CHAPTER 1

INTRODUCTION

1.1 Background of the project

The major problem when using typical household faucet is the uncontrollable of fluid volume. This problem occurs because the water pressure is fluctuated and some time not available. It is risk that the tank will be filled over, if user open the faucet for filling up water in to tank and forget to turn it off. There are two methods to solve the problem; first is to use the electric circuit to control the volume of water and second is to use the floater linkage mechanism faucet to control the volume. The first method is inconvenience for household user because the electric circuit requires the batteries or electricity in operation. The second method causes the installation problem, the floater linkage needs more space to install. The volumetric faucet is designed and built to solve of all these problems.

Volumetric faucet is automatic shut off value when the water flow through faucet reach a setting point. It was designed and built in 1995 (Chonwilai, 1995) to test the technical feasibility the fist prototype show in figure1.1.

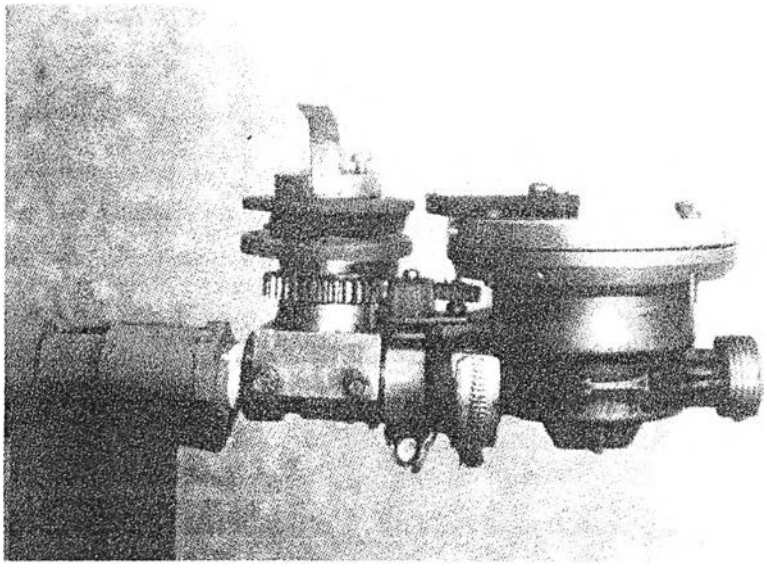

Figure1.1 First prototype of Volumetric Faucet

1.2 Statement of problem

The volumetric faucet is a new product which is under the product development process. The basic design concept of product is proved by first prototype which develop in 1995.

The prototype of volumetric faucet is needed to test before sending it to manufactures to produce. The first volumetric faucet prototype did not meet the design specifications because of time limited and lack of research in customer requirements.

The problem on first prototype

- High open faucet torque is required to turn off faucet because some of energy store in spring.
- Faucet can not cancel the operation while working.
- Faucet can not set various fluid volumes.
- Fluid leakage between two chambers, turbine and gear set chambers.
- Not relate with customer requirements.

This research will evaluate the first of volumetric valve prototype and development new prototype to meet the engineering design specifications. The purpose of this prototype will use as a proof for basic function, operation and concept of volumetric faucet design.

1.3 Objective

- To study the product design and prototype development processes
- To develop the volumetric faucet prototype

1.4 Scope of project

This project focus on the volumetric faucet prototype development. The prototype is not focused on the manufacturing process, production process, aesthetics and appearance.

The rough engineering specifications of volumetric faucet are listed below.

1. Volumetric faucet geometry

   Dimension of prototype should not exceed 15 cm. length, 10 cm. height, and 10 cm. width.

   Inlet diametre of faucet is ½ inch

2. Volumetric faucet operations

   Volume accuracy should not exceed 15%

3. No batteries or electricity required in use

1.5 Expected results

- The volumetric faucet prototype which meets the new design specification
- Information from testing prototype to use for further product development

1.6 Methodology

- Evaluate the existing volumetric faucet prototype
- Additional literature surveys for new product development process.
- Data gathering from primary and secondary data source.
- Planning for prototype development
- Build the prototype
- Testing prototype
- Summarize
- Preparing the final report and presentation.