THE NUTS AND BOLTS

Carmel High School—Rolls-Royce www.techhounds.com

TECHHOUNDS TEAM 868

FIRST Robotics Competition
Issue 3.2
March 2, 2010

INSIDE THIS ISSUE

UPCOMING EVENTS

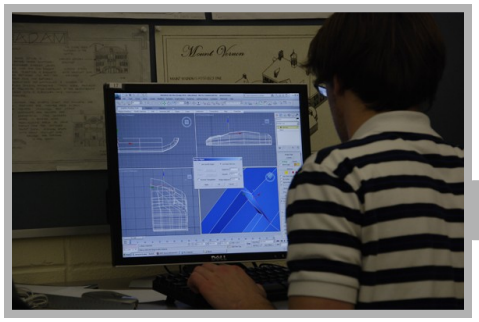
- **Kansas City Regional:** March 4—6, 2010
- **Boilermaker Regional:** March 18—20, 2010
- **Atlanta International Championship** April 14—17, 2010

Everyone is welcome to attend our competitions!

AUXILIARY CONSTRUCTION

ROBOT OPERATIONS

PROGRAMMING/ELECTRICAL



ANIMATION

WEBSITE

It has been a fast-paced six weeks for the TechHOUNDS Robotics Team! As our deadline for the robot on February 23 approached (with earlier deadlines for some of our other divisions!), the team spent countless hours working in front of computers, constructing with machine tools, and practicing for competition. Keep reading in this issue to see how exactly each of our divisions wrapped up the Build Season, in addition to other interesting highlights!

WHAT IS FIRST?

The *FIRST* Robotics Competition is part of ***FIRST*** *(For the Inspiration and Recognition of Science and Technology)*, an organization that, according to founder Dean Kamen, strives to "transform our culture by creating a world where science and technology are celebrated and where young people dream of becoming science and technology heroes." For more information, please visit **www.usfirst.org**.

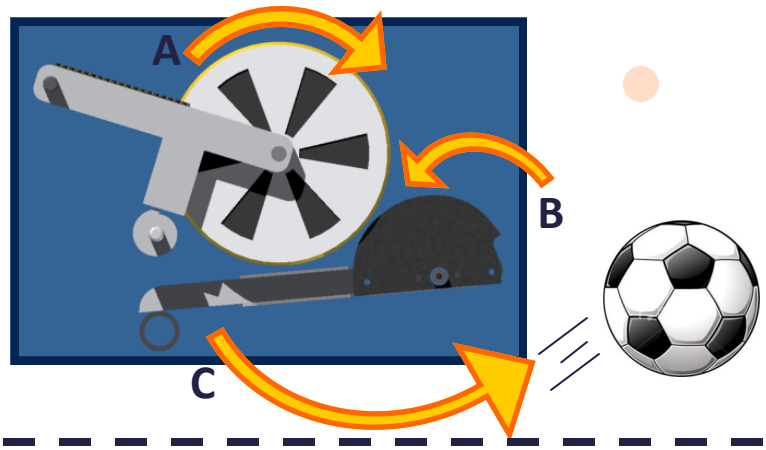
FIRST®

ROBOT OPERATIONS *UPDATE*

"As expected, the Robot Operations division tirelessly worked through weekday team meetings and weekends to ultimately produce a functioning robot by the end of Build Season. During Week 3 and Week 4, the division ***finalized the drivetrain*** *and designed the main feature of our robot, the "****kicker module****". We* ***built the parts*** *for this module and* ***assembled it****, painted the* ***spinning flywheel mass*** *(described below), and prototyped the "****ball blocker****" (which keeps the soccer balls an appropriate distance from the robot frame for optimum kicking). In the last weeks of Build Season, the Robot Operations team assembled the various mechanical components of the robot itself and worked with the Programming/Electrical Division to allow the robot to move across the playing field and operate the appendages. Now that our robot has been "bagged and tagged", we are anxious to see our team compete at the Greater Kansas City Regional!"*

— **Charles Nepomuceno** and **Stephen Spence**
Robot Operations Leaders

HOW OUR ROBOT *WORKS*



Our robot is primarily a kicker. We hope to play in the midfield and direct the soccer balls over to our side of the field while occasionally scoring goals. Here is how our kicker module works (see above figure):

A: Weighing **14 pounds** and made of **wood**, this large mass is powered by a motor to spin at an incredibly fast speed in a **clockwise direction**, as shown.

