

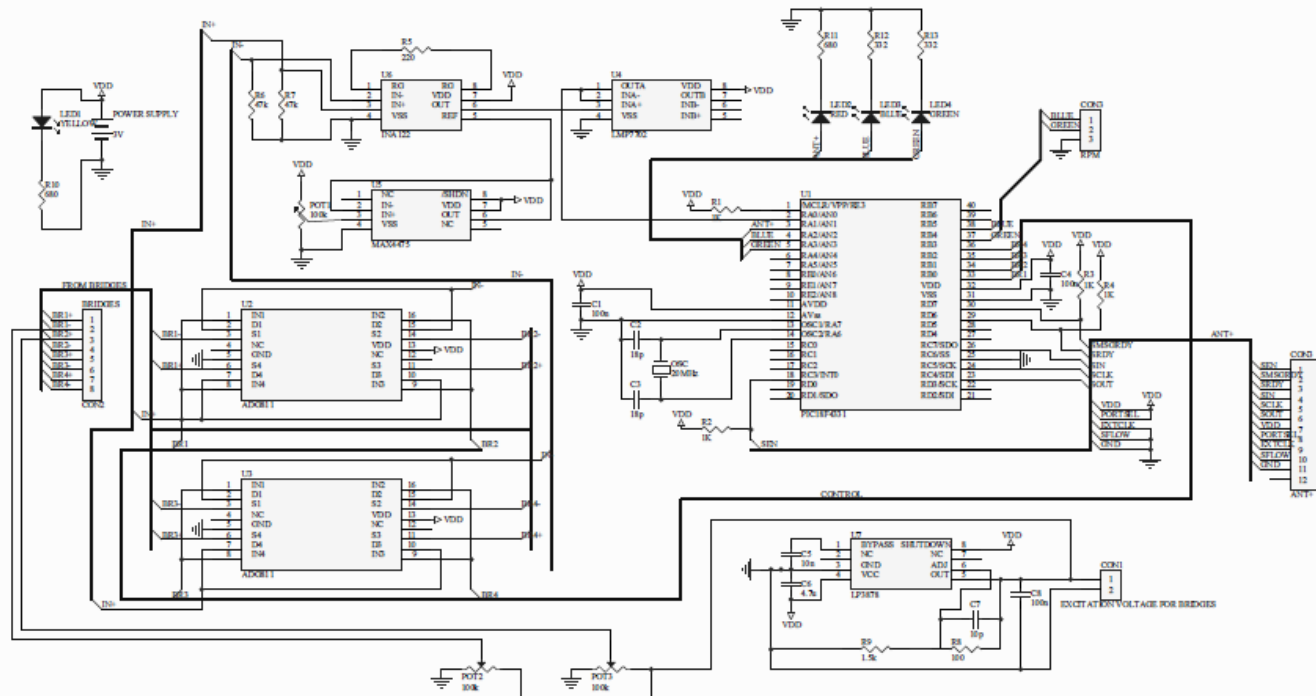


IPRO 324 – Power Measurement for Road Bicycles

October 5, 2009

Project Overview

The goal of IPRO 324 is to find an inexpensive but accurate way of measuring the power output of a rider on a bicycle.



The Circuit

Team Organization

- Mechanical

- Team Leader
 - Celeste Wegrzyn
- Team Members
 - Ross Allen
 - Sara Claxton
 - Gregory Herbert

