CHAPTER 3

RESEARCH METHODOLOGY

3.1 INTRODUCTION

This chapter introduces the research methodology used for this study and how it has guided data collection and analysis of data. Basically, this chapter provides the information regarding the methods that were used during data collection. Decide which step or method to be taken can help to ensure that the study is on the right path.

3.2 RESEARCH DESIGN

Collection techniques are essential aspects to be considered during study. Data collection is a method which is the information related to the study is gathered by suitable mediums. The types of data are basically classified on the basis of their collection methods and their characteristics. There are two types of data which are primary and secondary data. Primary data refer to the data that is collected first hand by researcher without relying on any kind of pre-researched information. The primary data collection technique use in this study is simulation. While for secondary data refer to the data which is collected from other means which is instead of the researcher. Besides, secondary data is information that has been gathered by researchers from other book, article, journal, website and many more.

The overall process of this study was summarized on a flow chart chart below starting with the preparing of materials that will be used in combustion till the process of report finding will be showed in the Figure 3.1.
According to the process flow chart in Figure 3.1, it shows the overall process of this study. The first step is preparing the materials for combustion. The materials used are plastics, wood, paper, and mix of all these three materials. The materials are collected by collect the recycle materials. Plastic bottles have been collected from student’s hostel in Universiti Malaysia Pahang. Wood have been collected from the furniture that has been damaged in the student’s hostel in Universiti Malaysia Pahang. The paper and recycle boxes are collected from retail outlets in the Universiti Malaysia Pahang.

Second step in this study is combust the materials in Fire Chamber with same quantities for each of materials. Data will be collect in the Central Fire Detection and Execution System Software (C-FIDES). Next is the analysis and interpret the data collected from C-FIDES. The data is presented in graph form. The graph pattern of each combustion of materials are different. Last but not least is completing the report findings.
3.3 DATA COLLECTION TECHNIQUE

Data collection is an important aspect of any type of research study. Proper selection, training, supervision, and evaluation of the field force helps minimize data-collection errors. Inaccurate data collection can impact the results of a study and ultimately lead to invalid results. The data collection used in this study is combustion simulation which involved designing a model of a system to carry out the combustion of materials in the simulator. The model enable to show how an actual activity was perform under different conditions.

3.3.1 Fire Detection and Supression Simulator (Comprehensive Instrumented Type), MODEL FDSS-CI

Fire Detection and Supression Simulator (Comprehensive Instrumented Type), Model FDSS-CI is an all-inclusive, multi purpose and user friendly solution for fire related studies. Model FDSS-CI is made of high quality 3 inter-connected chamber and integrated with Thermocouple, Smoke Detector, and Control Room-Equipped with sprinkler and connected to 5 through run pipers with each carrying water, innert gas, dry powder, carbon dioxide and foam.

Model FDSS-CI able to stimulate Fire Detection and Supression system parameters governing the actual fire conditions. All these parameters will be linked to the Central Fire Detection and Execution System Software (C-FIDES) and i3DAQ Data Logger for continuous monitoring and data recording of temperature, humidity, pressure and flame.

The specific features of this Model FDSS-CI is a 3000 ft. controlled conditions simulator, where the researcher can get familiar with the instrumentation used for the assessment of the fire conditions such as air temperature, wind speed, humidity and gas contents. The Model FDSS-CI also provide the Dedicated Control Room with overall size is 8’ width × 12’ length × 8’ height. The combustion of materials take place in Chamber 1. Figure 3.2 and Figure 3.3 shows the layout of Chamber.