

**EVALUATION OF RESIDENTIAL SPRINKLER SYSTEM IN THE KLANG
VALLEY**

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Thesis Submitted in Fulfillment of the Requirements for the
Degree of Masters Science in the Faculty of Engineering
Universiti Putra Malaysia

November 1999

FK 1999 44

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Acknowledgements

The author wishes to extend a great thank you to the supervisors of this project paper Dr. Nor Mariah Adam and Ir. Fuad Abas, without whom this would not be possible.



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ABSTRACT

Fire awareness in residential units in Malaysia remains low compared to developed countries. Fire safety awareness is not improved through campaigns not other methods, and as such, is expected to remain low.

This study aims to gauge the level of fire safety awareness through a survey in the Klang Valley. In addition, the main focus of study is on the effectiveness of residential sprinkler systems and how these systems can be implemented in Malaysia. A specific design will be effected for the HRC housing project undertaken by Universiti Putra Malaysia.

The study has concluded that fire safety awareness in residential units in Malaysia. This is based on the incidences of smoke detector usage, sprinkler system usage and evacuation plans in the event of fires. Both smoke detector usage and sprinkler systems in residential units are proven to reduce the fatality rate when a fire does break out. As such, implementation of these systems can significantly improve the life safety from fire of Malaysian homes. Unfortunately, the costs of fire protection systems in Malaysia can be prohibitive, and potential cost savings from reduction in insurance premiums are unlikely to be able to offset the initial investment required.

The design developed for the HRC houses to be built by Universiti Putra Malaysia can incorporate residential sprinklers and smoke detectors to improve fire

safety. Realisation of the entire fire strategy and design concept is however not done yet, especially as to the siting of the water storage requirements.



ABSTRAK

Kesedaran tentang kebakaran rumah di negara Malaysia masih kurang berbanding dengan negara-negara yang telah membangun. Kesedaran ini dijangka akan kekal di tahap yang rendah kerana kurang disebarkan melalui kempen-kempen ataupun cara lain.

Laporan ini bertujuan untuk menganggar tahap kesedaran orang ramai melalui peninjauan yang telah dibuat di sekitar Lembah Klang. Tujuan utama laporan ini adalah untuk mengkaji keberkesanan sistem pemercik automatik dalam rumah kediaman serta cara untuk melaksanakan sistem ini di negara Malaysia. Satu rekabentuk pemercik untuk rumah teres telah dibuat untuk rumah HRC Universiti Putra Malaysia.

Kajian mendapati tahap kesedaran tentang pencegahan kebakaran dalam rumah kediaman di Malaysia memang rendah. Kedua-dua pengesan asap dan penyembur automatik telah dibuktikan boleh mengurangkan kadar kematian sekiranya berlaku kebakaran. Oleh sebab itu, pelaksanaan sistem tersebut boleh memperbaiki tahap keselamatan dalam rumah kediaman. Walaupun begitu, pembelanjaan untuk pelaksanaan tersebut kurang menggalakan kerana kos awalan yang tinggi.

CHAPTER 1

INTRODUCTION

Losses of life due to fire incidents has always occurred in every part of the world. Disasters caused by the unchecked powers of heat, fuel and oxygen can be found throughout history, like the burning of Rome (AD 64), and up to more recent times, such as the Cocoanut Grove night club fire (1942, Boston, US) in which 492 people were killed. Locally, the explosion and subsequent fire at the Bright Sparklers fireworks factory in Sungai Buloh (1991) resulted in over twenty casualties and a public enquiry.

What is less known perhaps, is the losses occurring in residential units. In the US, due attention was given after a report published by the Presidential Commission on Fire Prevention and Control in 1973 indicated that a majority of fire deaths occur in residential occupancies. In Malaysia, fires in residential occupancies registered the highest number of occurrences, some 7122 cases based on 1990 - 1997 figures [1]. This is significantly higher than fire incidences in other occupancies, such as offices (589 incidents) and shops (2154 incidents) for the same period.

The severity of the problem in the US has led to the development of additional codes and standards by various organisations such as the National Fire Protection Association (NFPA) to address the problem directly. Codes and standards stressing life safety for homes were developed. In addition to the use of smoke detectors to enable the

early detection of fires and hence increase the tenable time for the tenants to exit, sprinklers were also introduced in residential homes. (NFPA 13D)

STATEMENT OF PROBLEM

The residential fire problem in Malaysia will only grow with the rapid industrialisation process that the country is undergoing, if no steps are taken to address the issue. Current legislation and existing building codes offer only requirements in the form of passive fire protection for residential units, and there are no requirements for active type fire protection system.(e.g. smoke detectors, sprinkler systems, etc.)

Malaysia's burgeoning population is also expected to place greater strains on the fire fighting and response capabilities now available. The rapid creation of new suburbs and residential developments means that more resources are required to increase fire stations and fire fighting personnel. Coupled with the population growth, economic growth in recent years has resulted in increased traffic congestion. These factors, when combined can lead to longer response time by the fire brigade to tackle fire incidents.

OBJECTIVE OF THIS STUDY

The objective of this study is to gauge the fire safety awareness levels among residents in Malaysia.

This study will look in particular the possibility of implementing residential sprinkler systems as a possible means to address the issue of fire safety in residential units. Various factors such as cost of implementation, design criteria, implementation problems, etc. will be investigated.

In addition, this study intend to look at possible modifications of residential sprinkler systems to suit the Malaysian condition. Examples of these include climate (temperature variations, humidity), sources of water supply and reliability of water supply.

SCOPE OF THIS STUDY

This study is limited to gauging the general public awareness in terms of life safety in residential units only. No correlation is however attempted for data obtained to be applied to determine the fire safety awareness levels in general. The measurement of fire safety awareness will also be based on easily quantifiable values. This is to reduce

uncertainties and ambiguity when analysis of the collected is performed, especially in the processing of human opinion.

Baseline requirements for fire safety will be obtained through interpretation of the various codes and standards developed both in Malaysia and elsewhere. The developments of these codes and standards will be investigated, as well as the effectiveness and success after implementation. The tracking of these successes will be based on current data collected by various bodies, both governmental and non-governmental.

The scope of investigation of this study will focus on the use of residential sprinkler systems as a possible means to improve life safety. Smoke detector usage will also be considered as part of an overall fire protection strategy.

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