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## Design And Fabrication Of Multipurpose MiniFork Lift

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**Abstract :** Material handling process is the process of movement of raw material, semi-finished goods, finished goods through various stages of production and warehousing. It has been seen that forklift equipment is widely used in many industries for different applications such as lifting, safe delivery of material such as huge boxes, Raw materials, cylindrical sections etc. are widely used Forklift equipment. This project deals with the concept of portable electric remote-controlled forklift for material handling industries. The proposed project consists of development of portable electric remote-controlled forklift which can operate with material handling forklift attachment incorporated to the same. This is not only cost effective but also helps in increased industrial productivity.

**Keywords -** Easy to Handling Heavy Load, suitable for small industrial Areas, Easy to Load and Unload, Multiple attachments, less human power requirement.

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### I. INTRODUCTION

In today's life, there is a wide variety of forklifts, from the large heavy loading truck to the one that works among narrow aisles. Forklifts have become one of the basic transportation tools we use in our lives. With all the forklifts in existence, we find that there are some improvements that can be made to bring the forklift to a better performance.

A forklift is a vehicle similar to a small truck that has two metal forks on the front used to lift the load. The forklift operator drives the forklift forward until the forks push under the cargo, and can then lift the cargo several feet in the air by operating the forks. The forks, also known as blades or tines, are usually made out of steel and can lift up to a few tons.

Forklifts are either powered by gasoline, or electricity. Electric forklifts rely on batteries to operate. Gasoline or propane forklifts are sometimes stronger or faster than electric forklifts, but they are more difficult to maintain, and fuel can be costly. Electric forklifts are great for warehouse use because they do not give off noxious fumes like gas powered machines do. Forklifts are most often used in warehouses, but some are meant to be used outdoors. The vast majority of rough terrain forklifts operate on gasoline, but some use diesel or natural gas. Rough terrain forklifts have the highest lifting capacity of all forklifts and Heavy Duty tires (like those found on trucks), making it possible to drive them on uneven surfaces.

Forklifts have revolutionized warehouse work. They made it possible for one person to move thousands of pounds at once. Well-maintained and safely operated forklifts make lifting and transporting cargo infinitely easier.

### II. METHODOLOGY

Industrial operations require continuous flow of material from one workstation to another in industries. This is done manually in most of the small scale industries due to the lack of high initial investment in powered material handling equipment and also the increased maintenance costs of the same. The proper and timely flow of material not only reduces the transit time across the industrial floor but ultimately reduces the time required for the production resulting in increased profits and increased production.

The design of forklift has revolutionized warehouse work and it is practicable for one person to move hundreds of kilograms at once. These well maintained and safely operated forklifts have

made lifting and transporting cargo items very easily. The main purpose of this paper is to design and fabricate a forklift machine which is new and different from existing designs. This designed forklift uses a rechargeable battery which means it is powered completely by electricity.

