Second Generation Bicycle Charging Station

Mid-Point Report

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Connor Kroneberger

Background

- Provide students of all levels with a way to understand and compare the amount of energy required to power and charge electronic devices with the amount of energy produced by pedaling a bicycle
- Improve on 1st generation design by increasing portability, adjustability and efficiency

Connor Kroneberger

Design Update-Bike

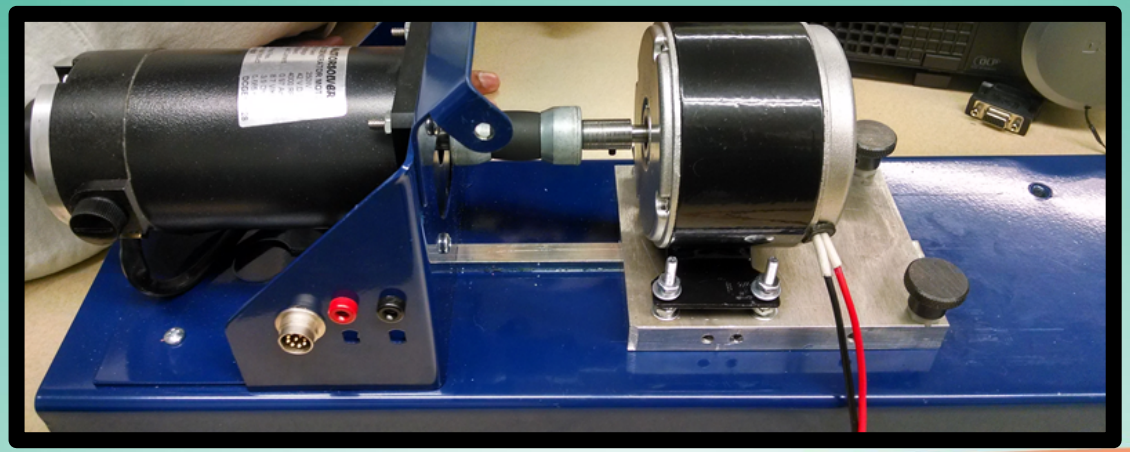
- Received components have been installed on the bicycle
  - Including adapter for disk brake caliper
- Parts needed: Front & rear axles, front brake pads
- Tuning required

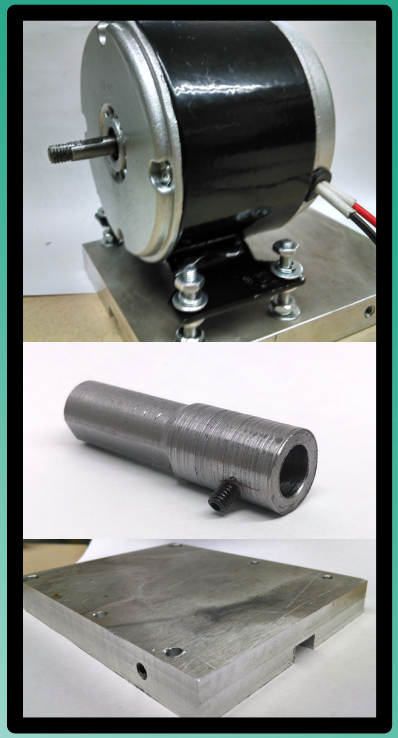
Before **After**

Jonathan Jerome

Design Update - Generator

- Coupler and adapter plate for synchronous motor testing
  - Fabricated and installed
- Testing has begun
  - A potentiometer is needed for further data acquisition
- Generator will be mounted directly on the frame of the bike

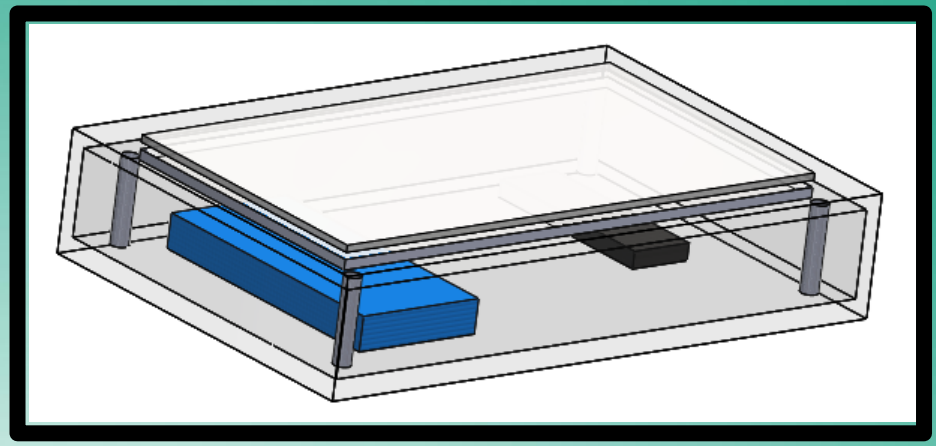




Jonathan Jerome

Design Update - Display

- Plexiglass housing allowing for views of electrical components
- Display will be inset to allow touch screen access
- Touch screen must use stylus for navigation



Rob Rosenberg

Design Update - Display

- Attachments for display
  allow for option to remove
  with allen key for transportation

