Design and Implementation of an Electronic

System for an Off-Highway Vehicle Application

Cody McKinley Mitch Fenneman April 19, 2007

Objective: Design and implement an electronic controls package for the 2007 Purdue Quarter Scale Pulling Tractor

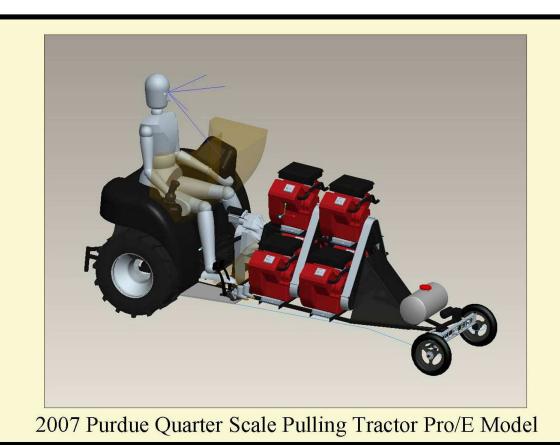
Features:

- •Parker Hannifin CAN-Bus Control
- •Fuse and Relay Access Panel
- •Throttle and Steer-By-Wire
- Shrouded Wiring Harness
- Printed Circuit Board
- •Deutsch Connectors
- Sensor Integration



ASABE 1/4 Scale Tractor

International Student Design Competition





Design Methodology

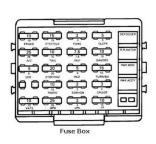
Safety

Object Detection Sensor Reverse Alarm **Ignition Lockout Feature** Brake, Seat, and Clutch Switches







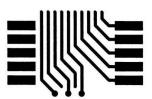


Ergonomics

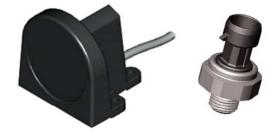
Gauge Clusters in IQAN MDL No Dash Interference MDL and Joystick Location Centrally Located Fuse & Relay Box

Manufacturability

Shrouded Wiring Harness Printed Circuit Board Deutsch Connectors Sensor Suppliers







Performance

True Ground Speed Sensor **Engine Speed Sensor** Oil Pressure Transducers **Data Acquisition**

Packaging

Steer-By-Wire **Linear Actuator** Throttle-By-Wire Electronic Servo Control

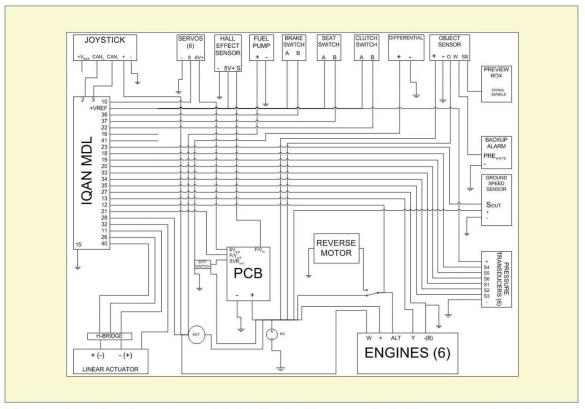








Electronic System Integration



Worked in Conjunction with ¼ Scale Tractor Sub-Teams to Satisfy their Electrical Requirements



2007 International Quarter Scale Tractor Pulling Competition: Peoria, IL - 5/30/07-6/3/07

Special Thanks: Dr. John Lumkes, Dr. Joseph Irudayaraj, John Andruch, and ABE Faculty and Staff

<u>Sponsors:</u> Parker Hannifin, Daimler Chrysler, PESC, Eaton, Preco Electronics, Vansco Electronics, Ladd Industries, Sensata Technologies, Sunstone Circuits, HiTec Servos, Linak, Tapeswitch, Cherry Sensors, National Semiconductor

