

eShoe

Nov. 27 2013



ePower

Presentation Outline



Introduction

- Meet the Team
- Background
- Possible Solutions



Business Case

- Budget
- Market Analysis
- Acknowledgement



System Overview

- Mechanical Design
- Electrical Design



Reference



Reflection

- Future Improvements
- Project Timeline



Q & A

Introduction

Meet the Team

Janine Li (CEO)

Meeting Management

George Gu (COO)

Project Progress Management

Eric Yang (CTO)

Technology Consultant

Edward Huang (CFO)

Project Financial Management

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Introduction



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Introduction

How many steps do you walk everyday?

Nationality	Average Steps
Americans	5117
Japanese	7168
Swiss	9650
Western Australian	9695



Introduction

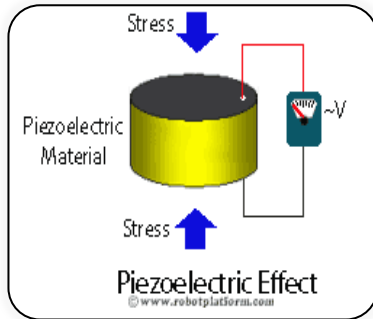
How much power can be produced by each step ?



“The energy produced by an average person dancing is about **20** watts’ worth, so two people could light a bulb, Club Watt’s scientific consultants have found.”

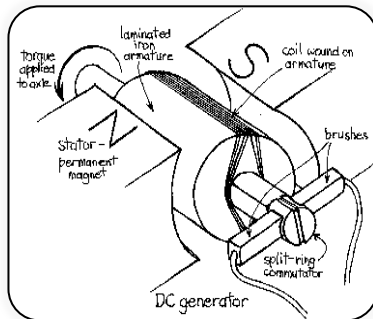


Introduction



Piezoelectric Transducer

- Generate huge voltage by stress
- Thin & Light
- Low Output (Data be provided later)