- Provides ability to adjust
  angle of the screen to individual preferences

Rob Rosenberg

Design Update - Stand

- Design and build of rear stand is complete
- To be mounted when axle is acquired
- Cost to date: $172.80

Kori Molever

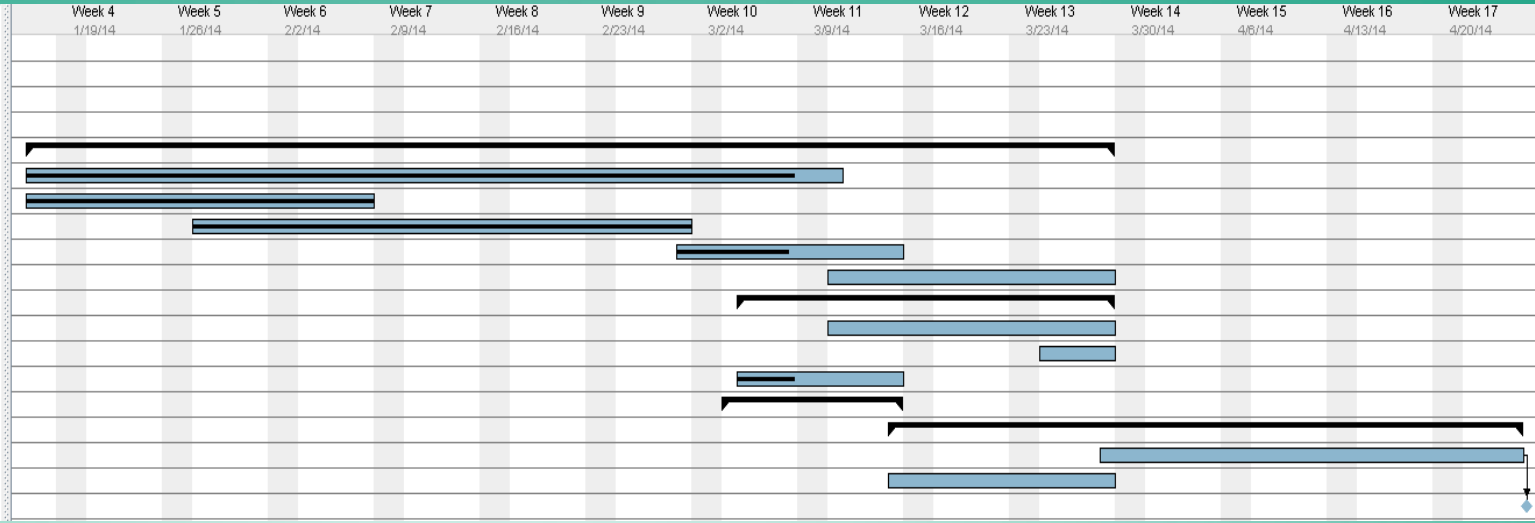
Budget Update

Component	Price	Quantity	Total
Tires	$35.43	2	$70.86
Quill Stem	$16.20	1	$16.20
Handlebar Grips	$12.83	1	$12.83
Handlebar	$15.64	1	$15.64
Handlebar Tape	$15.00	1	$15.00
Crankset	$21.93	1	$21.93
Bottom Bracket Bearing	$23.71	1	$23.71
Brakes	$20.68	1	$20.68
Disk Brake Adapter	$20.00	1	$20.00
Handlebar Shims	$9.31	1	$9.31
Handlebar Stem	$21.23	1	$21.23
Pedals	$19.80	1	$19.80
Indexing Chain	$15.50	1	$15.50
Multispeed Chain	$11.00	1	$11.00
Generator Sprocket	$15.00	1	$15.00
Stand Components	$172.80	1	$172.80
Generator Mounting Hardware	$15.00	1	$15.00
Housing Mounting Hardware	$50.00	1	$50.00
		Total	$546.49
Final Proposal Budget Estimate	$750.00	**Budget Remaining**	$203.51

Kori Molever

Timeline

Name	Begin d...	End date
Project Needs, Specifications, Plan	9/26/13	10/10/13
Concept Generation and Selection	10/11/13	10/30/13
Engineering Analysis	10/31/13	11/20/13
Project Proposal	11/21/13	12/6/13
Assemble Parts	1/16/14	3/28/14
Bike	1/16/14	3/10/14
Extra Bike Parts	1/16/14	2/7/14
Rear Stand	1/27/14	2/28/14
Front Stand	2/28/14	3/14/14
Display Box Materials	3/10/14	3/28/14
Build Phase	3/4/14	3/28/14
Build display box	3/10/14	3/28/14
Final Bike Tune-up	3/24/14	3/28/14
Generator to Bike Assembly	3/4/14	3/14/14
Test Phase	3/3/14	3/14/14
Final Presentation	3/14/14	4/24/14
Prepare final presentations	3/28/14	4/24/14
Prepare Operations Manual	3/14/14	3/28/14
UGRADS Presentation	4/25/14	4/25/14



Michael Klinefelter

Conclusion

- Next steps:
  - Design and build front stand
  - Acquire rear axle
  - Assemble housing for electrical components
  - Connect generator to rear cassette and sprocket
  - Test
  - Compile operations manual
  - Prepare for UGRADS presentation

Michael Klinefelter

Questions?