CHAPTER 1

INTRODUCTION

1.1. Overview

Electric motor was used widely in industry[1]. Some of them were running 24 hours for many days. Therefore, the performance of the electric motor is very important to ensure the production target achieved. Furthermore, the top performance of the electric motor will save the money from expend it to the utility bill for running more hours. One of the important components inside the electric motor is the bearing. It can be said that the performance of the electric motor also depend on the condition of their bearings [2,3].
The bearing is normally installed to ensure the shaft rotate smoothly without any obstacle [4]. Also, the bearing will avoid the shaft and the other related component from breaking. One of the factors that really related to the bearing performance is the greasing of the bearing. Greasing is the liquid that applied in the bearing surface which touch with the end bell (end shield). This greasing will protect the bearing from overheating which can affect the bearing damage [5,6,7].

Currently, the method of bearing greasing is done in many ways. Either using really manual which need to open the end bell and applied the grease by hand to the bearing or using grease gun which the grease will inject to the bearing via grease nipple. However, it has several problems associated to this current method of greasing.

Through this project, it will help the technician who did the greasing job. The goal of this project is to develop a system which can make the greasing job done automatically without danger to the technician and also to ensure the bearing is always in good condition.

1.2. Problem Statements

Most industry even in advance electronic gadget days, yet still use manual lubrication to relubricate industrial electric motors operating in plants. This method is applied because of cheap in operation which only need to buy grease gun. Furthermore, auto grease application is still new and not very well-known in our country especially. The usage of manual regreasing method has been foreseen as significant drawback which can affect bearing damage and will influence reducing overall electric motor performance. There are few reported associated problems regarding to this method which are; regrease interval, amount of grease and safety.
Regrease interval is one of most important thing that maintenance person need to stress[3]. If the interval is too long then the bearing will wear and damage but if the interval is too short, it will make waste of grease because the grease applied still can be used. In manual greasing, the maintenance person will determine regrease interval either by waiting for a weird sound or by referring to data given by supplier[8]. However, the data given is by referring to high efficiency motor or a new motor and this is not practical for an old motor that have been used for many years and do not gain high efficiency.

Amount of grease applied to the bearing can be divided to three conditions; overgrease, optimum and less grease. In manual lubrication, maintenance person usually will apply the grease as much as he can to the bearing and it will cause overgrease. Overgrease will affect the pressure and temperature inside the bearing increase [9]. But, if too small amount of grease applied, less grease will happen which will make friction increase, temperature of the bearing increase, noise and bearing wear [3]. The optimum amount of grease is the best volume that will maintain the top performance of bearing.

Not all electric motor was placed at accessible place. In some cases, electric motor was placed at inaccessible place such as at the higher place or also in hazardous place. This will danger to the maintenance person [10].