CHAPTER 1

INTRODUCTION

1.1 PROJECT BACKGROUND

Corrosion is one of the major loss to industry area-costly billion per year in one state. The accepted concept of corrosion is that it is a result of an electrochemical reaction taking place on the surface of the metal where the metal is converted into metal oxides or other corrosion products. With some metals, they produce a tight skin on the metal surface, which hinders further corrosion, and if this surface layer is broken it is self-healing. These metals are said to be passivated and include lead, nickel, cadmium, chromium and aluminium. Zinc corrosion products form a fairly tight layer on zinc and further corrosion is slow. A tight layer of iron and chromium oxides forms on the surface of stainless steel and is the reason for the resistance of this metal. Iron and steel, however, form rust as a corrosion product, which is porous, is not firmly adherent and does not prevent continued corrosion[1].

There 4 basic methods for corrosion control and corrosion protection[11]:
1. Material resistant
2. Protective coating
3. Cathodic protection
4. Corrosion Inhibitors

In this study, there only 3 methods will be taken which is coating, cathodic protection and corrosion inhibitors. In this study also, there are specimens will be taken as default specimen which known as controlled specimen. This will become as a reference to the protected specimen.
1.2 PROBLEM STATEMENT

Millions of dollars are lost each year because of corrosion including cost of prevention, maintaining and loss. Much of this loss is due to the corrosion of iron and steel, although many other metals may corrode as well. The condition of the environment in the factory also main causes of corrosion happened where humidity, temperature, and PH of air become the major part. Many of factory owner didn’t realize the disaster of corrosion and how to prevent it correctly causing many accident and bad quality result in product.

1.3 PROJECT OBJECTIVE

- Study the corrosion behavior of steel structure
- Investigate the corrosion protection of steel structure for industrial application
- Study and analyze the corrosion protection and its effectiveness.
- To provide a better view on effect of corrosion to industry

1.4 PROJECT SCOPES

- Sample preparation based on standard
- Exposures period
- The Effectiveness of the protection
- Corrosion analysis
  - Surface observation
  - Corrosion rate
  - Composition analysis

1.5 PARAMETER OF PROJECT

- Coating
- Inhibitors
- Cathodic protection
- Condition of environment in factory