CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

Urbanization and socio-economic are among the factors that prompt to the invention of interlocking block or dry masonry stack. In Africa, interlocking block was invented to solve the housing problem due to the rise in costs of land and building materials while in Thailand, interlocking block was developed to reduce the usage of timber.

Interlocking block reduces the usage of industrial products like cement and relies on local resources. It is considered to an effective and environmental friendly technology because it consumes less production energy, reduces deforestation, decreases the utilization of non-renewable resources and produces less waste from construction process.
1.2 PROBLEM STATEMENT

Wall is one of the main components in construction of the building. Wall will transfer the load from above such as upper floor and roof truss and transfer it to the foundation below the ground. Wall also acts as a rain control layer, an air control layer, a vapor control layer and a thermal control layer. In some countries especially cold climate countries in North America and Europe, wall with insulation materials was built to give some heat during the winter. Heat will always flow from a warm area to a cold one. In winter, the colder it is outside, the faster heat from the house will escape into the surrounding air. Thermal resistance is one of the main aspects in construction of houses. Builders are finding methods to insulate the wall rather than using the conventional way.

Due to global warming, people today prefer to use air conditioner in their house. The usage of air conditioner is one the main factor contributes to the global warming. Although there are energy efficient air conditioners, not all people can’t afford to buy it. Hence, this study will investigate the role of infill in retaining heat especially in the wall.

1.3 OBJECTIVES

The objectives of this proposed topic are as follows:

i. To determine the compressive strength of the blocks

ii. To determine the thermal resistances of interlocking block walls with three different types of infill.

iii. To compare which infill have better thermal resistance.
1.4 SCOPE OF STUDY

The scope of this proposed topic is focusing on:

1. To produce interlocking Compress Stabilized Earth Blocks (CSEB).
2. To test compressive strength of the blocks.
3. To design and build block wall with 1x1.05 m dimension using interlocking blocks.
4. To test the thermal resistance of the wall with three different conditions:
   a) Wall with sawdust as infill
   b) Wall with polystyrene as infill
   c) Wall with polystyrene mix with cement as infill

1.5 RESEARCH SIGNIFICANCE

With this research, the usage of industrial waste material such as sawdust and the introduction of Styrofoam as insulation material in interlocking block could be an alternative to conventional masonry wall especially in Malaysia.

This research can promote to the application of energy efficient building and give better understanding to the usage of Styrofoam and sawdust as insulation material in interlocking block construction.