

## CHAPTER 1

### INTRODUCTION

#### 1.1. Background

Today, souvenir has become such media to represent the existence of a place, an institution, or a personal identification. It has transformed into an exclusive memorable stuff equipped with detail and complex design. Coins, medals, statues, key chains, and miniature are some terms of souvenir.

Universitas Atma Jaya Yogyakarta is included as player in souvenir industry in Yogyakarta. Utilizing Roland Modela MDX40 as prototype machine helps the Universitas Atma Jaya Yogyakarta to provide high quality of detail and complex design for mastering souvenir. The partnership with Delcam since 2006 has opened a big opportunity to enhance the ArtCAM technology which offers capability in creating intricate details of relief leads to the differential advantage of souvenirs. Moreover, the data from Jogja Fair 2007's and 2008's customer and product master data showed a great potential market for Universitas Atma Jaya Yogyakarta to produce many kind of souvenirs by applying ArtCAM technology.

Unfortunately, the development in software and modeling machine is not in line with the capability on mass production. Universitas Atma Jaya Yogyakarta still relies on the subcontractor. Therefore, the application of spin casting technology is required. It is a method

of utilizing centrifugal force to produce castings from a rubber mold (*Wikipedia*). Spin-casting machine offers capability to produce intricate design, smooth surface finish, economical process and also capable for mass production (*TEKCAST Industries, Inc*). It is mostly used in souvenir mass production made from tin.

In 2007, spin casting machine had been already constructed in Universitas Atma Jaya Yogyakarta. It was an output from a research titled "*Perancangan Mesin Spinning Casting Untuk Pembuatan Symbolic Shorthand Souvenir Berbahan Baku Pewter*" wrote by Victorinus Deras Sabdariva. The spin casting machine was constructed with many limitations such as high machine vibration, poor design of liquid metal inlet, imprecise inline construction, and poor adjustment of casting table. By the lists of limitations, this machine is considered to have follow-up procedure.

Based on the current software and modeling machine technology, and encouraged by the great potential market, the need of enhancing spin casting machine to be reliable and applicable to produce good quality of souvenirs made from tin is massively clear.

## **1.2. Problem Statement**

Referring to the background, the main problem in this research is how to obtain reliable spin casting machine for tin souvenirs production which are visually the same as master model and have no defects.

### **1.3. Research Objectives**

1. Obtain the specification and construction of spin casting machine by evaluating the current one
2. Obtain the experimental result of UAJY keychain using the new spin casting machine
3. Obtain the production time and machine cost

### **1.4. Scope of Research**

To prevent the misunderstanding about the content and conclusion on this paper, the boundaries of observation should be existed. Those boundaries are:

1. The starting material is tin as it's commonly used in many souvenir products made by spin casting.
2. Prioritizing the need of appropriate finished product, the construction of the spin casting machine will be focused on its components functionality and proper mechanism, therefore anthropometric data is ignored.
3. Considering the complexity relief and double-sided shape, the "UAJY keychain" will be used as an experimental object in spin casting process.
4. Considering the production cost and the need of handling medium to large order quantity (more than 500 pieces), the spin casting machine capacity will be limited to eight molds only.
5. The price of spin casting machine is defined price from Hari Mukti Teknik workshop.
6. The spin casting will solely be analyzed on its production time and machine cost.

### **1.5. Research Methodology**

The research methodology will follow the sequence of flowchart shown on Figure 1.1.



