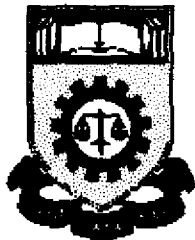


CHARACTERIZATION OF PULSE FORMING NETWORKS

**Project ilmiah is presented fulfillment for the award of the
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ABSTRACT

Pulse Power Technology is another subdivision being embarked recently. This field is very synonym to High Voltage Engineering, which deals with thousands of volt in small range of current. The generation of high voltage impulse is a prime requirement prior to the actual testing process. Impulse signal could be generated using solid-state devices and even to the application of coaxial cable, which is capable in producing high voltage impulse. This set-up is widely known as Pulse Forming Networks (PFN).

This thesis presents the characterization of PFN model using coaxial cable, simulation through Microcap5 and experimentation of various models. Various construction of PFN were carried out such as Single Pulse Forming Line, Open Transmission Line and Stacked-Blumlein Generator. Results obtained from the laboratory experiment indicated that an agreement with the theoretical prediction is accomplished.

TABLE OF CONTENTS

CHAPTER	DESCRIPTION	PAGE
1.	INTRODUCTION	1
2.	THEORETICAL BACKGROUND	3
	2.1 Introduction	3
	2.2 Single Pulse Forming Line	4
	2.3 Open Transmission Line	7
3.	STACKED-BLUMLEIN HV PULSE GENERATOR	9
	3.1 Introduction	9
	3.2 Coaxial-Blumlein layout and construction	9
	3.3 Inverting Blumlein	10
	3.4 Non-inverting Blumlein	12
	3.5 Inverting/non-inverting Blumlein	13
4.	LUMPED COMPONENTS	15
	4.1 Introduction	15
	4.2 LC Ladder Networks	15
	4.3 Type-C Guillemin Networks	17
	4.4 Other Guillemin Networks	23
5.	SIMULATION	25
	5.1 Introduction	25
	5.2 Simulation	25

CHAPTER 1

INTRODUCTION

1.1 Introduction

The major generator components of any pulse system normally include a primary energy store, a PFN, a switching system and a load. The PFN can be configured in many ways and is optimized for voltage and current measurement. The PFN is generally the most important generator component, which will dictate the system output characteristic. The most common generator system uses transmission line in the PFN stage.

Researchers, engineers and even academicians are always sensitive to the latest advancement in this field. Previous work done by Shinji Ibuka et al [3] and S M Turnbull et al [4] is an indication that the pulse power and high voltage have very close relationship

Therefore, the main interest of this project is to investigate and characterize the response of PFN. Attention is given in the voltage magnitude and the duration time of the pulse.

This thesis describes the characterization of a PFN that use coaxial cable as the primary component.

The use of coaxial cable in impulse voltage generation is not new. C Somerville et al [1] reported the use of coaxial cable to construct high voltage pulse generator known as Blumlein generator.