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STUDY THE EFFECT OF ELECTRICAL CONNECTION BETWEEN COUNTRIES ON FREQUENCY STABILITY BEHAVIOR IN SYRIA

Valeev.I.M[1], Alzakkar.A.M[2]
[1]Doctor of Technical Sciences, professor, ilgizvaleev@mail.yandex.ru.
[2]Student, ahmadalzakkar86@gmail.com
[1,2] Kazan State Power Engineering University, Kazan, Russia

Based on the importance of electrical connections to maintain the stability of the frequency achieved by the project of eight connections of Arab energy systems, the article will present a number of simulations in the Syrian network for 2018 using (PSS / E) and using this program to compare data with the results of real situations through several cases of power outages that occurred in the energy system of Syria.

Keywords: Deir Ali, electrical connection, frequency, stability.

Over the past two decades, Arab countries have spent more than 9 billion dollars on network connection projects for electric networks. To date, 13 projects have been completed. Currently, two more projects are being implemented, which should be completed in 2018. A number of connected projects that have been commissioned have reached an acceptable portion of the expected benefits.The aim of this study is to demonstrate the importance of electrical connections in maintaining frequency stability in case of an emergency in Syria.This project involves the connection of energy systems in Egypt, Iraq, Jordan, Lebanon, Libya, Palestine, Syria and Turkey, as shown in figure (1).This project is now known as (EIJLLPST), which represents the first letter of each of the eight countries [2].

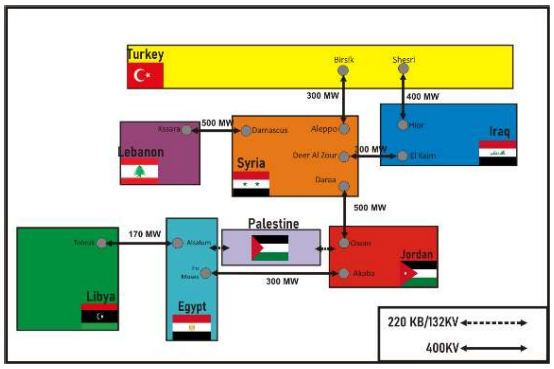

Fig.1.The Diagram of electric connections under project (EIJLLPST)

The program (PSS/E)is used by the Ministry of Electricity to analyze the work of the Syrian electricity network [5].In this study, we will explain the effect of electrical coupling in increasing frequency stability [3],[4] by comparing:

Frequency stability of an electrical system simulates a Syrian electrical system (independent network):Suppose that a malfunction at Deir Ali station for example, malfunction in the gas pipelines supplying the station - cut them off from work. This

case is represented by the program (PSS / E), and the resulting curve shown in Fig. 2, shows the frequency behavior in the event of a failure at Deir Ali station and their deviation from operation.

It is seen that the mains frequency has fallen below the value (47.5) Hz, which is the limit value and separates the equipment and digital-relay protection systems, and thus, network failure and power interruption. The frequency drop was significant due to the large proportion and increase in load from generation.

Frequency stability of the electrical system simulates the Syrian electrical system with the electrical connection{project(EIJLLPST)}: We return to the same previous parts with an electrical connection and produce with us the curve shown in Fig.3. compared with Fig.2. we find that the decrease in the frequency curve is less if the activation of the electrical connection due to the import capacities of neighboring countries contributed covering a significant part of the generation deficit resulting from the separation of Deir Ali generating station, 48.2 Hz is greater than the value at which all electrical protection is separated by 47.5 Hz. Thus, the frequency of the electrical connection is prevented from falling to undesirable values and helps to stabilize the frequency to values that exceed threshold values.

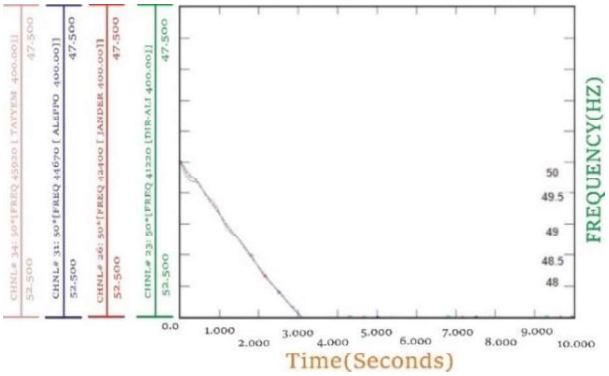

Fig.2.Frequency behavior in the event of a malfunction **without** the electrical connection

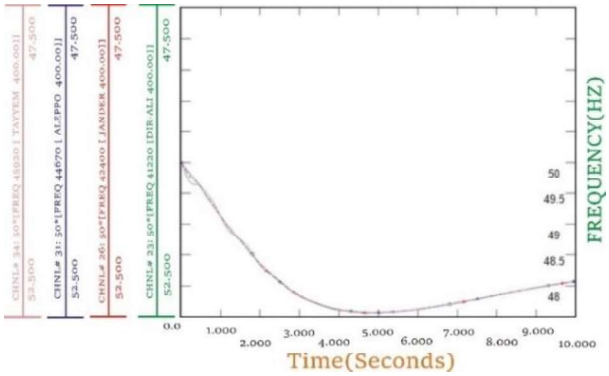

Fig.3.Frequency behavior in the event of a malfunction **with** the electrical connection

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