Electrical Generator

- Linear motion → Circular motion
- Faraday's Law

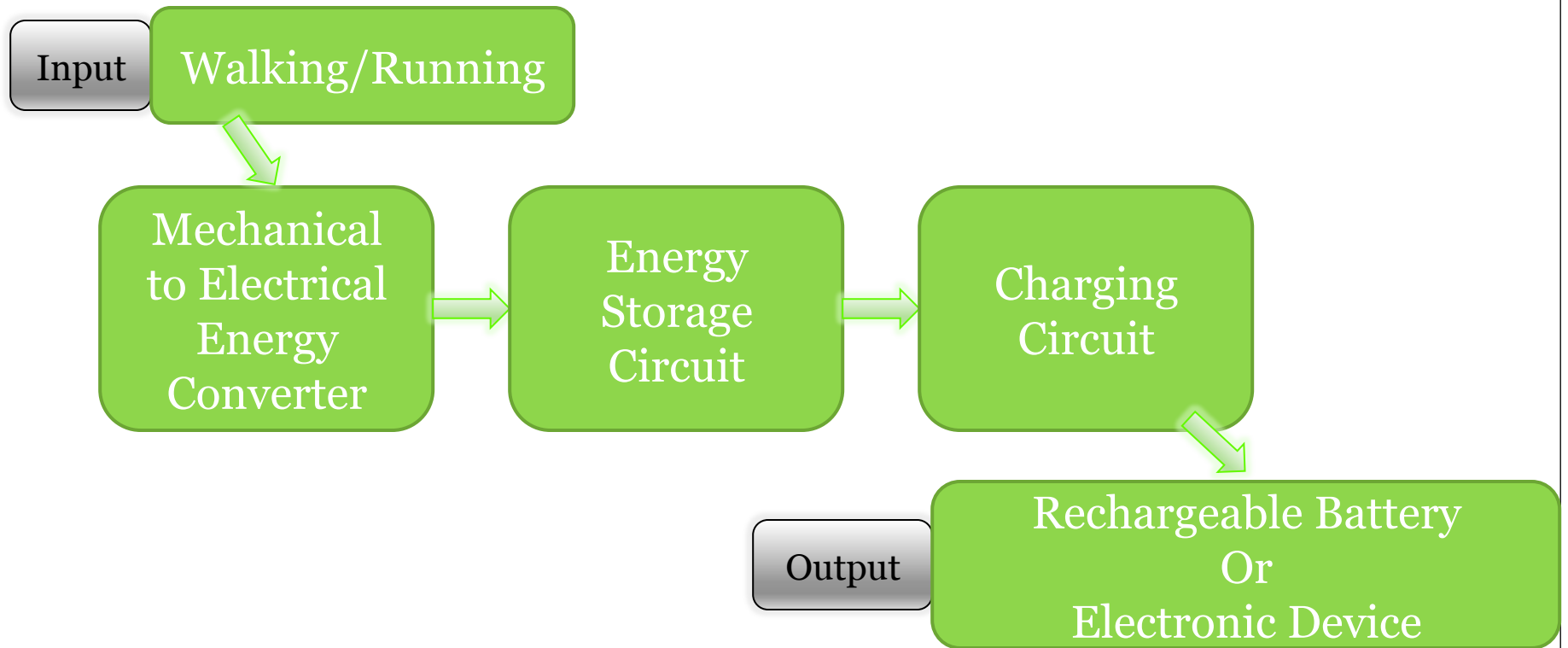


Introduction

Resistor Values (Ω)	Produced Voltage (V)	Produced Current (mA)
100M	-35 ~ 30	0.003
1M	-35 ~ 35	0.002
100K	-40 ~ 40	0.003
10K	-40 ~ 40	0.003
1K	-40 ~ 40	0.003
100	-40 ~ 40	0.003

