MEMO: January 26, 2006

SUBJECT: 2006 Prototype Robot Design

GOAL: March 16-18, 2006 -, Boilermaker Regional Competition

Attachment: January 21, 2006 Meeting Minutes

To: TEAM PhyXTGears 2006

Last Saturday was a huge step in the design process as we move forward on the 2006 robot. We are considerably closer to reaching our goal to …

Make a competitive Showing at the Boilermaker Regional Competition.

Each of the teams has reached conclusions that are helpful in creating a plan for the next step in the design process. Mike Koch's proposed concept for the overall design provided a clear vision of we must do to continue the prototype phase. Please see the attached documents for the sketches Mike provided to communicate that vision. With that vision you have met the compressed schedule as defined in the previous memo. However, to stay on track the next working prototype should be complete and tested January 29th. That is this Sunday.

Several ideas were discussed. Ultimately PhyXTGears reached a consensus and Mike's proposal was accepted as the next design iteration for a prototype that is now very similar to what PhyXTGears can expect in the completed design. To accomplish this next phase the mentors were assign specific areas to further develop. They will lead their team to complete this stage with the considerations or objectives we decided upon during this meeting.

Brad's Team - Shooter using one axel

- Motor = large CIM
- Aim side to side by turning robot
- Aim vertically by release point or speed of deemed capable
- Feed from rollers
- Optimize dispersion (accuracy)
- Understand the relationship between wheel mass and motor torque to optimize the speed at balls throwing rate (2 balls per second is the minimum goal)
- Recommend wheel type by starting with two eight inch wheels on a single axel

Mike's Team – Gathering and handling balls

- Move robot to pick up balls via driven rollers & belts
- Prototype gate
- Motor is limited one large CIM
- Prove out low rear shooter
- Feed balls in from front and lift to top for shooter or storage
- Must catch/funnel balls from human player
- Must feed shooter or deliver to storage

Allen - Drive train/chassis

- Two transmissions with four motors (small CIM)
- Steer to aim
- Optimal wheel base/traction (26 X 26)
- Consider wheels or tracks
- Speed & acceleration
    - 2 speeds?
    - At no more than max weight by as close as possible
    - 8 f/s max?
- Chassis must be rigid and designed to fit and working mechanisms
    - Bumpers location and mounting considerations

Kevin's Team - Ball handling & storage

- No motors required, should be gravity fed
- Must drop into rollers via a gate to send balls to top for shooter
- No less than 10 balls, but as many more as possible in storage
- Minimize space constraints
- No jamming – the balls must move unassisted

Mark & All - Overall

- Weight and center of gravity (CG) considerations
- Power consumption chassis must integrate all systems
- Brian, Paul and Kent to consult with all sub teams as needed

PhyXTGears is no target and working extremely well together. Each of you are making great contributions to the team as we move ahead. Keep up the good work and remember…

AIM HIGH!
GO FOR THE GREEN!
PhyXTGears!

Mark Lohmar
PhyXTGears
Project Manager

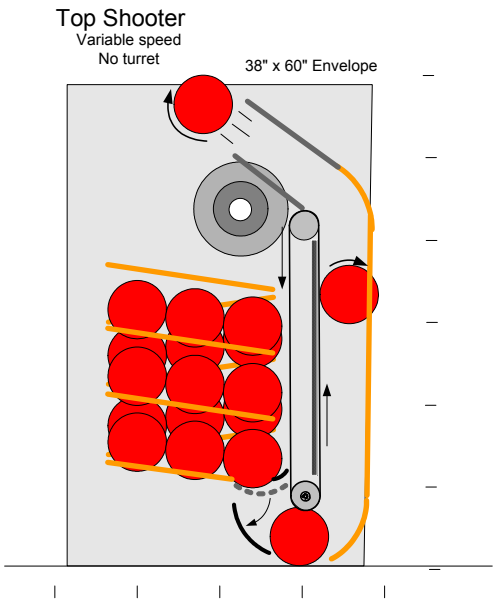
ATTACHMENT

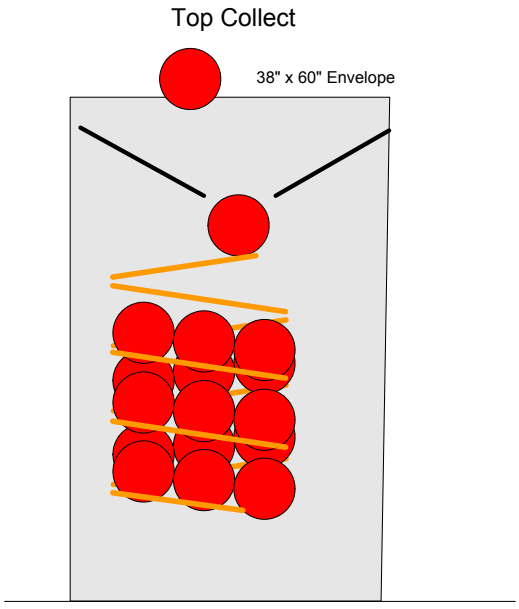
Simplify and Integrate

- This design simplifies the design by
  - Eliminating the turret and depending on robot turning for side to side aiming
  - Eliminating tilt and relying on changing motor speed for distance control
  - Combining using the lifter inertia to pre-fire into the shooter with eliminating a staging mechanism.

Simplify and Integrate

- It provides four basic functions:
  - Top goal shooting
  - Bottom goal shooting
  - Gathering from the floor
  - Gathering from play toss in





Bottom Shooter

38" x 60" Envelope