### III. FIGURES AND TABLES

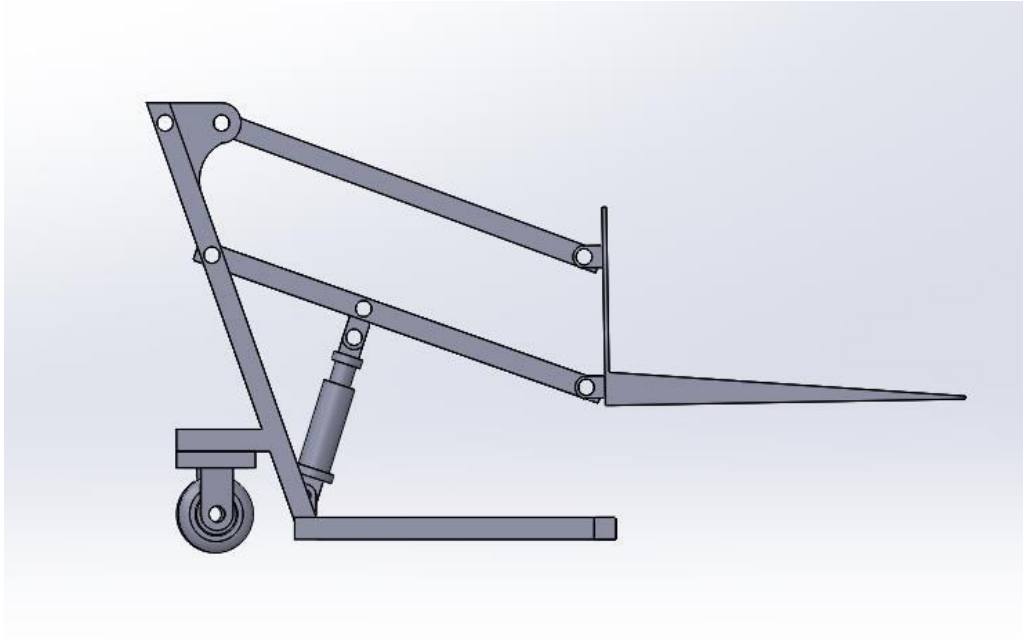


Fig . 1 . CAD Model of Multipurpose Mini Forklift (side view)

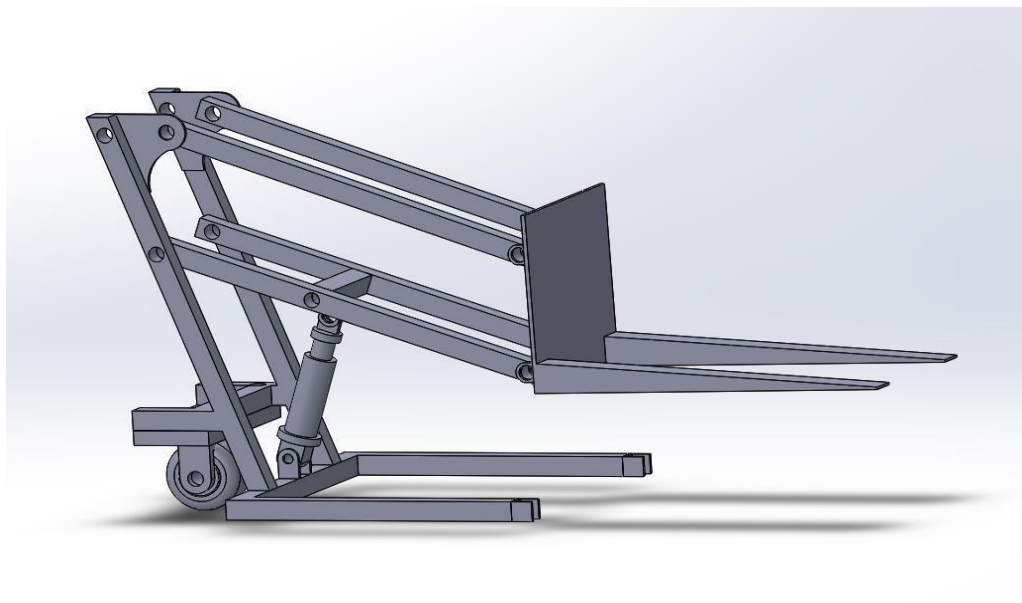


Fig. 2 CAD Model of Multipurpose Mini Forklift (isometric view)

Table No .1 Materials Procured.

Sr. No.	Components	Quantity
1	Hydraulic Jack Long Ram Stroke(450mm)	1
2	Caster Wheel 5” inch	2
3	Roller Wheel	3
4	Rectangular Pipes, MS Plate	-
5	Handle Grips	2
6	12 v Dc gear Motor	1
7	12 v Battery	1

#### IV. CONCLUSION

With an aim to manage material handling in industries, we came up with the design of a battery operated hydraulic mini forklift. Our literature review for this paper helped us with the understanding of various steps and processes involved in design and fabrication of this forklift. The market and industrial research of this topic helped us understand the upcoming technologies and inventions implemented while constructing this forklift. The main objective of this paper is to build a forklift that can reduce human efforts spent on material handling in industries.

#### ACKNOWLEDGEMENTS

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