

Senior Design Projects 2005

2005 1ST PLACE - Basic Utility Vehicle

Students: Jim Bachman, Sean Reed, Vince Breidenbach

This team is entering a competition to build a basic utility vehicle for use in third world countries. The vehicle is aimed at improving lives in developing countries by facilitating the spread of simple vehicles that can be assembled almost anywhere, by almost anyone. This project is built under the guidelines of The Institute of Affordable Transportation. The team will complete on April 30, 2005 in Indianapolis against other major U.S. universities

Paper Machine

Students: Dan Thyen, Rich Baker

The project is to correct the speed readout for the coating head rollers on a paper coating machine. An error correction curve was developed experimentally and then applied to speed signal to adjust for the sensor errors.

Automatic Car Lifting Mechanism

Students: Daniel Black, David Graf, and Joshua Moreland

The team is designing all phases (structural, activation, safety, cost, etc.) of an automatic passenger car lifting mechanism that may be employed when any tire on the car goes flat. The design takes into account varying surface roughness and unevenness and there will be some investigation into an inside sensor system that warns the driver of impending "flatness" and identifies the tire location.

First Robotics

Students: Jimmy M. Nichols, Matthew E. Brown, Craig A. Mathews

First Robotics with Lakota East High School offers our students a unique opportunity to mentor young potential engineers. This project involves designing a robot to perform a specific task and earn points in head-to-head competition against other robots. In addition, students assist with facilities preparation and fund raising.

HVAC Trainer

Students: Gary Bosse, Josh Huff, John Wilson

This team is modifying an HVAC trainer for use in a thermodynamics course. The modifications will allow for more flexible and accurate labs. Students will be able to monitor temperature and pressure variance across an evaporator coil. This will allow the Coefficient of Performance (COP) to be measured accurately. The system is web based, allowing the controls and data to be used for distance learning.

Fuzzy Logic Controlled Motor

Students: Mindy Nicely, Telicia McCants

This team is designing the electronics and writing the code to create a hands-on lab experiment for teaching fuzzy logic concepts. Students will write input and output membership functions and rules using a fuzzy logic interface. The behavior of the motor will then be observed as the input and output membership functions are modified.

Dayton Technologies Pick Cycle Automation Application

Students: Michael W. Harrison, Bryan Waye

The main objective of this project is to use engineering design and analysis to reduce packaging labor by developing automation equipment and fixtures. The project is intended to determine the process parameters and equipment design improvements that would give the greatest labor savings over the project life cycle.

Manufacturing Automation Cell

Students: Steve Hart, Alan Belcheer, Adam Watters

This team is designing a grant funded manufacturing automation cell at Rhodes State Community College. This group worked with the college to determine what technologies needed to be taught in the cell, and designed a working model that will be used by the college.

Process Trainer

Students: Clarence Breitenbach, Aaron Roberts, Andy Rearden

This team is designing a series of fluid based lab experiments for Miami University. They are also interfacing three process trainers to the web for use in distance education. These labs will reinforce classroom lectures on topics in fluid mechanics.

Pacific Industries Valve Stem Transfer

Students: Neil Gardner, Joe Rudischum, Greg Selzer

This group is working with Pacific Industries on a redesign and cost analysis for a manufacturing application to transport process valve stems moving from a lathe to a wash station.

Viscosity Measurement System

Students: Randy Schilling, Darius Banks

This team is designing a trainer to measure the viscosity of most fluids. They are also interfacing the unit to a PC using Labview.

Backhoe Design

Students: Mike Blaisdell, Tim Brahimaj, Adam Kemery

This group is designing a backhoe for use in farm applications. They designed the part using hand calculation and verified the results using Working Model. The backhoe was then built and tested.

Magnode Mobile Caustic Etch Tank

Students: Mark Miller, Dura Peffly, and Mike Weeks

The main task of this project is to modify the design of a caustic etch tank that checks aluminum grain structure. The existing procedure does not have good accuracy or repeatability, and is labor-intensive. The redesign of the tanks will solve these problems.