

**LIGHTNING RISK ASSESSMENT FOR BUILDING USING
INTELLIGENT SMART SYSTEM**

This thesis is presented in partial fulfilment for the award of
Bachelor of Electrical Engineering (Honours)
UNIVERSITI TEKNOLOGI MARA



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ACKNOWLEDGEMENT

Alhamdulillah. Praise to ALLAH S.W.T for giving me strength and health to complete this project successfully. First of all, I would like to take this opportunity to express my highest appreciation to my project supervisor, Associate Professor Dr. Zuhaina Hj. Zakaria for her ideas, suggestion, advices and guidance until the completion of this final year project.

I would like to extend my deepest thanks to my family especially my parents for their moral support and encouragement through out the year upon completion of my Bachelor Degree. Not forgotten, my friends who have contribute information, suggestions, time and effort directly or indirectly in this progression of this project. Thanks to all those who have assisted in this project through supplying the related data, provides the application software and technical assistance during completion of this project. May ALLAH S.W.T bless you all. Amin.

ABSTRACT

Lightning is a natural hazard which occurs during thunderstorm. Direct and indirect lightning strikes can bring harm, injury or death to humans. It is important to ensure all electrical components and buildings are being protected with the suitable protection from direct and indirect lightning strikes hazards. The objective of this work is to provide a risk factor assessment calculations graphical user interface to ensure whether buildings required protections from the direct and indirect lightning strikes. The calculations of risk assessment will be based on BS6651:1999 against direct and indirect lightning strikes. The risk assessment calculated then will determine whether certain buildings need protection against direct lightning strikes or indirect lightning strikes or both. Types of protection were discussed to give an idea what type of protections can be installed to protect humans, buildings and equipments from the hazards of direct and indirect lightning strikes.

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CHAPTER 1

INTRODUCTION

1.0 Introduction

The famous Benjamin Franklin experiment on lightning has made a marvellous breakthrough in the world of electricity. The famous key that attached to kite experiment proved that lightning is an electrical in nature and can travel from one point to another. More than a decade extensive work and researches have been done in order to fully understand lightning. Despite that lightning is beautiful in the theory of science it brings more harm than advantage to human beings. Tropical climate countries have dealt with natural disaster associated with lightning hugely compared to none tropical climate country. Even though that the fact that humans can't predict the occurrences of lightning, humans have provided a way to protect their lives from the danger of lightning.

Due to the rapid increase of buildings in tropical climate countries, many lives can be endangered by lightning even when people are taking shelter on their own residential houses. Maybe people think that during lightning or thunder storm occur house are the best place to hide, but indeed they are wrong. Buildings that are not equipped with necessary protection from lightning are not safe at all. Certain buildings need proper risk assessment to ensure the correct types of protection scheme are being installed. Moreover risk assessment calculations are time consuming as it involves with a lot of rules and regulations. It is easier if risk assessment calculations can be done accurately and fast. With the correct type of risk assessment calculations and protection scheme, human lives can be spared and cost of installation of lightning protection scheme can be minimize and optimized.