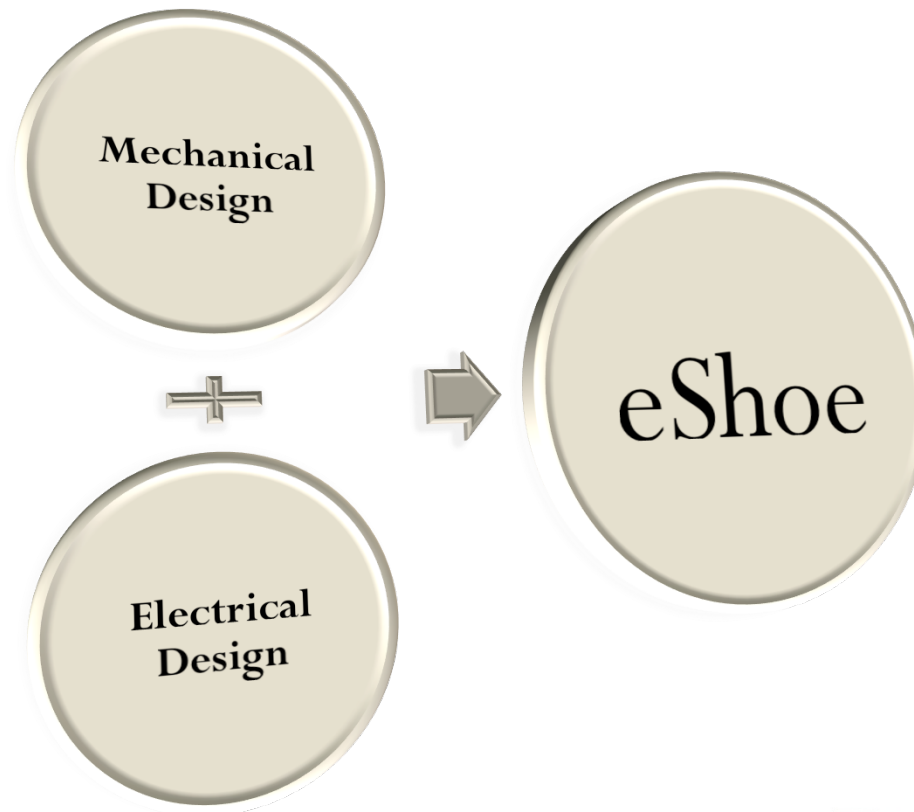


System Overview



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System Overview



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System Overview

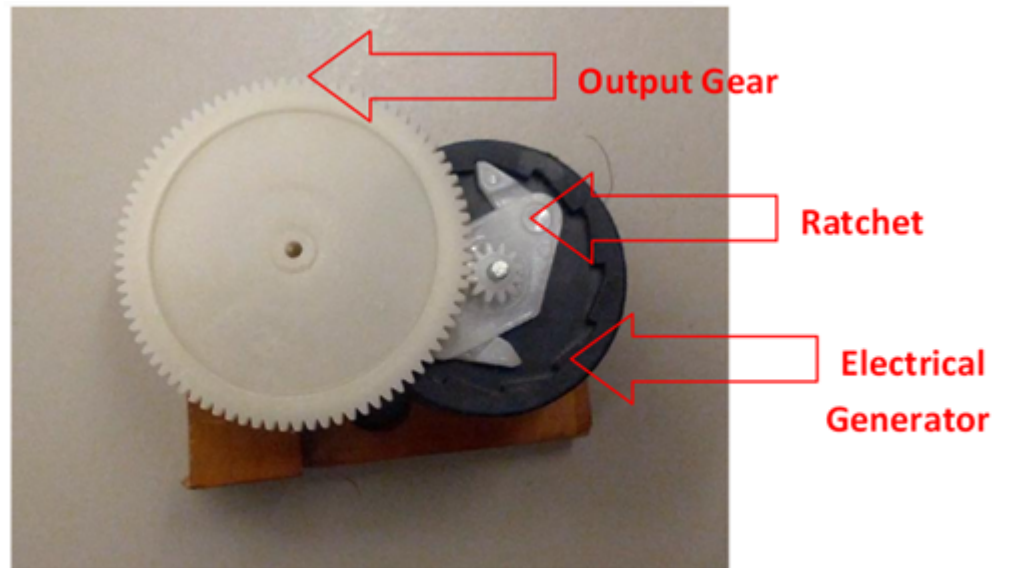
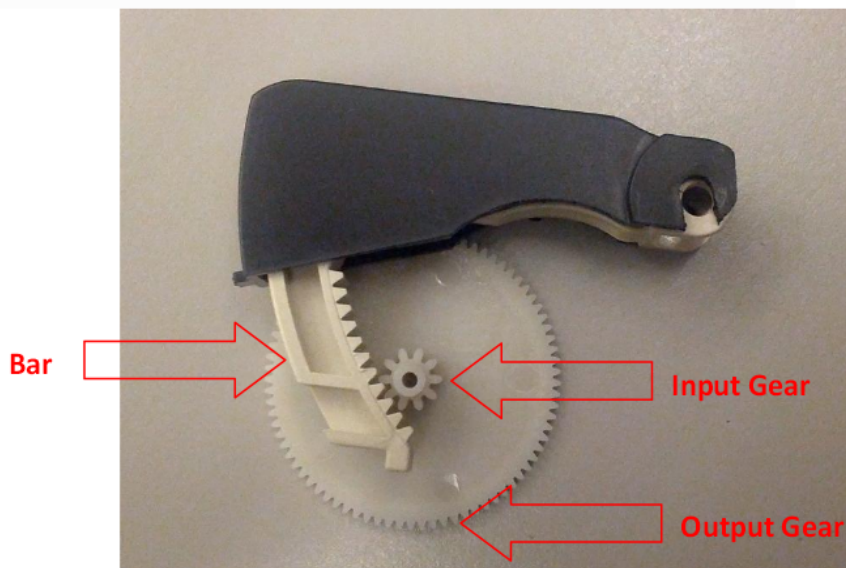
Mechanical Design