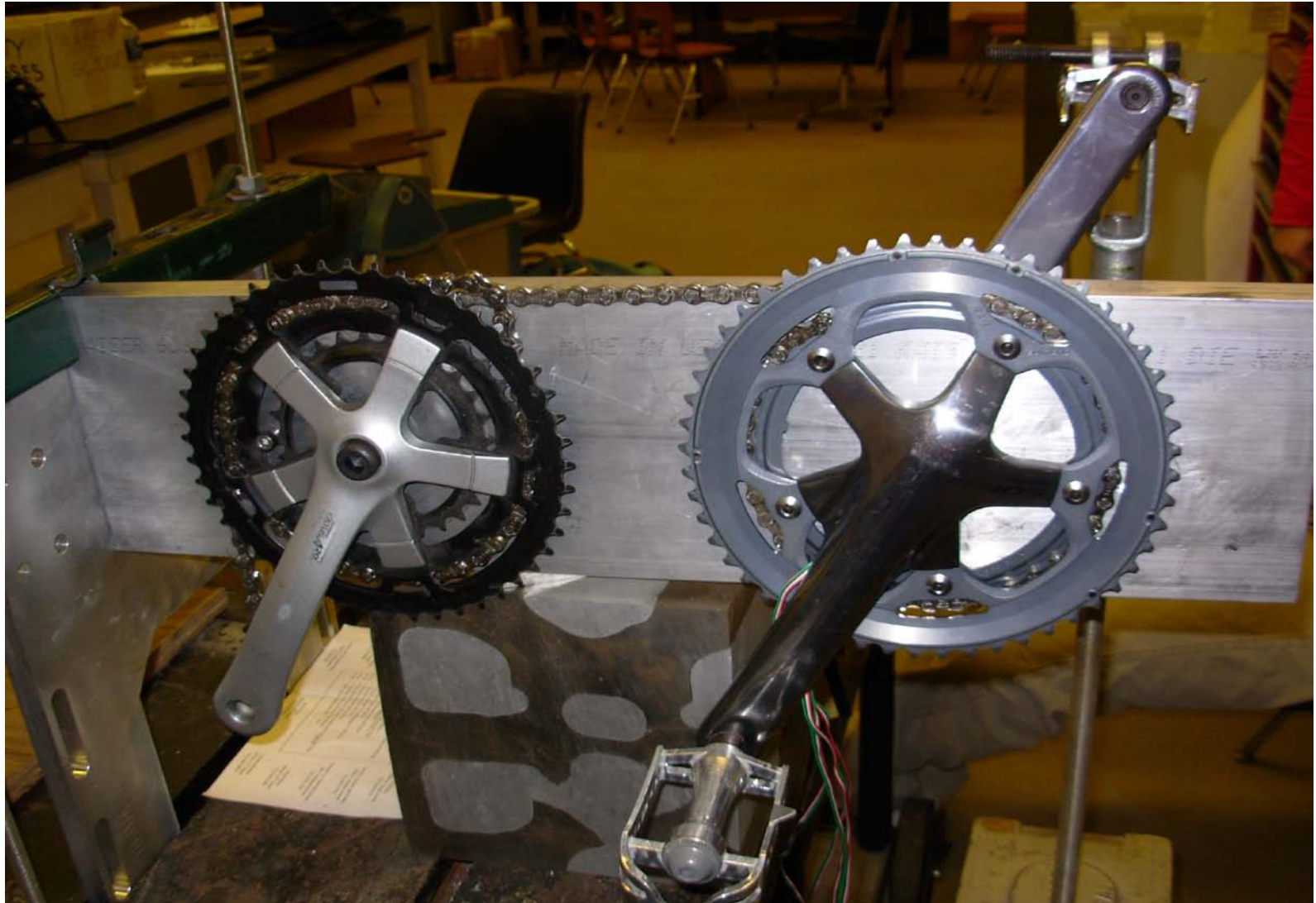
- Electrical

- Team Leader
 - Dan Shaffer
- Team Members
 - Luis Adrianzen
 - Chris Antonio
 - Mark Callan
 - Patrick Tagny Diesse

Goals – Mechanical Team

- Revise test stand setup from a vertical to horizontal configuration
- Obtain additional data from modified test stand setup
- Design mounting system of circuit
- Build bicycle for road testing
- Acquire road test data

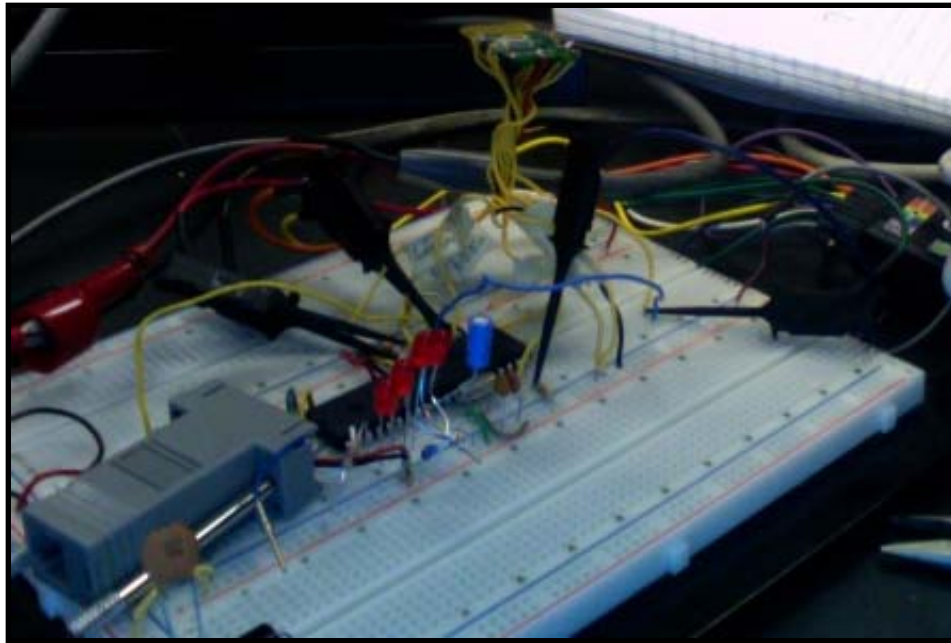
Crank Set and Testing Stand



Goals – Electrical Team

- Improve overall power efficiency of circuit
- Miniaturize and package electronics to conform to working space of crank set
- Prepare schematic diagram for PCB layout
- Debug algorithm calculating applied torque at crank set
- Fit circuitry onto bicycle

Circuitry Comparison



Our Circuit



Quarq Cinco

Team Progress - Mechanical

- Modified testing stand so it is horizontal
- Tested both chain rings with multiple weights
- Wrote testing procedures for static testing
- Found sponsor for the bike
- Blue City Cycles

Team Progress - Electrical

- Found contacts to help with design of packaging
- Found contacts to help make the circuit board
- Refined the circuit in order to make it more efficient
- Performed power consumption calculations

Obstacles – Mechanical Team

- Attachment of all components to crank
- Raising sufficient money to assemble bike
- Modifying bicycle
- Integrating electrical and mechanical designs
- Conducting live, road tests

Obstacles – Electrical Team

- Miniaturization of the circuit board to fit on the crank set
- Source code for the chip needs to be updated to reflect coefficients from mechanical testing
- Overall power efficiency of the circuit needs to be improved either through code or by removing unnecessary components in the circuit

Any Questions?

