

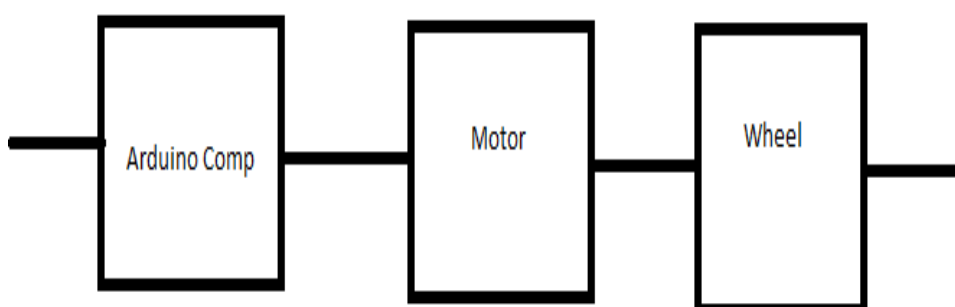
Electric Super Bike, 1/21/2012

“Team Super Bike: Matt Johnson, Alex Rybachuck, Max Kislista”

Problem Definition

- To design an electric superbike motor and electronic assembly to control the motor. That could be a cost effective substitute.
- **Schedule**
- Proposal 2012
- Parts gathered 1/5/2013
- Beginning prototype 1/21/2013
- Working prototype 3/20/2013
- **Resources**
- Engineering program/Clark College
- Intel engineers/programmers

Solution Block Diagram



Proposed Solution

we are focusing on the power aspect of this project, that being the motor driving the motorcycle and the batteries used to power everything. All this will be packaged together with a controller to control the speed of the motor. Since an AC motor is more powerful than a DC motor we are also going to implement a DC to AC inverter to convert our DC power supply of 12V into an AC supply of 120V of 60Hz. This will be done through a single phase meaning we will only have one inductor, and the wave produced by a 555 timer will be a modified square wave not a perfect sine wave. However since we are only using it to power a motor it will do just fine. The wave will then go into an Arduino Kit that we will use as a pulse width modulator to control the frequency of the wave to control the motor speed.

