HIGHER TECHNICAL INSTITUTE

ELECTRICAL ENGINEERING COURSE

DIPLOMA PROJECT

CONTROL OF A GENERATOR SET USING PROGRAMMABLE LOGIC CONTROLLERS

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Introduction

The main purpose of this project is to create a program in order to control a generator set. First we must make clear that saying generator set we mean a diesel engine working, giving mechanical power to a common generator. This generator converts this mechanical power into electrical giving as final result the production of electricity.

So having this general view of the system we can see that there are two sub-systems which must be controlled. The first is the mechanical part, the diesel engine working to rotate the generator. Factors which may affect the operation of the engine are high engine temperature, low oil pressure engine's battery charing level, overspeed and the amount of fuel running to the engine.

The other part of the system is the electrical and the main factors which must be controlled are: Continuity of Load supply and overload of each phase.

Having in mind all these factors we must provide the necesary control in order to prevent any engine damage and give the maximum security to the operator and the overall system. The operator must have a view of what's happening during any stage of the operation, through LED's representing all the fault condition which may be occur.

Another thing which must be considered as necessary is the separation of the operating cycle into starting sequence, running sequence and stopping sequence.

During the starting sequence we must consider the time delay the starting motor needs to start the engine and care must be taken in case the engine fail to start.

We must also take care so as after a specific speed limit the starter motor to be discounted since the engine had started and the starter motor can not follow the speed of the engine's axes.

During the running sequence all the mechanical and electrical controls must be engergized. We must also give some time delay before we onload the engine. This of course is a disadvantage since in case of a main failure we must wait at

LIST OF CONTENTS