

HIGHER TECHNICAL INSTITUTE
ELECTRICAL ENGINEERING DEPARTMENT

DIPLOMA PROJECT

**PROTECTION OF ELECTRICAL EQUIPMENT
IN EAC SYSTEM**

by
ZANDIS KYPROS

E 1106
JUNE 1997

HIGHER TECHNICAL INSTITUTE

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HIGHER TECHNICAL INSTITUTE	PROJECT NO 2696
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To my family and friends

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PROTECTION OF ELECTRICAL EQUIPMENT IN EAC SYSTEM

Project report submitted by:

ZANDIS KYPROS

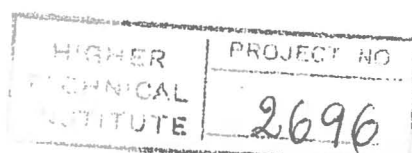
**In part satisfaction of the award of
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ABSTRACT

PROTECTION OF ELECTRICAL EQUIPMENT IN EAC SYSTEM

This project deals with the protection of the transmission and Distribution System of the Electricity Authority of Cyprus. The system has to be protected from internal and external disturbances so as to minimise the damages to equipment and to save the public from exposed high voltages.

The project studies EAC's policy on protection and schemes are adopted followed by a design example on the protection of a typical transmission/distribution substation.

INTRODUCTION

Electricity has become, during the last few decades, one of the most important and vital forms of energy. It is extensively used in offering lighting energy, heating energy, energy for electrical machines, and even entertainment through television or their means of massive or individual entertainment. The use of electricity is in fact much more necessary. Today, the technological progress is developing so rapidly, that the need for electricity is becoming more and more vital for society. The increase of population and as a result the building up of more resident units, the erection of many industrial zones with most of them having machines consuming large amounts of current and many other factors classifies electricity as one of the most important sources of energy world-wide. It can undoubtedly be said that humanity is so dependent on electricity and its uses, that today life cannot be imagined without it.

That's the reason, why an electrical system of generation, transmission and distribution must be designed in such a way that optimum conditions of supply will exist at all times, no matter what. When a fault occurs at any part of the network, protection devices must be energised so, to isolate the fault at the achieved minimum area while the supply should not be interrupted at any other part of the network than in the faulty one. Furthermore, the part of the circuit that was affected by the fault, should not be hardly damaged and then destroyed and become unusable, but on the other hand it should become re-effective after normal conditions are restored.

In order to achieve this purpose, protective devices called circuit breakers are needed to be placed at various key points of the system which will isolate the faulty part when a signal is received from the protective relays which are the responsible devices to detect the fault current.

The protective relays should be so adjusted, so as to minimise the fault in such a way that no permanent damage is done in the circuit due to excessive current that the cables will not be able to withstand.

PROTECTION OF ELECTRICAL EQUIPMENT
IN THE SYSTEM

CHAPTER

PRESENTATION OF THE FACTS
GENERAL PRINCIPLES OF PROTECTION
OF TRANSMISSION NETWORK