CHAPTER 1
INTRODUCTION

1.1 Background

Spin casting technology is a method of utilizing centrifugal force to produce castings from a silicone rubber mold. Typically, a disc-shaped mold is spun along its central axis at a set speed. The casting material, usually molten metal or liquid thermoset plastic, is then poured through an open space at the top-center of the mold. The filled mold then continues to spin as the metal solidifies or the thermoset plastic sets.(en.wikipedia.org/wiki/Spin_Casting).Spin casting technology needs a good mold in order to get the best product after processing. This is why spin casting technology becomes the best reason for those who want to produce on high amount of products. Spin casting is a system that has an objective to a mass production in every processing nut in relatively cheap cost. It requires many patterns inside the mold that will be fulfilled by metal liquid. Patterns amount depends from how many products that will be produced.

The mold pattern would depend on the product master that vulcanized before spun. If there is a good product master, there will be a good pattern on the mold. This will produce a good product result.

Product mastering has been observed by Universitas Atma Jaya Yogyakarta (UAJY) using Artistic Computer Aided Design/ Manufacturing (artistic CAD/CAM or well known as ArtCAM). ArtCAM is one of technology that possessed by Industrial Engineering Department. It is facilitated by Atma Jaya Delcam Training Center (ADTC).

At the beginning, ADTC use ‘ebalta’ as the material for ArtCAM technology. From this work, get the product master for rubber key chain. Because of ‘ebalta’ as same as wood, it is not resistant to hot temperature. Then, ADTC develop their work, aluminum become the material that resistant to hot temperature. This becomes the problem on duplicating the master.

A product master is required before a product is actually processed in a machine. One technique to produce this product master is using Roland MDX 40 machine which is already used in ADTC. However, duplicating product master by using this machine is not recommended because : (1) Producing a product master using a Roland MDX 40 machine consumes a long time (depend on product complexity) due to metal material used for producing the product master is a heat resistant material, hence requires more time to shape; (2) Roland MDX 40 machine are high costly to use. The time consumption in the process of making the product master would burden the cost of electricity and replacing the cutter all the time when it is not sharp anymore; (3) A Roland MDX 40 machine also requires a machine operator to always stand by to frequently giving the machine and cutter oil lubricant during the process.

This research attempts to find the best technique in obtaining the master model to fulfill ADTC need in applying spin casting technology. The result will affect the mold making process. Good master model produces good pattern, hence produces a good final result of product when spun.

1.2 Problem Statement

Based on the background, the problem statement in this research is how to obtain the best technique in making master model for spin casting application.

1.3 Research Objectives

1. To obtain the best technique in making master model.
2. To obtain the production time in making master model.

1.4 Scope of Research

On this research, the objects of research are limited by :

1. HTV (High Temperature Vulcanized) and RTV (Room Temperature Vulcanized) silicone rubber used as the mold material in this research.
2. Tin and lead are used as the starting material in processing the master model because of its widely used in spin casting.
3. The prototype of “UAJY keychain” will be used as the pattern in this research because of its relief complexity.

