



GEARHEADS GAZETTE

FRC Team 1189 | Established 2002



**2015
SEASON
KICKOFF:
RECYCLE RUSH
BRINGS BIG
CHANGES--BYE
BYE BUMPERS,
SO LONG SCOR-
ING, HELLO
HALF-FIELD!**

THROWBACK TO STACK ATTACK

Progress Report

Officers elected
Primary game plan
established.
Chassis construction
initiated.
Design process has
begun.
Social media reboot-
ed.
Safety tests admin-
istered.
Pit refurbishment
under way.

Day 19
of build
season.

Audrey Kam

Roughly twelve years ago, an idea was born that would in some way change the lives of every single person reading this sentence. In 2002 it was decided that Grosse Pointe needed a team that could compete in the annual FIRST Robotics Competition. In 2003, that team went forth to blaze a new path toward STEM-related greatness. However, 2003 is more noteworthy for the nature of the challenge than our own history. 2003 was the last year that the FRC game featured box-type field elements that aided teams in scoring. Stack Attack featured Sterilite bins that had to be stacked (and in some cases, from the looks of some of the game footage we looked up, thrown) in zones for the teams to gain points. As that game marked our rookie season, any “expertise” we could have gained from more careful documentation and strategy, would have been little help. Because while this year's Recycle Rush echoes its predecessor's game style the competition has evolved dramatically in the past twelve years. With the advancement of technology, students have become more savvy and the challenges have evolved to suit the tech available.

Meaning that, in the past twelve years, the Game, the competitors, the rules, and the robots themselves have come so far that our own evolution as a team is almost put to shame. Almost.

Since that fateful first FIRST season, the Gearheads have changed name at least once, completely switched our team colors, and grown to more than three times the size of the original team. Team annals are seriously lacking, but if oral history is to be believed, it wasn't until 2010 that we had a robot that wasn't a “brick” or a “brick that caught on fire”. And in 2013, the Gearheads qualified for the World Competition. And if that isn't the sweetest bedtime story you've ever heard, we suggest you listen up because we're not finished yet.

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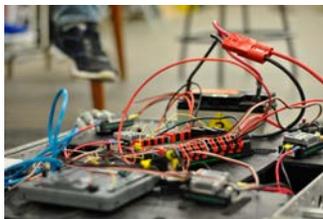
FRC 1189 - The Gearheads



WHAT'S OUR GAME?

Erica Powell

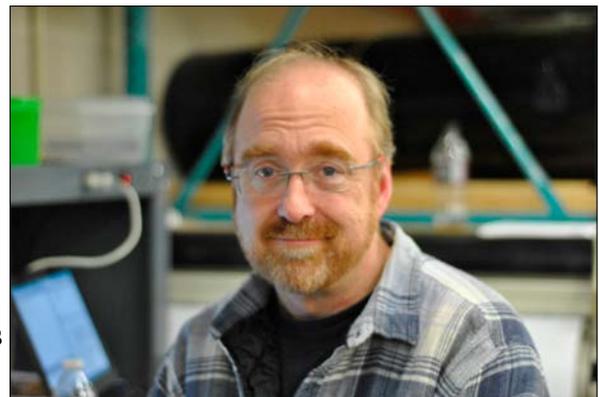
FIRST Robotics Competition is a game that combines science and technology with sport. Teams are required to build a robot that can perform the tasks in the game each year. The game is announced the first Saturday of every year in a broadcast filled with tips, interviews, game hints, and of course, a game animation. This year's game is called Recycle Rush. Robots must pick up totes, recycling bins, and/or pool noodles, known as "Litter". The game is on a field broken into two halves, colored red and blue for the two alliances. The halves each have an Auto Zone and a Landfill Zone. Each alliance is made up of three teams consisting of a four person "Drive Team", made up of a Human Player, a Coach, a Driver, and either a Controls Specialist or a second Driver. To start the game, there's a 15 second period called "Autonomous Mode", or "Auton", where robots operate without drivers; using code written by the team. During Auton, alliances can get points for moving all three robots, Green Containers, or Yellow Totes into the Auto Zone before the 15 seconds is up. After Auton, the drive team steps forward to take control their robot for the remaining 2 minutes and 15 seconds. This years game is a purely offensive game; robots are restricted to their alliance's side of the field. The objective of the game is to stack Grey Totes on stacking platforms. There are also large Green Bins, which can be stacked on top of the Totes. For additional points, teams can put Litter inside or on top of Containers. Stacked Totes are worth 2 points each, Containers are worth 4 points per level, and Litter is worth 6 points when inside/on top of Containers or 1 point when in the Landfill Zone. At the end of the match, alliances can choose to work together to get "cooperatition" points by stacking Yellow Totes on the step in middle of the field. A stack of 4 Yellow Totes is worth 20 points. And that's the end of the match!