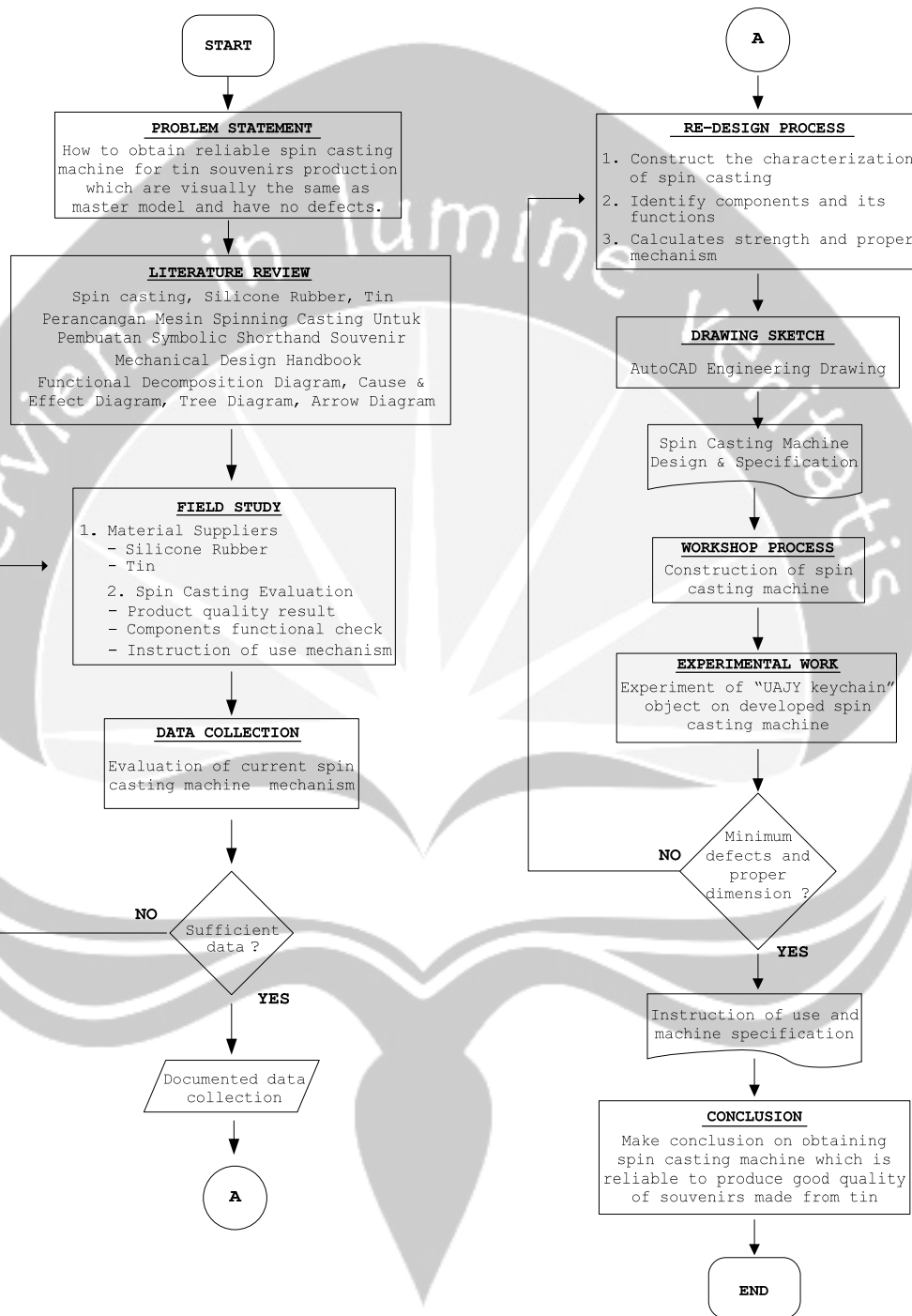


Figure 1.1. Flowchart of Research Methodology

## **1.6. Report Outline**

The writing systematic in thesis report is arranged below:

### CHAPTER 1. INTRODUCTION

This chapter consists of background, problem statement, research objectives, scope of research, research methodology, and writing systematic.

### CHAPTER 2. LITERATURE REVIEW

This chapter contains briefs description of previous thesis which has related problem to this thesis report.

### CHAPTER 3. BASIC THEORY

This chapter consists of literature theories contributed to problem solving.

### CHAPTER 4. DATA

This chapter consists of data to solve problem based on application case.

### CHAPTER 5. DISCUSSION

This chapter consists of data analysis and discussion based on application case.

### CHAPTER 6. MANUAL INSTRUCTION

This chapter contains machine operation procedure.

### CHAPTER 7. CONCLUSION

This chapter contains conclusion of research.