ACYST

(Actual Condition Yield Simulation Terminal)

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Problem:

1. Changes in yield monitoring technology have outpaced teaching methods.
2. Current educational methods and tools have inefficiencies.
   a. Field observation poses challenges.
      i. The safety of students and machine operator is a concern.
      ii. Crop seasonality allows observation only during harvest.
      iii. Harvest down-time incurred by farms is a hindrance to demonstrations.
   b. Operator manuals are most effective when used with a monitor.
   c. Instructional videos lack hands on experience for students.
   d. Current simulators do not allow students to calibrate the monitor or observe operation.

Objective:

1. Develop a concept of a simulator which allows students to interact with the Insight™ monitor as they would on a combine.
2. Produce technical drawings of ACYST using AutoCAD™.
3. Calculate power and speed requirements of motors and linear actuators.
4. Construct ACYST.
5. Create instructions for students and instructors.

The Concept

1. A simulator that moves actual grain.
2. The Ag Leader Insight™ Precision Farming System will monitor grain data.
3. An interactive display board.
4. Calibration of the monitor.
5. Continuous flow of grain to allow creation of yield maps.

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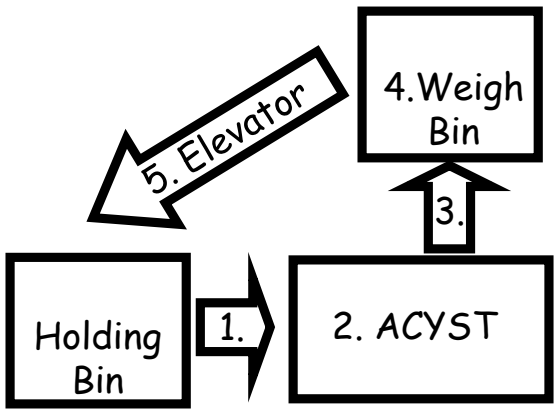
The Ag Leader Insight™ terminal.

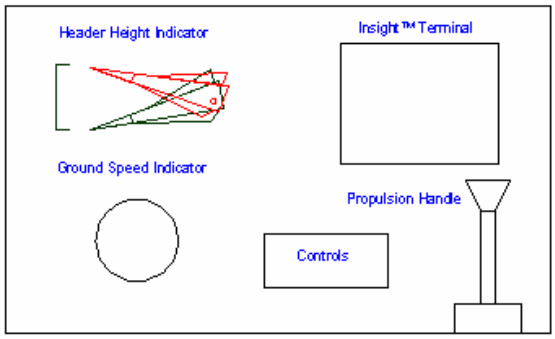


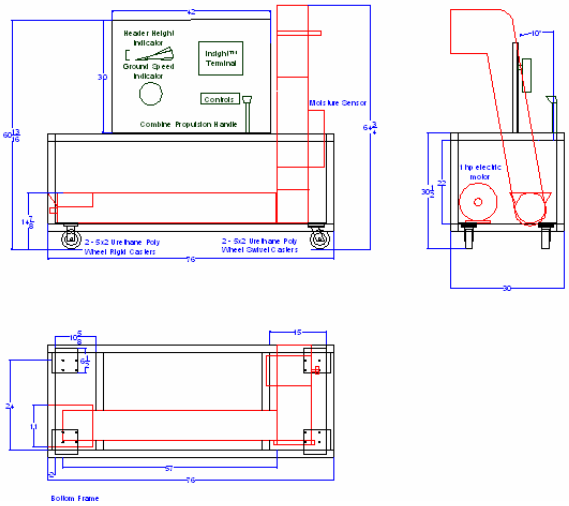
How it works

1. Grain enters ACYST from the holding bin.
2. ACYST measures grain flow, grain moisture, and shaft speed in addition to simulating ground speed and header height.
3. ACYST elevates grain into the weigh bin.
4. The grain is weighed to calibrate the flow sensor.
5. Grain is elevated back to the holding bin.

The Display

1. A propulsion handle from a CaseIH 8010 combine controls indicators.
   a. Ground speed is indicated by the drive tire rotation.
   b. Header height is indicated by the position of the header.
2. The Insight™ terminal displays the yield.
3. Ignition and separator switches control the simulator's power.





Design Criteria

- System mimics combine.
- Modular design that allows quick set-up.
- Transportable in the ABE department's trailer.
  - -Height limited to 66 inches.
- Fit through a common doorway.
  - -Width limited to 32 inches.
- Easily maneuverable by one person.
- Light weight.
  - -Calculated bare cart weight less than 200 lb

The ACYST project was created in conjunction with the grain handling project of Thomas Sprague and Jason Beuligmann.

Academic Advisor: Professor Gaines E. Miles

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The clean grain elevator assembly used on ACYST was taken from an IH 1460 combine.

Retrieved 4-14-05 from http://agleader.com/index.htm

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