

RESEARCH ON VOLTAGE SAG BEHAVIOUR AND ITS EFFECT ON LOAD

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**AZRIYANI BT MD YUSOFF
2004659469
Faculty of Electrical Engineering
UNIVERSITI TEKNOLOGI MARA
40450 Shah Alam, Malaysia
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ABSTRACT

This paper presents about voltage sag characteristic and behaviors through different types of experiment and data collection. Voltage sags is one of the interruption that reduce power quality performance. According to International Electrotechnical Commission (IEC) , voltage dip is sudden reduction in the supply voltage to a value from 90% and 1% of the declared voltage and it will be followed by a recovery between 10ms and 1 minute later. While for Institute of Electrical and Electronics Engineers (IEEE) Standard 1366, a voltage drop will be called sag only if sag voltage is between 10% to 90% of the nominal voltage. This research is useful to planners or design engineer towards planning and development to consider the most efficient way to reduce voltage sags.

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CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

The quality of electricity service required by customers from all classes is increasing. This requirement for increasing quality is due to many factors, including increasing sensitivity of devices used by customers and their awareness of the impact of small variations in the quality of the electricity supply. Voltage variations are caused by fault conditions and the energisation of large loads, where high starting currents are involved. The faults can cause a ‘drop’, ‘rise’, and ‘supply void’ in the supply voltage and are also known as sag, swell and interruptions respectively. One of the failures of equipment to perform is due to sudden increment of load which contributes to voltage sag or known as voltage dips. Voltage sag is one of the interruptions that reduce power quality performance. It is normally caused by system faults energisation of heavy loads and starting of large motor.

According to International Electrotechnical Commission (IEC) voltage dip is sudden reduction in the supply voltage to a value from 90% and 1% of the declared voltage. It will be followed by a recovery between 10ms and 1 minute later. Following the Institute of Electrical and Electronics Engineers (IEEE) Standard 1366, a voltage drop will be called sag only if sag voltage is between 10% to 90% of the nominal voltage.

Voltage sag or voltage dip is a reduction in the supply of magnitude followed by a voltage recovery after a short period of time. [1] This situation will last from a cycle to a second or tens of milliseconds to hundreds milliseconds. Electronics based process control system is quite sensitive to voltage fluctuations because of their component are lack tolerant of power system disturbances. If voltage sag