

COMPARATIVE ASSESSMENT OF USING DIFFERENT FACTS TECHNIQUES TO ENHANCE POWER TRANSMISSION CAPABILITY OF LARGE INTERCONNECTING LINKS

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The continuous increase in power transmission over long distances along with economical and environmental constraints associated with building new lines such as rights of way; necessitate the increasing of the power transmission capability of the existing system to balance the increasing power demand. This paper assesses the use of two different types of FACTS techniques to increase the power transmission capability of long distance interconnection links. High Voltage Direct Current (HVDC) system is one of these techniques while Thyristor Controlled Series Compensation (TCSC) is the other. The paper provides a basis feasibility study to decide which technique is the optimum to be used for a particular case. This decision is based upon compromising between the advantages and disadvantages of each technique based on system requirements, such as amount of power to be transmitted, interconnection link distance, geographical circumstances, switchgear & protection system complexity, power quality aspects, cost and other requirements. Also, a case study of the ongoing project for interconnecting the electrical networks of Kingdom of Saudi Arabia (KSA) and Arab Republic of Egypt (ARE) is discussed to verify the study. Finally, a sequential flow chart is constructed as a guideline to determine the optimum technique for a given system requirements.

**This paper was presented at SASG2012*



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