B: When we want to kick, the spinning mass meshes with the "**kicker wheels**," causing them to spin **counterclockwise**.

C: The **counterclockwise motion** of the kicker wheels leads the actual **kicker bar** to swing forward, thus kicking a soccer ball anywhere from **35 to 40 feet**! The playing field itself is only 54 feet long!

PROGRAMMING/ELECTRICAL *UPDATE*

"Our division was incredibly productive during the final weeks of Build Season. Using ***LabVIEW*** *(a professional development software) and* ***Java*** *code, we have programmed the 2010 robot to* ***drive in all directions****. The drivers can do this with an* ***Xbox 360 controller****! In addition, we constructed a* ***control board*** *(the "brain" of the robot) and experimented with/implemented an* ***Axis camera*** *(the "eyes" of the robot) along with its code. Finally, we are able to operate the* ***PSoc digital electronics board*** *(involving a controls system comprising of switches and LEDs). We prepared for and successfully completed the* ***final wiring and installing other electronic components*** *of the 2010 robot—our final days were consumed by troubleshooting with the Robot Operations team to fix small bugs here and there. We can't wait to see our robot at competition!"*

— **Alex Ryker**
Programming Lead

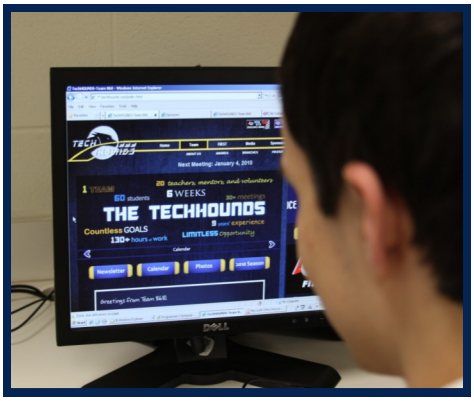
TechHOUNDS *Open House*

On February 22, 2010, the TechHOUNDS invited all of our sponsors, parents, and supporters to see the completed robot up close and in action! Attendees also saw another element of the competition: our 10' x 10' pit design (right).

Website *Update*

"We have officially launched our new website design on ***www.techhounds.com****! Updates include new* ***photos****,* ***newsletters****,* ***videos****,* ***current sponsors****, and more! You can even follow the whereabouts of our robot on its own Twitter account. Our website has been submitted to both the* ***Great Kansas City*** *and* ***Boilermaker Regionals*** *for the* ***Website Design Award."***

— Thomas Keen
Website Supervisor



Animation *Update*

"The Animation Division had to work quickly during the last few weeks of Build Season, as our animation was due on ***February 17, 2010*** *for the* ***Autodesk Excellence in Design Award****. We finished up our* ***camera*** *movements and* ***animating the human figure*** *(including the hair and eyes, facial bones, and movements of the face), along with compiling our work for our* ***final submission****. These contents, including the storyboard and final animations, can be seen on* ***www.techhounds.com****."*

— Noah Bannister
Animation Leader

Official Animation Explanation:

To eliminate the danger of horrific accidents and environmental pollution caused by tractor-trailers, we came up with the idea to run an electromagnetic cargo train through a vacuum tube. We replaced the need for diesel by using the piezoelectric effect to generate power from the vibrations of passing cars.

Aux. Construction *Update*

"The Auxiliary Construction Division completed several tasks as the Build Season came to and end. We finished our ***pit display*** *(placing a* ***new sponsor banner*** *and* ***light holders****, modifying our* ***pegboard****, and adding* ***light switches*** *and* ***conduit framework****), finalized* ***the workbench****, added "****robot holders****" inside our crate, and completed* ***inventory*** *of all items to store on the bus. We are ready for competition season!"*

— Andrew Johnston
Construction Leader

A SPECIAL THANK YOU TO...

*All **parents, supporters, sponsors, teachers, and mentors** who have promoted yet another exciting build season.*

We invite all of you to join us at our competitions in person or online at www.techhounds.com!

The **TechHOUNDS** have nominated **MR. GEORGE GILTNER** this year for the **WOODIE FLOWERS AWARD**, a prestigious recognition that acknowledges the significant impact a certain coach has made to our team.

DID YOU KNOW?

BEFORE joining **TechHOUNDS**, only **52%** of members this year had been exposed to the engineering design process.

TechHOUNDS has helped **100%** of our members learn more about science, technology, engineering, and math. We have an impressive record of sending all of our senior graduates on to higher education in these fields.

CONTACT THE TECHHOUNDS

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