

HIGHER TECHNICAL INSTITUTE

ELECTRICAL ENGINEERING DEPARTMENT

DIPLOMA PROJECT

DEVELOPMENT OF A MONITORING UNIT

FOR AN A. C. GENERATOR

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BY: GIOVANNI ANTONIS

JUNE 1997

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**ELECTRICAL ENGINEERING DEPARTMENT**

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UNIT FOR AN A.C. GENERATOR**

**E-1103**

**GIOVANNI ANTONIS**

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A.C. GENERATOR**

Designed by

GIOVANNI ANTONIS

This Diploma Project submitted in partial fulfilment  
of the requirements for the award of the diploma  
of Technical Engineering of HTI  
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Project Supervisor: Mr. S. Hadjioannou

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To my family for their love and support.

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# **INTRODUCTION**

## INTRODUCTION

The objectives of this diploma project, as proposed by the Higher Technical Institute, was to design, construct and test an electronic monitoring unit for an ac generator.

This unit consist of a digital frequency meter, a voltmeter and a battery charger. All the parts was mounted on a suitable and safe board.

The main part of this monitoring unit is the frequency meter which is based on a digital counter. This implies that the generator output is converted into TTL compatible pulses. The generator which the unit will monitor is 240V , 50Hz. So the meter will be used to measures frequencies of about 50Hz only. The frequency meter was design and adjusted to measure frequencies up to 999 HZ. The frequency meter uses a 555 timer I.C. as an oscillator, and we can change the range of the meter by changing the frequency of the oscillator. It also uses 7490 I.C. as a decade divider and the same I.C. is used as a decade counter. 7473 is used as a flip-flop and as a positive transition triggered monostable the 74121 is used. 7495 is used as memory and 7447 as a decoder.

All the units is supplied from a 12V battery source. This battery is recharged when the generator starts.

A voltmeter is also available on the board in order to monitor the output voltage of the generator.

The block diagram of the monitoring unit for the a.c. generator is shown in fig.1.