

INVESTIGATION OF VOLTAGE SAG PROBLEM ON SENSITIVE
LOAD USING RIDE THROUGH SIMULATION BASED MITIGATION
EQUIPMENT

AZURA BINTI SAMREK

FACULTY OF ELECTRICAL ENGINEERING
UNIVERSITY TEKNOLOGI MARA
MALAYSIA

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Abstract

This report focused on voltage sag happened to industrial consumer, which Compressor proven as sensitive equipment because the load affected when voltage sag event occurred. The Ride Through Simulation tested on the 2 points at the Compressor; Control Circuit and Starter Circuit. Compressor is main equipment to the operation of manufacturing industry. By using Ride Through Simulation Technique, the Compressor (before installation Minidisc) detected and proved that the Compressor as sensitive equipment based on MS IEC 61000-4-34 standard. In this work, the Minidisc was used as mitigation equipment to Compressor to improve the Immunity Level of Compressor. This is then proving by Ride Through Simulation results. Therefore, the risk caused by voltage sags could be minimized.

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CHAPTER 1

INTRODUCTION

1.1 BACKGROUND OF THE STUDY

In this era of globalization and technology, voltage sags is a major problem for industrial consumer. A voltage sag as defined by IEEE Standard 1159-1995, IEEE Recommended Practice for Monitoring Electric Power Quality, as a sudden reduction in a voltage to a value between 90%to 10% of nominal voltage, for a duration of 10ms (1/2 cycle) to 60 second [10]. TNB made great improvement in the grid system in Malaysia to ensure that all industrial consumers do not has power failure as voltage sags. There are three main causes of voltage sags: starting of large motor loads either on the affected site or by a consumer on the same circuit, faults on other branches of the supply network, and faults in the internal supply scheme of the customer's installation [1]-[9].

Voltage sags is a major problem for industrial consumers because it can have an impact on quality product, production shortage, unexplained reset, machine failure, and loss data [9]. When the voltage sags occurred, TNB and industrial consumer have to bear substantial losses. Therefore, the proposed methodology proposed the Ride Through Simulation to investigate and identify a sensitive load to a voltage sags. Then, based MS