



BONDS Week 2 Newsletter

1.23.2023

—

BONDS 5811
314 S Jefferson St, Dayton, OH 45402
bondsfrc@gmail.com

Introduction

Welcome to the second week of the BONDS Status Report of the 2023 season! In this entry, you will see what BONDS Robotics accomplished in the second week of our official season for this season's 2023 FRC competition, Charged Up!

Starting this week, we continued to prototype some of the mechanisms we were going to present to the panel. This week was our last week before PDR, so we were able to finalize prototypes and start working on the presentation. From Monday, January 16th, through Wednesday, January 18th, we worked on coming up with our final design for our robot by using the design matrices to eliminate a few complicated prototypes that did not fit our requirements. Using the design matrices, we came to the conclusion of our final articulation design and intake design to present to the panel on Saturday. We discussed several criteria to rate our prototype and weighed the total amount of points at the end. There were discussions about the advantages and disadvantages of the prototype and how we reevaluated our strategy during the week. Finally, we finished our presentation and final CAD to present to the panel on Saturday.



Articulation Mechanism

On Wednesday, January 18th, we started finalizing our prototype for the articulation mechanism. We started with the A-frame, which will serve as a base of the articulation mechanism; we cut wood in specific lengths and attached them with screws to hold them in place. We also assembled the arm using Omio. A few of our new students got to use X-Carve for creating the compliant wheel intake and a mounting point for the A-frame. We also had the scissor mechanism built a week before and tested it to see if it worked. With a team agreement, we decided to go for the “swing set” mechanism because of its low center of gravity, ease of use, and simplicity. Finally, we started assembling the robot on CAD and prepping for PDR.



Intake Mechanism



On Tuesday, January 17th, our programming team got our swerve drive working for the autonomous period with tremendous mentor support. Although it is not finished, our students will continue working with our mentors to prepare for the competition.

On the same day, we worked on our intake prototypes. We also had to decide between the two intake prototypes. We also had one more prototype, but unfortunately, due to supply chain issues, one

of our prototypes came in late for PDR. Our team decided to focus on our two intakes and evaluate the suction cups when they arrived. As a team, we decided to go with the claw mechanism. With the help of our mentors, we got the prototype onto the software and started CAD in preparation for PDR on Saturday.

Preliminary Design Review

As the nervousness rises, we are ready to present to the panel! The panel consisted of engineers, BONDS alum, and mentors. We received numerous feedback from the panel that would be useful for preparing for CDR. While our team was presenting, we realized several issues with our intake mechanism. We came to a unified consensus that we would reevaluate our intake mechanism before CDR. Some BONDS alumni shared their experiences on the team and some errors they made. In addition, they shared numerous pieces of advice that could genuinely help the section. After PDR, we had a



team lunch and assessed the feedback we got from the panel. Several questions included, “What are the expected scores during a match?” “How many cycles can you do in one match?” “What does repairable mean?”. We returned to the drawing board and developed new criteria for the intake mechanism. We also had other students disassemble a kit bot and reuse it to teach new programmers on the team. Our team will work diligently throughout the week before the upcoming CDR day.

With much of this week prepping for PDR, our team is satisfied with the progress we have made so far. Although we might run into issues, we will strive to keep going as our season progresses. We want to thank our mentors for coming in every day to support and help us succeed.

We also want to give a big thank you to all of our sponsors! Our team can compete because of your support, and none of this would be possible without our sponsor's help. Our team, BONDS, will keep improving and continue learning STEM skills and values this season.

To see our season's progress, please follow us on Instagram, Youtube, Tiktok, Twitter, and our official website for weekly newsletters.

Instagram: @bonds5811

Facebook: BONDS FRC 5811

Website: bonds5811.com

YouTube: BONDS 5811

TikTok: @bonds_5811

Twitter: @BONDS5811