CHAPTER 1
INTRODUCTION

1.1 Introduction

Technological development in the current era is very rapidly, with the rapid development of technology for the time being must be aligned and able to make it easier for humans in everyday life. In the world of industrial technology is absolutely necessary, because with the help of human resources in the technology world industry can apply technology to ease they did heavy work that might not be done the man himself without any tools of work, as does the use of aids such as forklift, hoist crane, loader crane or gantry crane. Nowaday the development of technology that very quickly like this is very important for improving the quality of transport lifting tools to become more user-friendly in its use. In this project authors will discuss about upgrading technology for hoist cranes. Currently hoist crane has widely the world of industry, including the use of hoist cranes among other companies manufacturing, ports, shipping companies, machinery companies etc. In the world of this industry very human it is not possible to directly do the work of lifting weights or the workpiece with a weight of the workpiece reaches above 100 Kg to 1 Ton above the load without the help of transport lifting tools. However, the use of technology in transport tool hoist crane is generally still using their technology control manually as well as hoist crane in the figure 1.

Figure 1.1 Hoist crane at Mitra Adyaniaga.PT, the manufacture of boilers, Surabaya - Indonesia

Figure 1.2 Manual remote control hoist crane in Mitra Adyaniaga.PT, the manufacture of boilers, Surabaya - Indonesia

On this crane hoist technology used is still using a series of manual where motors in hoist crane still operated with a remote cable. In fact the use of remote cable as shown above has disadvantages, where often the control cables disconnect because pulled when use hoist crane. In this project authors make innovation to replace the use of the remote control cable with a better operating system by using the bluetooth or android applications. Or bluetooth-based operating system android was chosen because of its use in a user friendly operation of the hoist crane, also combined with a system that is able to find out how the voltage of the motor when working, how the current consumed by the motor when operated and also the ability to detect how much load is lifted by the hoist crane. This innovation proved necessary because often the use of hoist crane which exceed the capacity of the transport capabilities of the threshold of hoist cranes, resulting in motor on the burning crane, hoist or hoist rope intermittent blackouts on the crane and hoist crane cannot be used. So with technology that able to detect how much voltage to the motor, the current consumed by the motor and can also display heavy burden lifted would help greatly in terms of safety in work when using their equipment hoist crane. So the operator can know the crane hoist and maintain safety for himself and the world around them and can minimize damage to the hoist crane. However, in this project the author just made a prototype, which do not use the motor AC 3 Phase as its main driving force because the costs are expensive and also when using the AC 3 phase Motors needed detailed construction planning because of the weight of the hoist crane itself and also the capacity of the load that can be lifted by hoist crane, so that must be planned and carried out the calculations correctly so that no accidents due to errors in calculations. In this project the author uses DC motors as its main driving force and he was just small because it only as a prototype. But although only a prototype, the control system is used here as much as possible can be implemented on a hoist crane.

1.2 Objectives and purposes of the study

The objectives and purposes of developing this project are :

1.2.1 Study about programming of Arduino.

1.2.2 Study about transmitting and receiving data for operation hoist crane using module bluetooth HC-05.

1.2.3 Study about detected sensor for heavy load.

1.2.4 Study about how to hoist crane works.

1.3 Scope of limitation in this project

The scope of this project are :

1.3.1 Design and build prototype controlling hoist crane with arduino module.

1.3.2 Programming using arduino for control hoist crane via smartphone.

1.3.3 Measured and display load weight of hoist crane using analog digital converter (ADC) of arduino module.

1.3.4 Evaluation proposed method.

1.4 Expectation of this project

The benefit of the project are :

1.4.1 Knowing about controling system with arduino module.

1.4.2 Knowing about controling object using bluetooth system with module HC-05.

1.4.3 Knowing about sensor of heavy load.

1.4.4 Knowing about make application on smartphone.