

Electric Motorcycle Team

Senior Design Group #1 ECE441, 442, 443

OSU Electrical Engineering

Special Thanks To:

Dr. Brekken OSU-EECS
-ASD Consultation

Otmar Ebenhoech Cafe Electric LLC
-Power Electronics Consultation

Jim Laney Diamond Auto Upholstery
-Seat Re-upholstery Donation

Dr. von Jouanne OSU-EECS
-ASD Consultation

Portland General Electric PGE
- Scott Baska, Brian Clark, John Wacker
- Primary Project Sponsorship

Solar Team OSU-ENGR
-Motor Donation

Michael Taylor Taylor's Portable Welding
-Metal, Welding, and Painting Assistance

Glenn Walters Linn Gear
-Gear Donation

WESRF Graduate Students OSU-EECS
-Lab Support



Welding the battery racks at Taylor's Portable Welding

Contact Information:

electricmotorcycle@lists.oregonstate.edu

<http://classes.engr.oregonstate.edu/eecs/fall2007/ece441/2007/g1/>

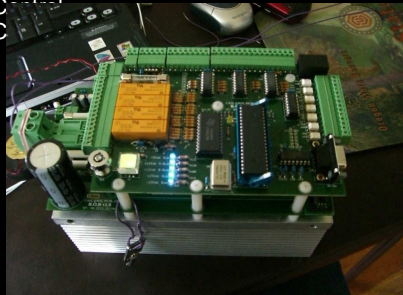
(project video available on website)

Break-Out Board

B.O.B. Features:

Full Power System Management & Control
Multiplexed Independent Battery Measurement

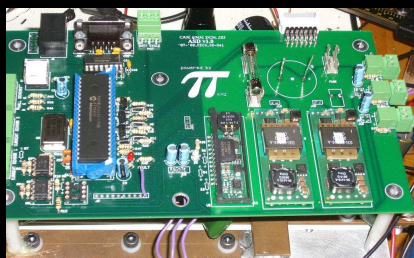
-20 Cell Capacity at 48 Volts (16 currently)
+/- 200 Amp Current Measurement
RS-232 Serial Control Interface
40Mhz 8-bit RISC Processor (PIC)
Battery Backup For Smooth Operation
120 Volt AC System Charging Automatic Safety



Adjustable Speed Drive

A.S.D. Features:

·Brushless DC (PMAC) Motor Controller
·Fully Regenerative Braking Capable
·18 MOSFETs for distributed 225 Amp Switching
·3-Phase Six-Step Switching Scheme
·Armature Angle Hall Sensor Input Monitoring
·Dual Current Transducer Current Monitoring
·RS-232 Serial Control Interface
·40Mhz 8-bit RISC Processor (PIC)
·Multiple Control Source Voltage Capable



Electric Motorcycle 2007 to 2008 Team from

Left to Right: Adam Bell, Chris Haller, Greg Hand, Derek Mickelson, Ryan Olson, KC Reaney, Leif Schneider

Motor / Drive Combinations

Mars PMAC Motor // ASD Controller (current)

- 10 HP, 200 Amp (30 sec) Peak Power
- 75 MPH Max Speed (calculated)
- 25 to 50 Miles Max Travel Dist. (calculated)

Etek BDC Motor // Alltrax DC Controller

- 8 HP, 150 Amp (30 sec) Peak Power
- 50 MPH Max Speed (calculated & tested)
- over 25 Miles Travel Dist. (calculated & tested)



Stripped 1985 Honda Interceptor Frame

Project Features

·Self-Contained 120 VAC Battery Charging

-4 Hour Charge Time (Drained to Full)

·48 Volt Configured 16x 12 Volt Batteries

·3456 Watt Hours Energy Storage

·Control System Battery Backup

·Complete AMD 500Mhz Computer

-Linux Operating System - Debian

·7" VGA LCD Display

-Digital Gage Display

-System Performance / History Feedback



Greg Hand performing Distance Testing



Finished Electric Motorcycle being Displayed at the 2008 Engineering Expo --Received "People's Choice Award"