

Week Six Newsletter



Ben S. working on the center shaft



Tryouts for the human player taking place



Week six of robotics was comprised of working out the bugs of the design and putting the finishing touches on the robot before shipping. This was also the week that the strategy team also held try-outs for the human player. The team was able to put the robot together, but there was a problem with the central shaft that pulled the balls up. It was vital that the robot was put together without major faults during the final Saturday of build season and the team pulled through. Some of the team also met on Presidents day to finalize all the parts of the robot like making the bumpers.

The central shaft of the robot is a rotating shaft that pulls the ball up through the Archimedes's screw. The trouble with the shaft was that it was not mounted properly. The resulting problems included vibration, very loud noise, and random robot shut-downs. The team had to take the robot apart and they worked hard to diagnose and fix the problem, so the team spent all of week six to fix the central shaft problem.

Try-outs for the human player were rigorous so that only the best were chosen. Standards for the human player are good aim, agility, and fast reactions to be able to shoot the orbit balls into the trailers. CAD team lead, Greer, and CAD team member, Scott, were chosen to be the human players.

The team worked hard during the final week of build season even with the lack of the Thursday build day. Talon was successfully completed and shipped on Tuesday without the need of a late night. This year was one of the most productive years in TALON 540's history.

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Greenwood Presentation

This week, students at Greenwood Elementary learned all about the robotics team at Godwin. The team held a brief presentation in the gym about the team, outreach, and FLL. Afterwards, the team shot t-shirts using Lt. Shiny Sides and one of the alumni showed the students one of the robots that could be created for the First Lego League Competition. This presentation helped to spread the word about First, and gave students basic insight into the world of FIRST robotics.

The primary part of the presentation included a power point about our team and what the team does for the community as a whole. The team representatives discussed robots from past years, such as Triton, Talon, and Pandora. Furthermore, the team talked about Talon 540's various community service projects, such as Big Brothers Big Sister's Duck Race, Night Under the Stars, and Jake's Reindeer Race. Lastly, one of the team leads talked about FLL, a small robotics competition based off of using Lego blocks to create a robot to complete a specific task. The team then held a short Q & A session, and showed off some of the robots that the team has built off season.

The students as well as the teachers responded with great enthusiasm, and hopefully the team's presentation sparked some interest in FIRST robotics in Greenwood Elementary kids.



Team presentation at Greenwood Elementary



Mentor Mrs. Holley and team captain Alex B.

Mr. Hurlburt Lead Mentor

We did it. The robot is built, tested and shipped on time, under budget and under weight. This is the 1st time in team history that we accomplished this. We have come along way in the 3 years that I have been with this team not to mention over the 9 years the team has existed. I am proud of this team by sticking to the K.I.S.S. methodology of design and not trying to build something too complex and difficult. We could not have done this with out the help and support of our sponsors, mentors, parents and dedicated students. We pushed this last week to finish the robot and we did it. We also submitted our revamped website for the website excellence award. We submitted our essay and executive summary for Chairman's promoting *FIRST* and our "Go Green" Campaign, which I am really excited about. I feel along with others that this could be our year to take home Chairman's, Regional Winning Alliance and possibly Engineering Inspiration Awards. Even though we have a very young team of students we were able to pull together and utilize our adult and alumni mentors knowledge and expertise to get it done and "Make It Happen." I can not wait to see what next month holds for us and we have much preparation in order for us to accomplish those amazing awards and achievements. Thank you all for your continued support and help this 2009 build season and I congratulate this year's team on a job well done.

Thank you.

Mr. Hurlburt

Mrs. Holley Assistant Mentor

Wow, what a great ending to the build season! All the students, mentors and volunteers were so excited to see the finished robot, webpage and our Go Green Campaign underway.

As a new assistant mentor, I was amazed at our students, parents, volunteers and sponsors who helped throughout the year. I want to thank the PR Staff for pulling it all together and the help they gave me as a new mentor.

A Look at Week Six from the Students

Stefani Haas

Awards Lead

This week I have been really happy with what is going on! John shot some video that will be used to accompany our pictures and video clips that were selected for the video! I have some final editing to do and the essay is ready to be edited. TIMS has been given to our lead mentor, Mr. Hurlburt, so that he can look over it and hopefully it will be sent out soon. It is looking like everything will go out fully finished and on time!

