch. A Pumped Hydroelectric Energy Storage (PHES) system is considered to be an attractive alternative solution for load balancing and energy storage mainly with wind farms. The presentation will deliver novel solution for the renewable energy variability sources by utilizing the existing dams that most of them are located along the Jordan Valley as lower basin and provides candidate locations for upper pumped storage basins in the vicinity of these dams without affecting their functionality. These upper basins are semi-natural basins with least amount of construction, i.e. least construction cost. Such experience can be extended and applied to similar places worldwide. The experience of how the candidate sites are explored and analysed in the Hashemite Kingdom of Jordan where the PHES can be installed and operated in an efficient manner will be presented. A couple of detailed case study analysis will also be presented. This research is conducted in cooperation with the Jordan Valley Authority (JVA), National Power Company (NPCO) and Royal Jordanian Geographic Center (RJGC).

Biography

Salih N Akour is an Associate Professor of Mechanical Engineering at the University of Jordan since September 2015, Chairman of the Sustainable and Renewable Energy Engineering Department at University of Sharjah from September 2011 to 2015 and at Sultan Qaboos University in Oman from 2008 to 2011 and as an assistant and associate professor, Assistant Dean at the University of Jordan in Jordan from 2000 to 2008 and Director of IAESTE Jordan Office. Akour is a member of International Distinguished Scholar, Phi Kappa Phi and Golden Key Honour Societies, IAENG and Jordan Engineering Association. Also, he is a former member of ASME and SME. He is awarded in 2014 the "Asian Education Leadership Award" as Best Professor in Sustainable & Renewable Energy Engineering. Recently Akour is recognized by the Strategic Foresight Group as one the World Renowned Scholars and Thought Leaders in Renewable Energy. Dr. Akour has received his Ph.D. with honour in Mechanical Systems from University of Central Florida (UCF), USA in 2000. Akour's current fields of research include Design optimization of Mechanical Systems including Renewable Energy Systems. He has more than 30 publications in International Journals, 15 conference papers and 2 international patents. Akour is a reviewer of many international technical journals and Consultant for many national and international firms such as Lockheed Martin.

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