CHAPTER 2

LITERATURE REVIEW

Product design is basically activity to make a plan and determine geometry, material and technical production from a new product or developed product, product design is not only draws a product but the most important thing is a guided thinking process. (Siswantoro, 2003).

As a part of Design for Reliability (DfR), Failure Analysis (FA) is defined as the process of collecting and analyzing data to determine the cause of a failure and how to prevent it from recurring. It is an important discipline in many branches of manufacturing industry, such as the electronics industry, where it is a vital tool used in the development of new products and for the improvement of existing products. (http://en.wikipedia.org/wiki/Failure_analysis).   The result of Failure Analysis (FA) allows recommendation for redesign procedures (Simonovic, 2008). A failure can be used as a design aid. It has two attributes: the function affected and the source of the failure. Both attributes will be identified where redundancy is needed as typical way of Design for Reliability (Ullman, 1997).

Spin casting is one of the most interesting indirect rapid tooling techniques. This methodology is very simple and characterized by the presence of two

fundamental elements: silicone rubber and centrifugal forces (Vezzetti, 2007).

Deras Sabdariva (2008) conducted a research on design and construction of spin casting machine to support casting in making of symbolic shorthand souvenir using pewter. To characterize the spin casting machine, questionnaires were spread. The anthropometric data from questionnaires were oriented to design process of spin casting machine by using rational method. The research obtained a spin casting machine.

This research will conduct development process of spin casting machine for souvenir production. The current spin casting machine will be set as object of research. Its whole system and performance will be evaluated to perform re-design process. Later, the souvenir produced by redesigned spin casting machine will be analyzed to assess the success of development process on spin casting machine. Table 2.1 shows the difference of research conducted by Sabdariva and present research.

Table 2.1 Comparison of Previous and Present Research

Description	Researcher	
	Sabdariva	Present
Object of research	Spin casting machine	Spin casting machine
Research objectives	Designing and making spin casting machine	Obtain the specification and construction of spin casting machine by evaluating the current one, obtain the experimental result of UAJY keychain using the new spin casting machine, obtain the production time and machine cost
Research Methodology	Rational Method	Failure Analysis
Research Outputs	Spin casting machine	Spin casting machine, souvenirs