

CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

Pipes are use widely in our domestic and industries (G.Budenkov et al, 2006). Every pipe manufacturer supplies characteristic curves for their equipments illustration pipe performance under given condition. Pipe is the most important part in human life because it gives the basic of human need, such as for drink, bath, cooking and others. Piping system most important as the medium of delivering fluid such as water, gas, petroleum and other from tank to another tank.

A few years ago, there also have many researches about to improve the monitoring system of piping in condition of piping line. There are a lot of methods that have involved in this research of monitoring pipe such as simulation, radiographic (X-ray), ultrasonic test and Eddy current test (S. A.Stefani et all, 1996). But, normally of the company will mark on the non-destructive test (NDT) method because it have many advantages of saving time, more easy to inspected on many area and it's low cost methods (G.Martin and J.Dimopoulos, 2006).

For this study, the acoustic emission (AE) technique was used to monitor the internal of pipe surface. This is almost in group of NDT and this method still newbie in contacts of piping system. This technique almost refers to transient elastic waves produce by a sudden redistribution of stress in materials (M.Surgeon, 2004).

When subjected to external stimulus such as change in pressure, load, temperature, it will localized sources trigger and release of energy. The energy will be release in form of stress waves and it will propagate to the surface and recorded by the sensors. AE is commonly detects the sources from natural event like earthquakes and rock burst. In composites, AE can detect matrix cracking, fiber breakage and debonding. It also can detect any changes in polymers, wood and concrete (M.Surgeon, 2004).

This method also gives low cost, high sensitivity and can be done by online. This method can proceed without interrupt the operation and breaking any part of components (G.Martin and J.Dimopoulos, 2006). This technique will use a sensor which is located at the components and will sense the elastic waves known as AE signal that can indicate the condition of component and parts that before it become catastrophic. The most commercial NDT method for this piping system is ultrasonic testing method but AE technique will give us the solution of detection and monitoring in piping systems.

1.2 OBJECTIVES

For this project, the main objectives are:

- i. To detect Acoustic Emission (AE) signal from internal surface pipe
- ii. To classify smooth or rough of internal surface pipe using Acoustic Emission (AE) technique.

1.3 SCOPE OF STUDY

For this project, the acoustic emission method will be use to detect a signal from internal surface pipe. From this technique also want to study a method to classify smooth or roughness surface of internal pipe with Acoustic Emission (AE) which is root mean square (RMS). Data from this parameter will be analyzed to get the characteristics of acoustic.

1.4 IMPORTANT OF THE STUDY

This study is important to give the necessary method in determining internal pipe roughness. It also can use in analysis of AE characteristics or parameters to be used in pipe roughness analysis. It is more benefits than using non destructive testing (NDT) because of the operational can running without interruption the operation.