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System Overview

Mechanical Design

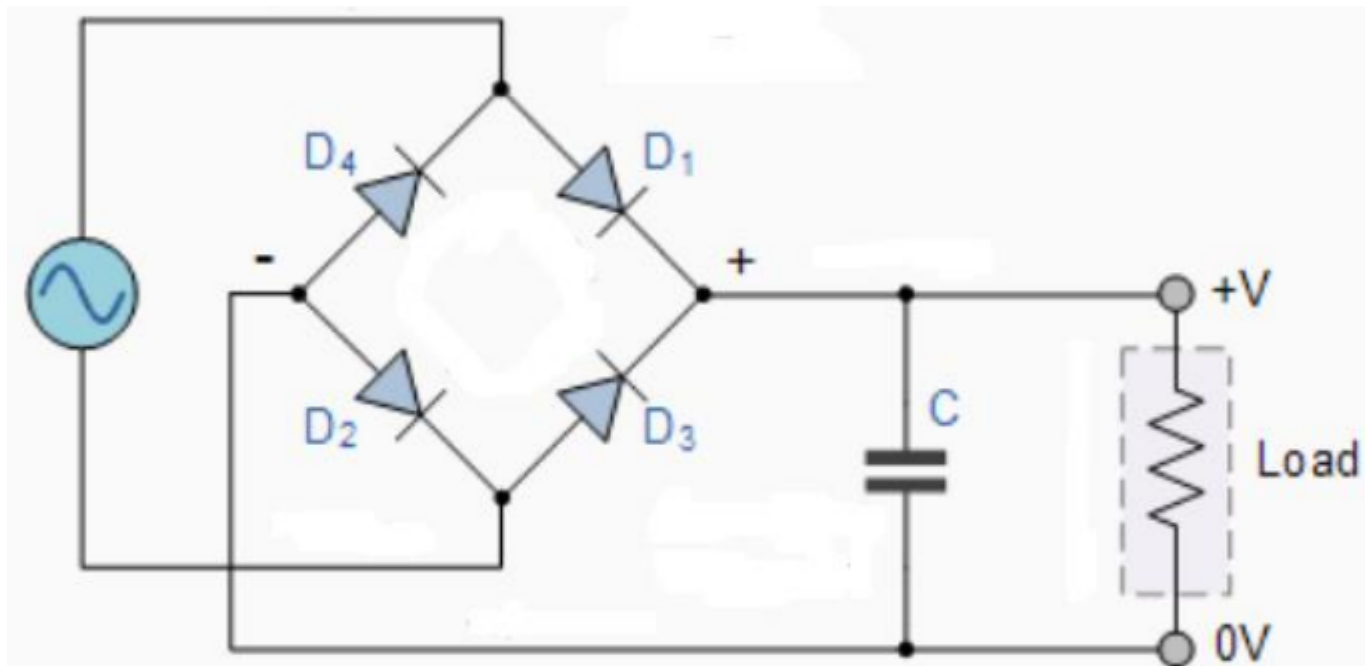


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System Overview

Electrical Design

