

**FEASIBILITY STUDY OF FRACTIONAL FREQUENCY  
TRANSMISSION SYSTEM APPLIED TO POWER SYSTEM**

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**UNIVERSITI TEKNOLOGI MARA**  
**MALAYSIA**



**MUHAMMAD ADHA BIN MOHD MANSORI**

**2010991381**

**Faculty of Electrical Engineering**

**UNIVERSITI TEKNOLOGI MARA**

**40450 SHAH ALAM, SELANGOR DARUL EHSAN**

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## ABSTRACT

Transmission lines play a crucial role in power transfer system. A good transmission line system is a transmission line with high power efficiency with very minimum losses. There are many methods that can be used for power transmission line efficiency and one of the methods is fractional frequency transmission system (FFTS). This paper presents the fractional frequency transmission system (FFTS) applied to the power system. A lower frequency is used in order to reduce the reactance of an AC transmission system that causes the transmission capabilities to increase to several folds. This system can be an alternative to the flexible AC transmission system (FACTS), high-voltage (HV) or High Voltage Direct Current (HVDC) to deliver better power transfer capability [1]. It can also improve the voltage profile of the transmission lines. In this paper, two studies are presented; the first part presents the performance analysis of power transfer capability, efficiency and regulation. The simulation carried out using MATLAB programming. The second part presents the design parameter of a transformer when FFTS is used. Synthesis approach is used for evaluation of design parameters.

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