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1 Introduction

The goal of this file is to describe the steps to create an electric bicycle. I dream of a world where we can all run on renewable energy sources. Building my own project in this field just makes me part of this new trend. I would like you to enjoy.

1.1 Sources

There are a couple of interesting websites and Youtube channels that provide a lot of high-quality material about ebicycles. You might want to check some of those:

1. <https://electricbikereview.com/>
2. <https://www.bruegelmann.de/elektrofahrrad.html>

2 Main components

1. Bicycle
2. Motor
3. Battery
4. Recharger

3 Tools

4 Batteries

In order to better understand batteries, one should focus on its main parameters that define its quality:

1. *Power-to-ratio*
2. *Specific energy*. It corresponds to the amount of energy per unit mass.
3. *Energy density*. It amounts for the quantity of energy in a given volume.



Figure 1: Electric Mountainbike from Amazon

The two main options of batteries are: lithium and lead acid battery. Our book will describe firstly the lithium batteries.

4.1 Materials

Some types of batteries are:

1. *Lithium Iron Phosphate LiFePO_4* . Also called LFP battery, they are some of the heaviest and most expensive ones, but they are also one of the safest and longlasting ones. They have low cost, are non toxic, safe and has a lot of thermal stability.
2. *Lithium Manganese Oxide*

4.2 Location