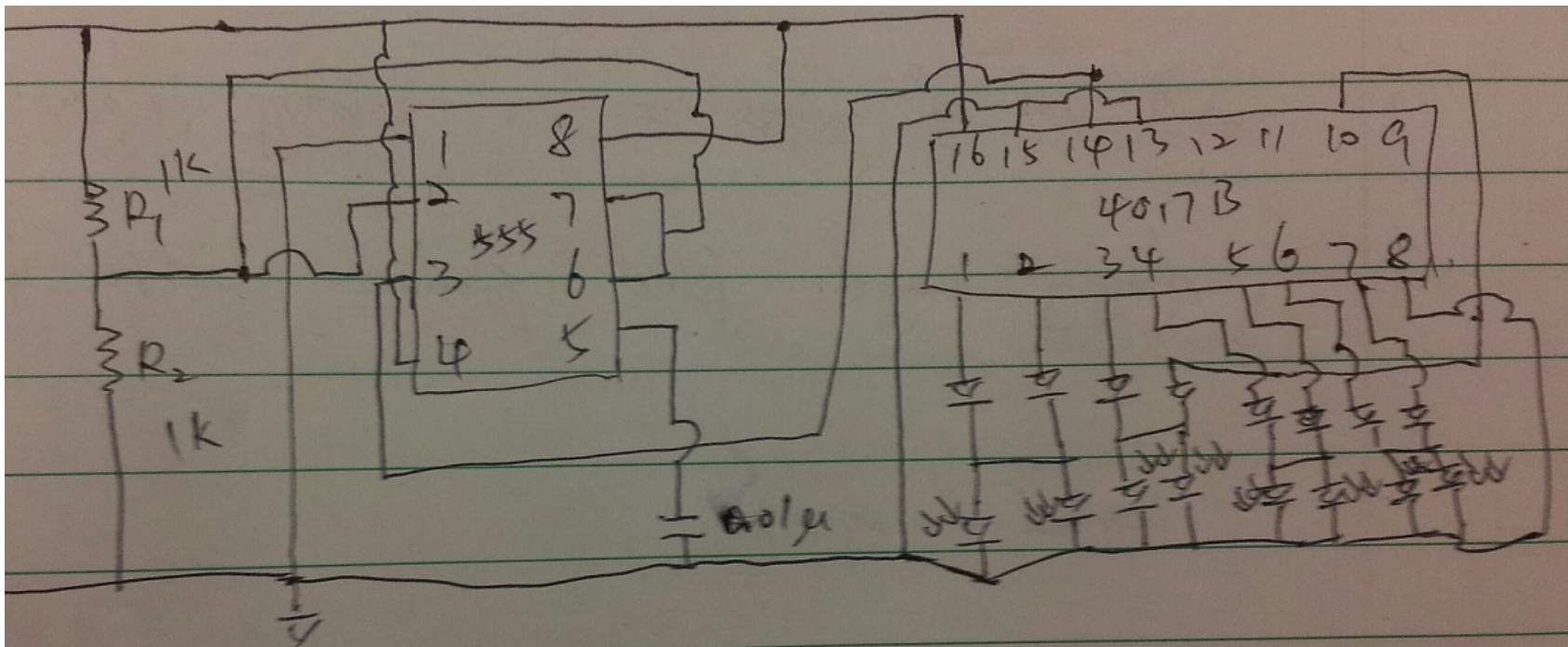
Electrical
Generator



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System Overview

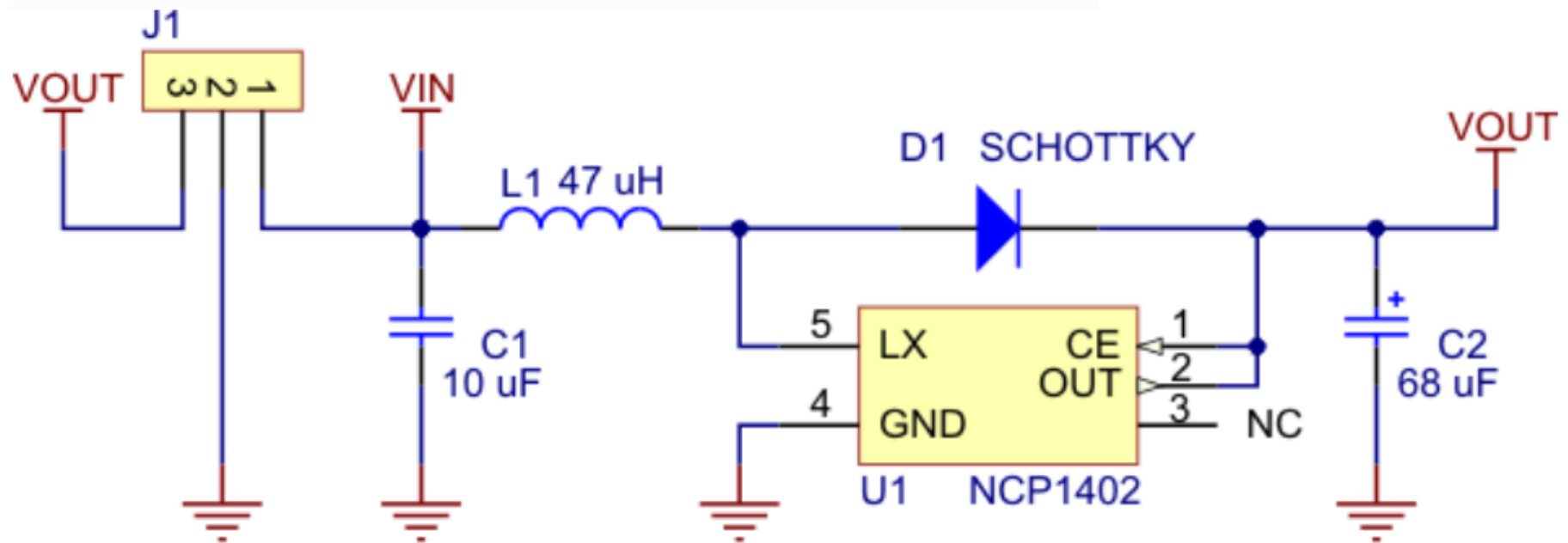
Electrical Design – Option 1: LED lighting Sequence