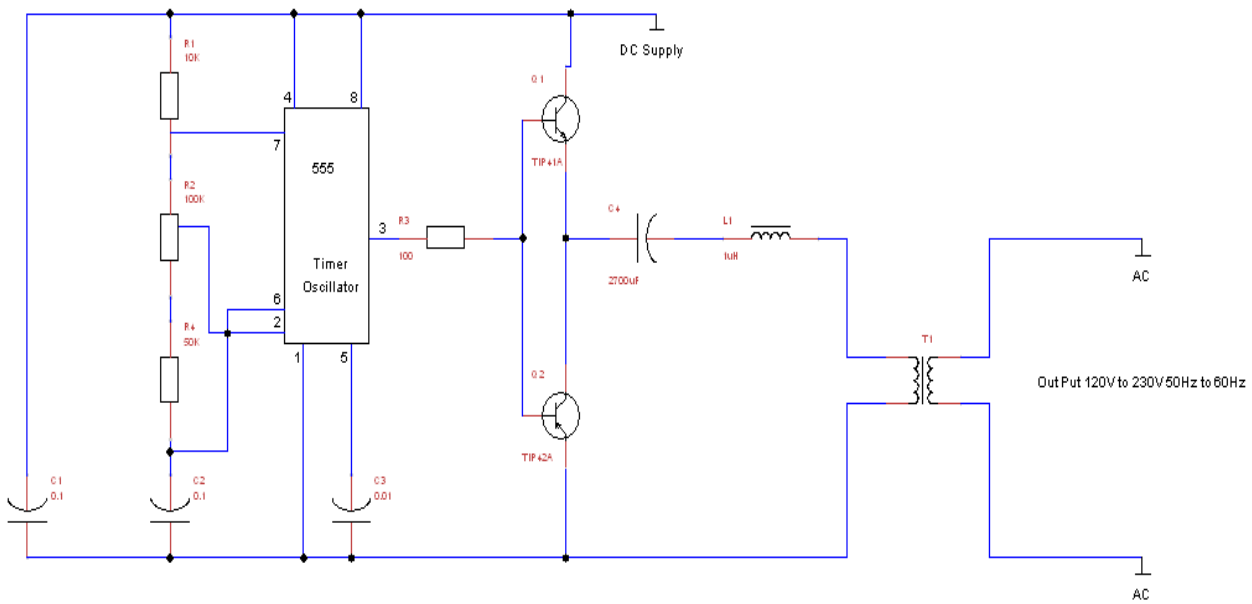
Potential Applications

- Inner city transportation
- Personal

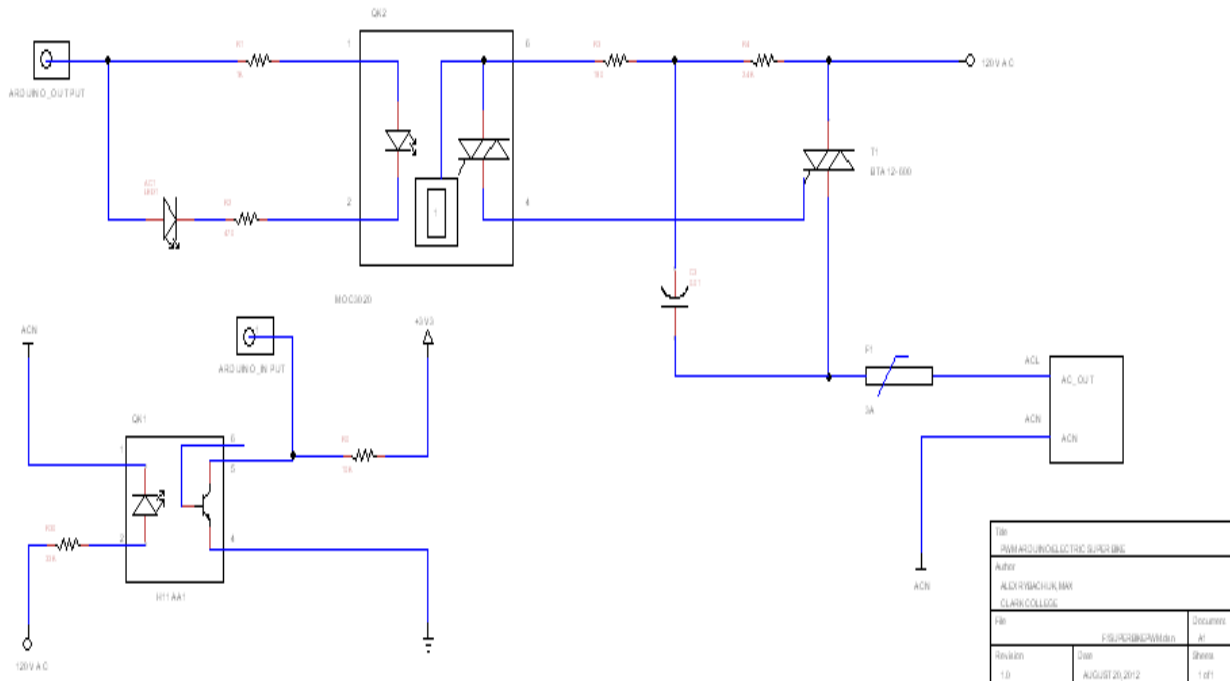
Future Improvement

- Implement Three Phase
- Rolling Model

Qty	Price	Part	Description
	34.90	Arduino Kit	Used to set PWM for AC motor drive
	0.42	NE555 IC	Drives the frequency to invert DC wave
	0.99	1K Resistor	Timing module/Current Control
	0.99	10K Resistor	Timing module/Current Control
	0.99	100k Resistor	Timing module
	0.99	50K Resistor	Timing module
	0.99	33K Resistor	Current Control
	0.99	2.4K Resistor	Current Control
	0.99	180K Resistor	Current Control
	0.99	470K Resistor	Current Control
2	0.99	0.1 uF Capacitor	Timing module
2	0.99	0.01 uF Capacitor	Timing module
	1.99	NPN Transistor	DC/AC invertor
	1.95	PNP Transistor	DC/AC invertor
	2.75	Transformer	DC/AC invertor
	2.50	Inductor	DC/AC invertor
	2.50	LED (Green)	Arduino Output Indicator
	3.50	H11AA1	Phototransistor with AC Input
	2.95	MOC3020	Motor Control
	4.50	BTA12-600	AC Control
	21.90	Bread Board	Wire everything
	100.00	AC 15 Amp Motor	Drives belt (propulsion)
\$191.74		Total	



AC/DC Converter



Arduino PWM Control