Chris Lee

Electronics Lead

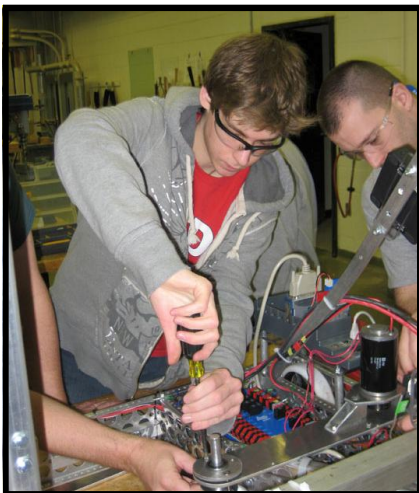
Talon 2.0 makes a record – it's the earliest working 'bot for our team! Even though we seemed to take two steps backward this week – Talon was disassembled slightly to make minor tweaks – we know the robot moves and fires, a far-and-away improvement over last year. Once the small corrections are made, putting the robot back together is a simple matter of five or six bolts.

The electronics team and I had relatively little to do, now that the bot is wired. We've mostly been tidying up our wires and moving temporary attachments into their final positions. One difficulty was re-attaching the Jaguar wires on the starboard side of the robot. The frame and battery tray have virtually encased the components, making it very hard to line the wires up and work a screwdriver. However, a third hand can make all the difference in the world, and once we worked as a team, the job became simple.

Brock Davis

Design Lead

This week we spent as much time as possible tweaking the few problems that still plagued the robot. Though we were unable to work for most of the days, we still made a few breakthroughs and diagnosed the problems. It's only a matter of time before they're fixed.



Brock Davis working on robot

Ryan Abalos

Design Lead

The center PVC tube was very noisy and vibrating uncontrollably. We spent the past week finding new ways to mount the tube so as to reduce noise and vibration. We have come up with one design that we are going to try out Saturday. Hopefully, it will work well, and we can proceed towards the programming stage.

David Elizondo

Programming Lead

Well this week, programmers were supposed to get to test their program so that they could get calibration for motor speeds, but the builders had a different plan. Instead, the programmers ended up just working more with conceptual design of the program, as well as connecting some virtual instruments together to allow for driving with sensors input. However, the programmers were able to attach some sensors to the robot, such as the optical encoders and the gyro.

Greer Peterson

CAD Lead

The acronym CAD, when related to robotics, stands for Computer Aided Design which is the use of computers to great three-dimensional representations of real-life parts. Once created, these parts can be assembled together in the program and eventually one can have a completely computerized version of whatever they are creating. This can have a variety of purposes. First of all, a CAD version of a large assembly of objects, such as a robot, can allow for the location of stress points, and problem areas on the robot before they cause any problems that may lead to things being broken. This was obviously not the case for the central shaft. The CAD team got a lot of work done this week and we plan to have the whole robot CADed in the near future.



CAD lead Greer P. working on the robot (virtually)

Alumni Corner

David Sporn

Alumni

Wow, this week was truly amazing! I'm very, very proud of my nerds. Last Saturday we did human player tryouts and picked 3 human players. Kent, Meher and myself then proceeded to train them the way I was trained as Human Player for Aim High. We ran them really hard, and they all got much better quickly. I can't believe how well they did in such a short time. At the beginning of season I had my doubts about the design and how it might be overweight and not getting built in time. I'm so glad that I was proven very wrong. Not only is it underweight, but it was built relatively easy and works extremely well. Today Mr. Hurlburt told me to polish the robot, something I have been waiting to do for a while. Talon looks very shiny instead of getting painted this year. I can't wait to see it glisten on the field. A few of the kids that helped me with it definitely questioned it before, but once they saw the difference it made, they suddenly loved it. It's been a very easy build this year, and to me, that's the greatest thing. After a season like last year, building this year just makes me so happy. Congratulations on a great season, I'm very proud of everyone.



The human players

January 10, 17, 24, 31; February 7, 14: Saturday build days

Saturdays are TALON 540's full work days. Team members will work with mentors on the robot.

February 17: Ship day

This will be when the robot needs to be sent to the regional competition at VCU. Essentially, this will be the last build day for the teams.

March 19-21: NASA/VCU Siegel Center FRC Regional

TALON 540 will be attending the local regional here in Richmond. The three days of competition include two days of practice and qualifying rounds and one final day of elimination rounds.

