

**THE DEVELOPMENT OF D.C CHARGING UNIT FOR A THREE STAGE
MARX GENERATOR**

Thesis is presented to fulfill the requirement
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ABSTRACT

In this project , the idea is to get the impulse voltages from Marx Generators (3 stages). Input for this Marx Generator is 100 kV dc and theoretically it is expected to have an output of 300 kV. Cockcroft Walton technique was used as the dc charging unit to produce 100 kV.

Impulse voltage are required for tests on high voltage equipment to simulate stresses created by lightning and switching phenomena, as well as for fundamental research in breakdown mechanisms

The scope of works to be covered in this project are ;

- i. Design of Cockcroft Walton as the d.c. charging unit.
- ii. Design of three stage Marx Generator
- iii. Incorporating the Cockcroft Walton circuit and Marx Generator.

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1.0 INTRODUCTION

Generally the available high voltage generators are applied in routine laboratories ; they are used for testing equipment such as transformers , bushing , cables ,capacitor , switch gear , etc. The test should confirm the efficiency and reliability of the products and therefore the high voltage testing equipment is required to investigate the insulation behaviour under all conditions which the apparatus is likely to encounter. The amplitudes and type of the test voltage , which are always higher than the normal or rated voltage of the apparatus under test , are in general prescribed by national or international recommendations and therefore there is not much freedom in the selection of the high voltage testing equipment.

Higher voltages might be necessary to determine the factor of safety over the prospective working condition and to ensure that the working margin is neither too high nor too low. Most of the high voltage generator circuit can be changed to increase the output voltage level , if the original circuit was properly. Therefore , even the selection of routine testing equipment should always consider a future extension of the testing capabilities.