جامعة الموصل

كلية الإدارة والاقتصاد

تقييم بدائل صناعة الطاقة المتجددة:

دراسة ميدانية في مشروع الطاقة الكهربائية في سد الموصل

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المستخلص

ســـعى البحث الحالي إلى تقييم بدائل الطاقة الكهربائية بدلالة ابعادها (الكفاءة، الموثوقية، الصـيانة) في ميدان البحث مشـروع سـد الموصـل في محافظة نينوى، بعد تحديد مشـكلة البحث الميدانية المتمثلة في غياب مؤشـرات واضـحة لقياس تأثير تطبيق الطاقة الشـمسـية على الأداء العام لإنتاج الطاقة في مشروع سد الموصل وأعمامه كنموذج في محافظة نينوى.

وتنبثق أهمية البحث من النتائج الكمية للمقارنات التي أجراها الباحث في بدائل الطاقة (الكهرومائية – الشمسية) والتكامل بينها وتحديد مجالات القرار الخاص لكل بديل.

ولغرض الحصـــول على البيانـات والمعلومـات التي تخـدم أهداف البحـث والاجابـة عن تسـاؤلاته، فقد أُعتمد على بيانات قسـمي سـلامة السـد والتشـغيل في سـد الموصـل، فضـلاً عن المقابلات التي اجراها الباحث مع عدد من المهندســين والفنيين ذوي خبرة وكفاءة في القســمين المختارين، اذ تم اختيار مشروع سد الموصل ميداناً للبحث، لما يمتاز به موقعه و تنوع تفاصيله واهميته في خزن المياه وتوليد الطاقة ووجود خطوط نقل الطاقة الكهربائية الأسـاسـية والتي ترتبط بخطوط الطاقة مع دول الجوار.

وفي ضوء التحليل الكمي لبدائل الطاقة الكهرومائية والشمسية وصلنا الى عدد من النتائج لعل أهمها أمثلية طريقة تحويل الحمل الليلي من الطاقة التقليدية (الحرارية) الى الطاقة المخزونة في المحطات الكهرومائية، فضلاً عن إمكانية الاستغلال الأمثل لمساحات سطح البحيرة.

بموجب ذلك قدم الباحث عدداً من المقترحات لعل أهمها ضــرورة الاســتفادة من مخرجات ألواح الطاقة الشمسية الموضوعة على بحيرة السد وخزن الطاقة في المحطات الكهرومائية.

الكلمات المفتاحية: بدائل الطاقة، ألواح الطاقة الشـــمســـية، خزن الطاقة في الكهرومائيات، مشروع سد الموصل.

Abstract

The current research sought to evaluate electrical energy options in terms of their key dimensions (Efficiency, Reliability, and Maintainability) at the Mosul Dam in Nineveh Governorate. This evaluation follows the identification of a field research problem characterized by the absence of clear indicators to measure the impact of implementing renewable energy on the overall energy production performance of the Mosul Dam project.

The significance of this research stems from the quantitative results of the comparisons conducted between energy alternatives (Hydroelectric vs. Solar) and the identification of specific decision-making domains for each alternative. To obtain the data and information necessary to serve the research objectives and answer its inquiries, the study relied on data from and Operations departments at Mosul Dam. Additionally, the Dam Safety interviews were conducted with seven highly experienced and qualified engineers from these departments. The Mosul Dam project was selected as the field of study due to its diverse topography, strategic importance in Iraq, and the complexity of its components, as it serves as a primary hub for power generation linked to major transmission lines and interconnected regional power grids with neighboring countries.

Based on the quantitative analysis of hydroelectric and solar energy alternatives, several key findings were reached, most notably the optimality of shifting the night load from conventional (thermal) energy to stored energy in hydroelectric stations, as well as the potential for the optimal utilization of the reservoir's surface area. Accordingly, the researcher presented several recommendations, the most prominent of which is the necessity of utilizing the output of floating solar panels on the dam's reservoir and integrating energy storage within the hydroelectric facilities.

Keywords: Energy Alternatives, Solar Panels, Pumped-Storage, Hydroelectricity, Mosul Dam project.

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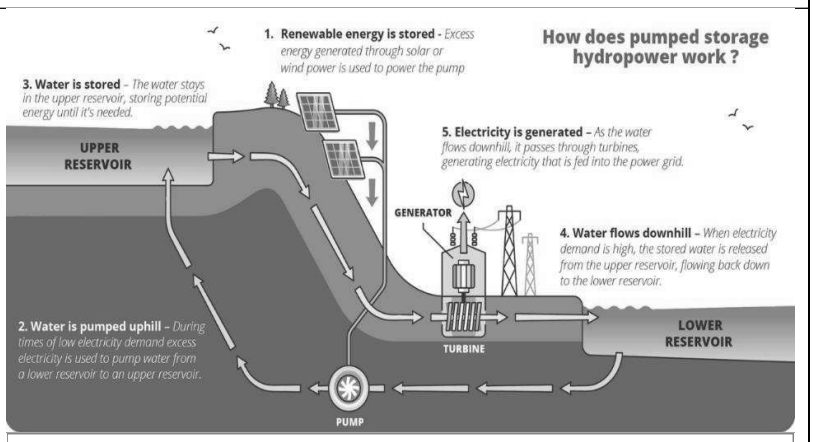
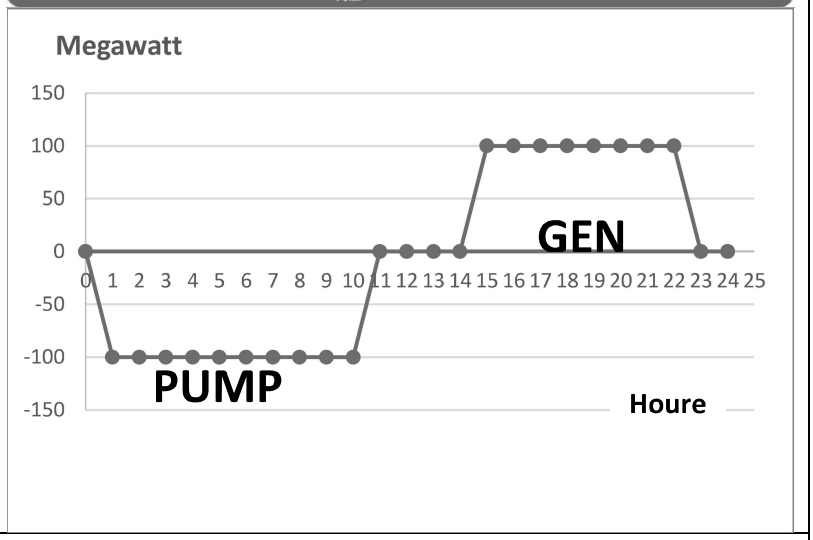
HIGHLITS	GRAPHICAL ABSTRACT
Evaluating Renewable Energy Industry Alternatives: A Field Study of the Mosul Dam Power Project. Shifting the night load from thermal and solar energy to stored energy in hydroelectric stations. Utilizing the output of floating solar panels on the dam's reservoir and integrating energy storage within the hydroelectric facilities. This search aims to supply nighttime loads in big cities with renewable .energy	 

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Evaluating Renewable Energy Industry Alternatives: A Field Study of the Mosul Dam Power Project

A higher diploma research presented to the Council of the College of Administration and Economics at the University of Mosul. It is part of the requirements for obtaining the Higher Diploma in Industrial Management.

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