1.5 Research Methodology

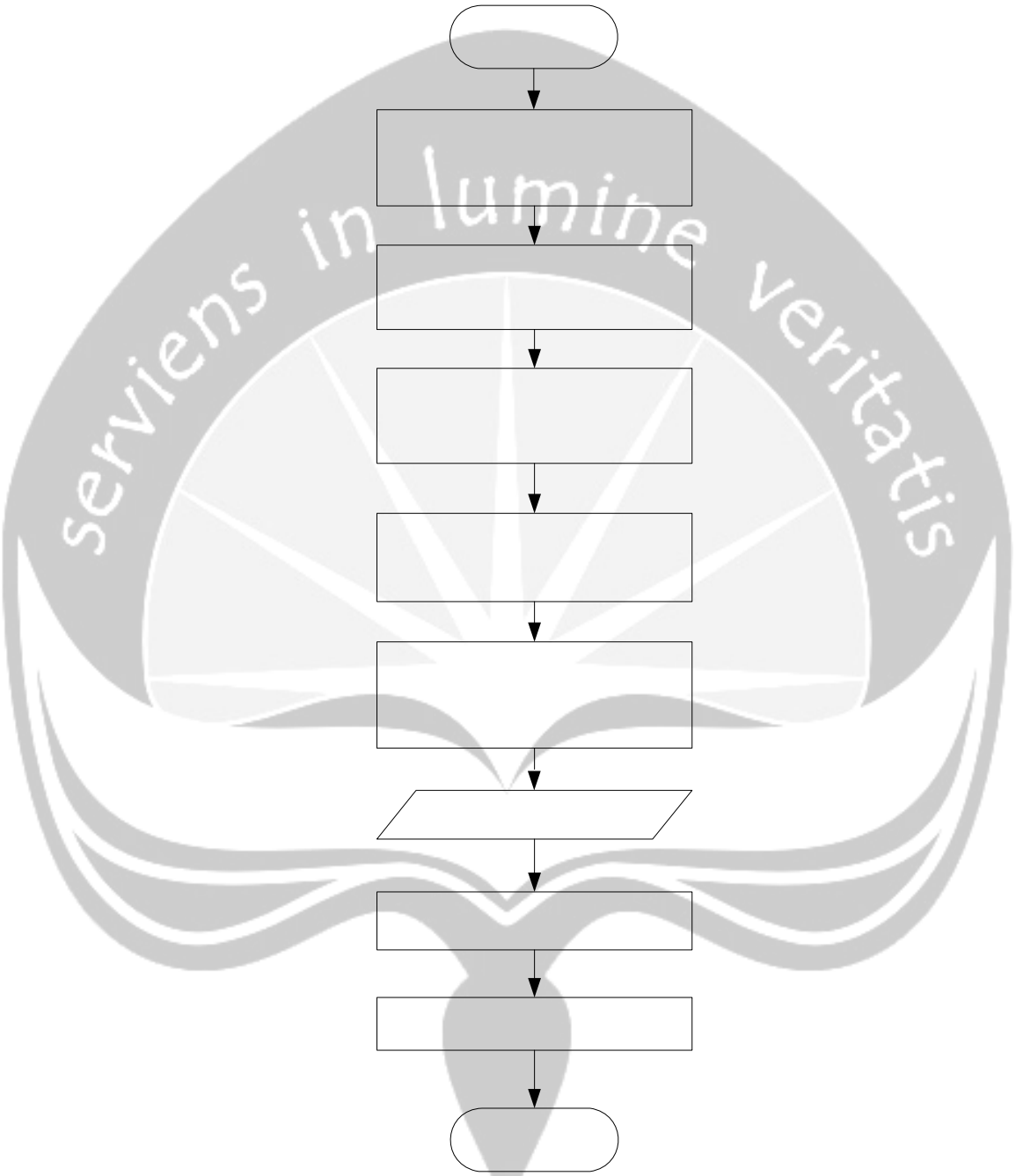

Figure 1.1 Research Methodology Flow Chart

1.6 Report Outline

Report outline in this thesis is arranged :

CHAPTER 1 : INTRODUCTION

This chapter is an introduction for the next chapters. This chapter consists of background, objective, research methodology, scope of research and report outline.

CHAPTER 2 : LITERATURE REVIEW

This chapter briefly explained several past research include the methods that have done. This chapter also explained the difference about past research and the writer's research.

CHAPTER 3 : BASIC THEORY

This chapter explained about theories that will be used to support the analysis and discussion in this research.

CHAPTER 4 : DATA

This chapter explained about tools and material that used during the research.

CHAPTER 5 : ANALYSIS AND DISCUSSION

In this chapter explained about result analysis to the theories.

CHAPTER 6 : CONCLUSION

This chapter explained about conclusion from the research result and suggestion to the research.