A COMPARISON ANALYSIS OF VOLTAGE SAG AND TRANSIENT USING SHORT TIME FOURIER TRANSFORM, WAVELET AND S-TRANSFORM

This thesis is presented in partial fulfillment for the award of the

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FACULTY OF ELECTRICAL ENGINEERING

UNIVERSITI TEKNOLOGI MARA

MALAYSIA

FIFI NATASYA BINTI HJ. SHAARI

2011812276

FACULTY OF ELECTRICAL ENGINEERING

UNIVERSITI TEKNOLOGI MARA

40450 SHAH ALAM,

SELANGOR

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ABSTRACT

This thesis presents a comparison of technique in extracting the features for voltage sag and transients in distribution systems using Short Time Fourier Transform (STFT), Wavelet Transform and S-Transform. Different data of voltage sag and transient are taken from Tenaga Nasional Berhad Distribution (TNB) Malaysia. This data is further analyze using the Matlab. The study features involves specifically in non-stationary signals. Previous tools like Fourier Transform have only frequency resolution resulting a lower level of effectiveness to the disturbance detection procedure. Therefore, a comparison is made between those recent techniques to investigate which techniques can identify the problems interactively when large datasets are applied.

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CHAPTER 1

INTRODUCTION

1.1 BACKGROUND OF STUDY

Electrical power is one of the dominant factors in our society. They become major concern regarding its quality and stability. Optimum power quality results in significant increase in productivity, efficiency and profitability [1]. In recent years, there some system has been developed by power utility companies to manage power generated to the transmission line in primary power distribution system. However, this analysing system are expensive, complex to be used, and fail to be applied to analyse power that is distributed to the consumer in industrial, commercial, or residential sites through the distribution system.

In Malaysia, fundamental frequency over this whole country in power distribution system is about 50 Hz. There are many factors lead to fundamental frequency distortion, such as environmental factors and even from power distribution system itself. Some of the complex circuitry or equipment such as controllers cannot react positively if there is any irregular sign introduced in the system. This situation tremendously affect the power quality received by the consumer.