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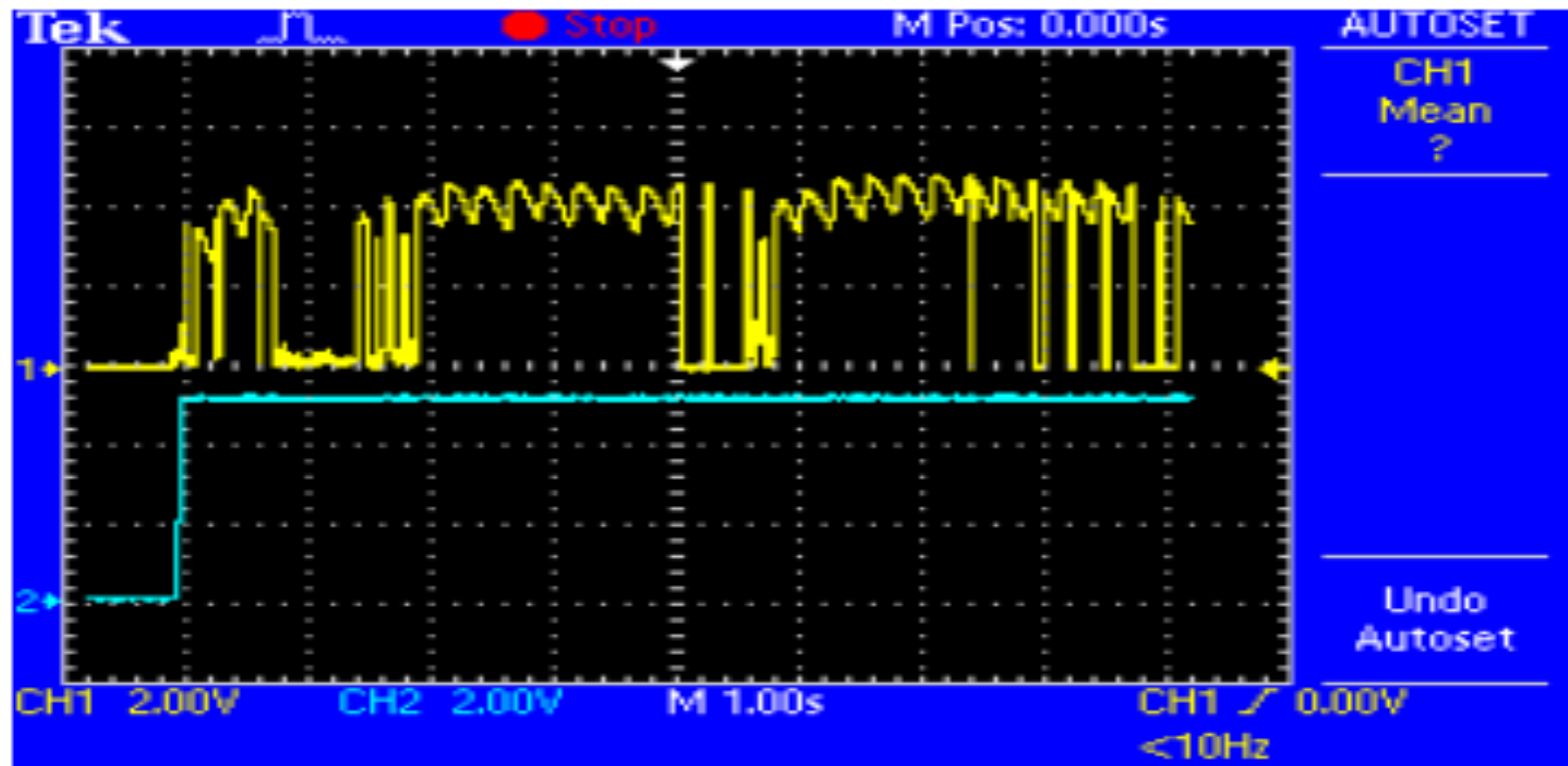
System Overview