Words to Know

Binding

When components of a motor get caught and cause the motor to stall

KOP

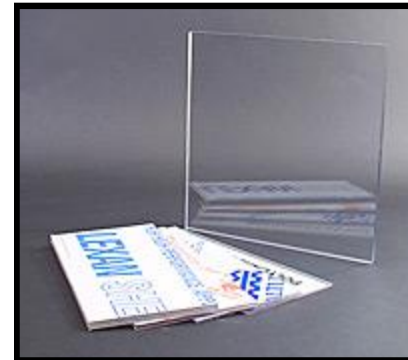
The kit of parts

Lexan

Brand named polycarbonate which can be bent, drilled, and cut in order to fashion the bracket

PVC

Polyvinyl chloride, the most widely used thermoplastic polymer which is cheap durable and easy to assemble, usually found in tube form and used to create prototypes.



Multiple pieces of Lexan



Robot Adapted by Alex Hill

TALON 540's Build Season



Kick Off

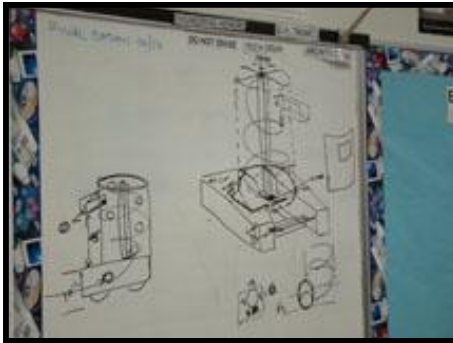
Kickoff weekend began with a design brainstorming session. After developing a general sense of how TALON 540 will approach the game, the team broke down into smaller groups to come up with different designs based on strategy. The groups included veteran team members, rookie members, as well as adult mentors. The design discussion led to deciding on a particular robot to prototype.



Week 1

Different ideas of robot design include building a machine to either shoot, dump, or herd the game pieces around the playing field. At the end of week one, TALON 540 has come up with two prototype designs that can collect game pieces, hold them, and shoot or dump them; the robot will use various conveyer belts to do so.

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Week 2

This year, the robot is divided into the following three parts: frame, hopper, and shooter.

The team decided to make the frame in a "V" shape, which allows the game balls to be funneled in and picked up the hopper

The shooter design was changed to fit the new design, making the shooter stationary. Although the shooter on the robot cannot be moved, the robot can still turn to face and shoot into another opponent's trailer.



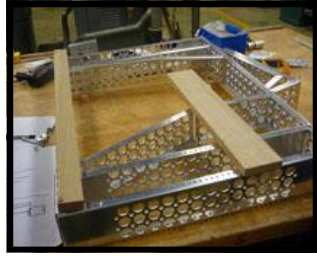
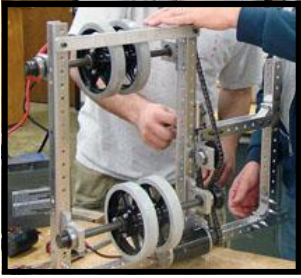
Week 3

The design for the robot was finalized and prototyping became the focus of the week.

The Archimedes's screw prototype was made using wood and rubber tubing.

The shooter utilizes two pairs of wheels to propel the game ball onto the field. PVC tubing was used to create the shooter.

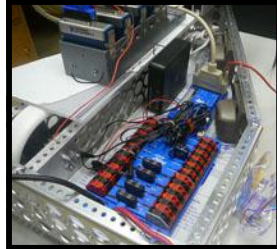
TALON 540's Build Season



Week 4

The frame was delivered by DuPont Metal Fabricators. The e-board was finished, and the shooter that is going to be mounted on the robot was nearly completed

The finalized shooter design has wheels mounted on a rectangular metal framework. It is driven by a chain and sprocket assembly. The two sets of wheels spin in the opposite direction so a ball placed in the middle would be propelled outward.



Week 5

The shooter was mounted on the robot, and the Archimedes screw was attached to the Lexan cylinder.

Two poles were attached to either side of the robot. The shooter was braced between the two poles to equally distribute the weight. Following this, two diagonal braces were building to secure the entire shooter assembly to the back of the robot.

A Lexan cylinder was fashioned from a flat piece of Lexan and riveted together. Four pieces of angled aluminum



Week 6

Problems were fixed and the robot was completed and shipped.