



**UNIVERSITI TEKNOLOGI MARA
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MEC299

**DESIGN AND FABRICATION OF
MOVEABLE LADDER**

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ABSTRACT

This project which is Moveable Ladder is for facilitate workers in the industry who are doing light construction work. A ladder is a piece of equipment that consists of multiple rungs or steps for climbing up and down something to do any activity, particularly in high-rise building maintenance. Even though many individuals utilize ladders without incident, when anything goes wrong, the consequences are frequently fatal. Stepladders are frequently one of the most damaging products in both the household and industrial environments, resulting in significant human misery. Furthermore, conventional stepladders are incapable of moving horizontally and make it difficult to change positions from one point to another while retaining stability. As we all know, the current ladder has numerous flaws for workers. The existing ladder is a collection of statics in one location. If workers desire to climb up the ladder, it will be difficult to do so. Stay above the ladder if a worker wants to redirect it. Users must descend and raise the ladder to the next point. Their mission will take a long time to complete. The project focuses on establishing a way to assist users with the initiative to invent a ladder that can move horizontally (left and right) at the necessary distance using mechanical mechanisms, saving users time when doing work that involves a change of location. This is not appropriate for grassy or rough surfaces. In addition, this ladder has a tool pocket to make it easier for users to utilize the tools without having to raise up and down from the ladder. For the process that use are we design, drawing, drawing in Solidwork, material selection, estimated cost, fabrication, and testing. In a nutshell, the essence of this stepladder's innovation is to maintain a positive relationship with household or professional users by helping them stay content at work and giving them something to look forward to each day. Lastly, for the expected result, this project may help the workers in the light industry.

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CHAPTER 1

INTRODUCTION

1.0 INTRODUCTION

In this final year project (FYP), the objective is to make a design and analyze a Moveable Ladder. This ladder can help workers who work in the light industries to ease their work. This ladder can move aside so the workers don't need to move the ladder when doing work. For making Moveable Ladder, the project is to design the ladder that can move aside. This project will reduce time for the workers when doing the light work at the high place. It is because the workers don't need to climb the ladder many times.

1.1 BACKGROUND OF STUDY

Nobody knows exactly when the ladder was invented. The earliest evidence of it, however, may be found in Valencia, Spain. A 10,000-year-old Mesolithic rock artwork depicting a ladder can be found at the Spider Caves. Various types of ladders have been developed over time to suit various uses. Rigid ladders come in two types: self-supporting and those that may be rested on a vertical surface like a wall. Aluminum ladders are commonly used nowadays since they are multifunctional, lightweight, and easy to store. Another type of ladder is the flexible ladder. Rope, cord, grass, and other flexible materials are commonly used to construct these ladders. They're more portable and simpler to operate. They're more portable and simpler to operate. They are, nevertheless, frequently utilized in battle circumstances and can be quite useful in an emergency. According to my observations, the typical current stepladder is unable to move horizontally and is too difficult to move from one location to another while keeping the structure. So, the gap that we found in this project is that the invention of this moving ladder multitasks could move horizontally using a mechanical mechanism.

1.2 PROBLEM STATEMENT

1. The existing ladder is fixed in one location. If workers try to deflect the ladder by staying above it, it will not travel smoothly. The worker must descend and lift the ladder into the next position. Their work will take a long time to complete.
2. Due to the frequency with which the user moves the ladder, the user allots additional time to finish the task. As mentioned previously, they are static and cannot be moved correctly. It also carries the risk of the user slipping off the ladder as a result of frequent ascending and descending.

3. Because of its large size, the standard current stepladder is difficult to transport in a small vehicle or store in a small space. Its size cannot be lessened, and it is cumbersome to transport.

1.3 OBJECTIVES

The main objectives of this project are:

1. To design a ladder that can move horizontally (left and right) at a predetermined distance.
2. To fabricate a ladder that can move horizontally (left and right) at a predetermined distance.

1.4 SCOPE OF WORK

1. This ladder's movement is controlled by a mechanical system.
2. This ladder is only appropriate for usage on flat surfaces; it is not ideal for grassy or rocky terrain.

1.5 EXPECTED RESULTS

1. Make a ladder that can travel horizontally (to the left and right) at a set distance.
2. When a tool's pocket is offered, it makes it easier for users to use the instrument in a systematic manner.
3. To save users time when performing jobs that require them to move about