Electrical Design – Option 2: Charging Circuit



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System Overview



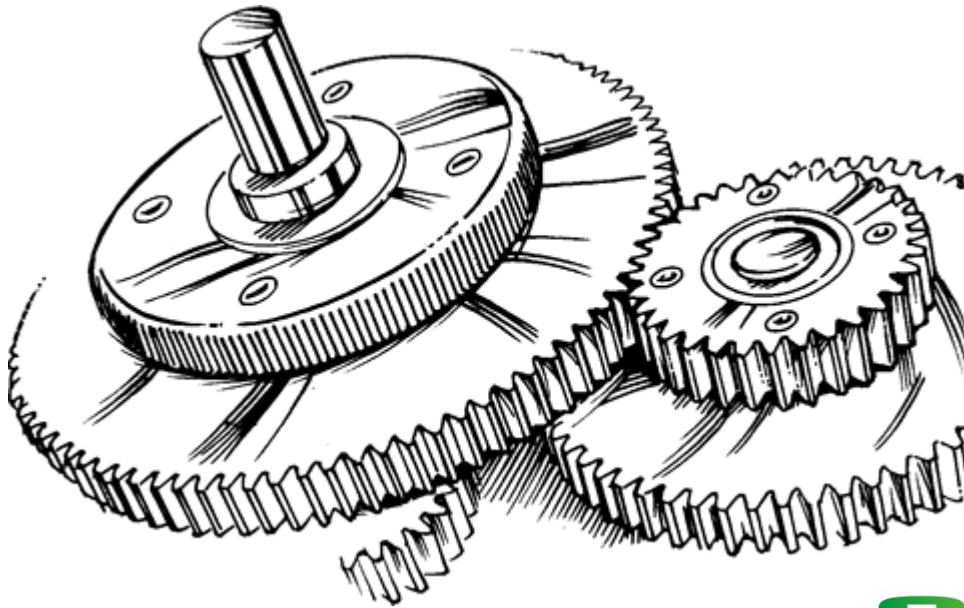
CH1- Input CH2 - Output

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Reflection

Future Improvements

1. Implement More Gears



Reflection

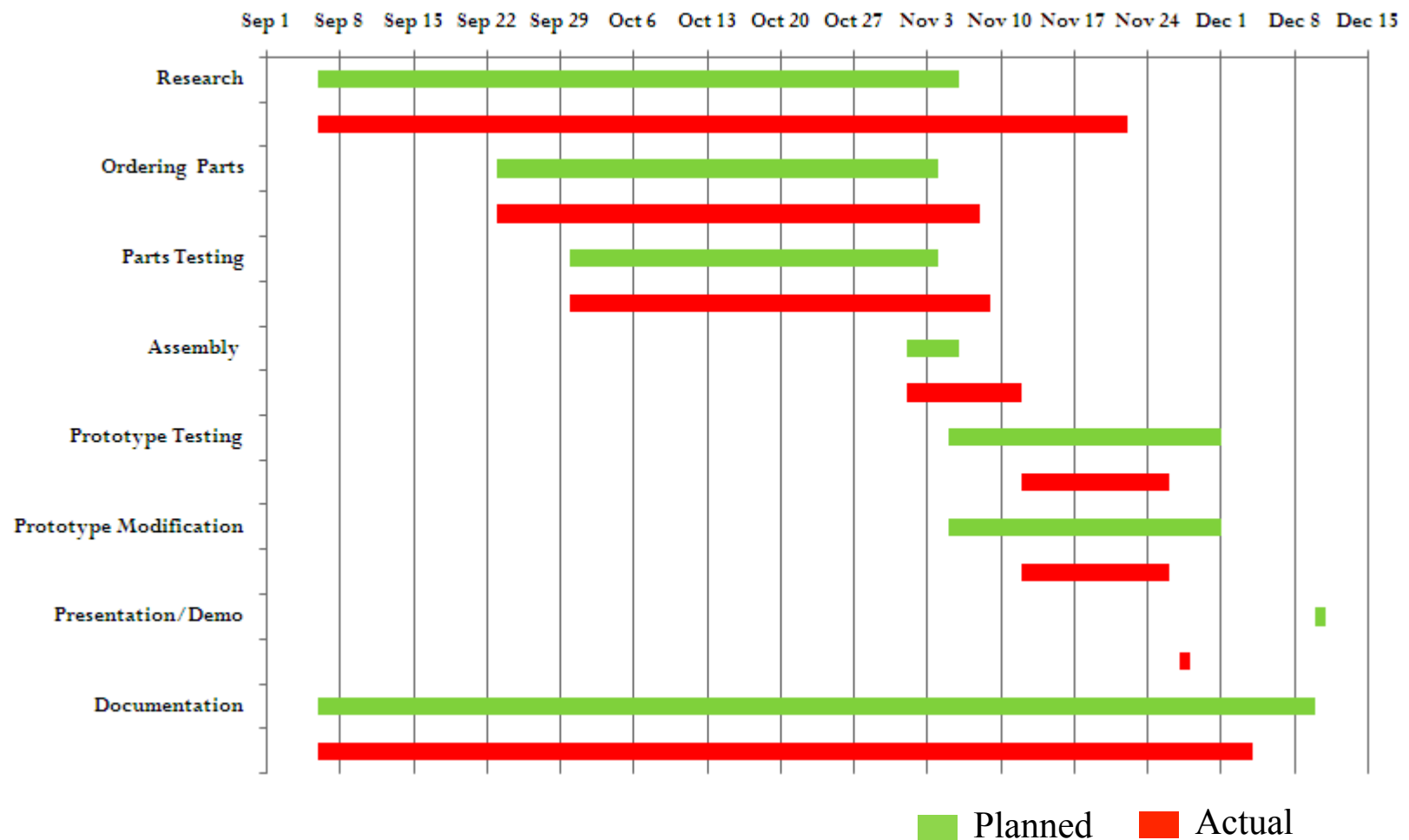
Future Improvements

2. Use female port instead of male port



Reflection

Project Timeline



Business Case

Budget

Component	Budget	Actual Budget
Piezoelectric Transducer	\$10x4	\$3.81x6
Electric Components (op-amps, capacitors, resistors)	\$25	\$7.28
Rechargeable Battery	\$20	N/A
Breadboard	\$10	\$10
Shoe Pad	\$2.5x2	N/A
Belt	\$5	N/A
Total	\$105	\$40.14



Business Case

Budget

Component	Budget
Electrical Generator	\$2.24x2
Shoes	Free
5V Step-Up Regulator (NCP1402)	\$7.28
USB Cable	\$1.00
Electric Components (capacitors, resistors)	Free
Total	\$10.52



Market Analysis

Target Market



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Acknowledgement

Thanks to

Lakshman One

Mike Sjoerdsma

Ash Parameswaran

Fred Heep

TAs for this course

Reference

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Q & A