MEET A MENTOR: KEN PEARCE

Anna Karcher

Ken Pearce mentors the software part of our controls group. He joined the team last year with his son, Zach. For Mr. Pearce, mentoring the Gearheads meant that he could help kids learn what it is to be an engineer. That's the reason he became a mentor in the first place. Outside of being a Gearheads mentor, Mr. Pearce is a Cyber Security Specialist at General Motors. His day job is to write the encryption system that protects cars from being hijacked. Mr. Pearce taught us how to use new coding programs. We used these programs last year, and will continue to use them for this year's game, Recycle Rush. Since becoming a part of the Gearheads, Mr. Pearce has helped us expand our knowledge of coding. It used to be that only a select few knew how to actually write the code; but with time and effort, all members of the controls group now know what they are doing. Mr. Pearce's favorite part about mentoring is seeing how excited the kids get when something finally works right. His willingness to help the team out has greatly impacted our success in competitions, and we will always be grateful for his invaluable help.



TEAM OVERVIEW: WHO ARE WE?

Josh Kozakowski

Design

Design is where we put our ideas into digital existence with CAD (Computer Aided Design). The designs they make are then sent to fabrication in order to make the right parts. Design's leader, Connor Keith, said that the team has downloaded schematics for chassis and wheels, making sure they have the right dimensions for omni wheels.

Fabrication

Fabrication, using the dimensions drawn up by Design, make the custom parts using various machines in the shop. This week, leader Ben Sosnowski, led the section in practicing inputting coordinates in the mill and using the lathe.

Build

Nick Santrock's Build team uses the new parts to construct the robot itself. They are the main force for troubleshooting during the build process. Recently, they have been prototyping different parts to solve the challenges presented in the game this year.

Controls

The controls team, under the leadership of Gabrielle Feeny, work on the electrical engineering and programming of the robot. Their agenda this week has been comprised of learning how to use the new controls system and C++.

Safety

Kim McBryan and Jamie Lackner's Safety squad is in charge of making sure the entire team stays alive. They have been hard at work making sure people have taken safety tests, looking into volunteering opportunities, and improving the safety program in general.

Media

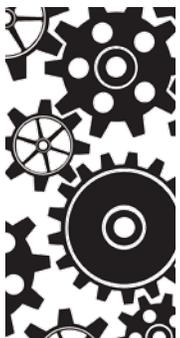
Anna Karcher leads the media team, which produces this newsletter and updates social media websites in order to get exposure for the team. We wrote this Gazette and have been updating the Gearheads website and the plethora of social media accounts that we run.

KIM'S KORNER: THREE SUPER SAFETY TIPS

#1: Wear Safety Glasses!
Things can fly into your eye if you choose not to wear them, and no one would want that to happen.

#2: Tuck in Drawstrings!
Tucking in drawstrings can prevent getting caught in any machines and so you don't get pulled in to anything.

#3: Use Common Sense!
Make sure you know what you're doing and look before you leap!



MEET JOSH O'GRADY

What brought you to Gearheads?

Well I've been going to FIRST Competitions for 10 years now, and wanted to be on the team for that long, and its a great opportunity for the future.

What do you want to accomplish on the team?

I want to learn some valuable skills, I want to become the captain of fabrication, possibly the team. I want to get through FIRST, make some good friends, and learn something that will help me along my way in the future.

interviewed by Grace Cupolo



TEAM GROUP EVOLUTIONS?

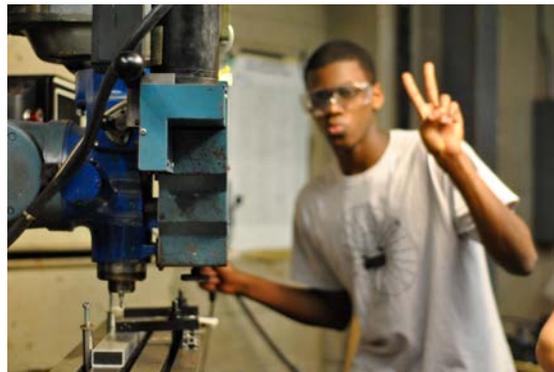
Josh Kozakowski and Abby Ferry

Like all great things, the Gearheads had humble beginnings. The year 2002 was marked by the introduction of team 1189-- kind of. We were a small team (ten kids and half as many mentors) working out of the South Arts and Math building. Now, thirteen years later, we are over forty students strong, have at least ten dedicated mentors, and are working out of North's Auto Shop. But we are so much more than that.

The Gearheads are split into six specialized groups. The Design team is the planner, making sure each and every dimension of the robot is correct. Without their constant designing (CAD), we would not be able to machine the parts necessary. The Fabrication shop is where the parts of our robot are become real. Our "shoprats" use machining equipment like the lathe, belt sander, drill press, and mills in order to create the parts that the robot cannot function without. The Build team then puts the robot together, along with any game pieces we need to practice with. Without their hard work, we would have a jumble of parts on a table and no pits. The Controls team does all of the wiring and programming of the robot. This allows the robot to run and compete each year. The Safety team is our protector who makes sure we know what to do in an emergency (and prevent one from happening in the first place). Our guardian angels are always on top of things, making sure everyone has the same amount of limbs as they started out with. The Media team is the only reason we have proof of this, since we document everything that happens on our website, social media outlets, and our newsletter. This allows our sponsors and fans to know what we are up to.

Our schedule doesn't stay constant all year round. Before build season starts, many members come to practice their specialties and plan fundraising events for the team. Build season is the most stressful and rewarding time, when we put the skills of all of the sections together to make a robot. The post season is mostly made of members practicing using the robot and planning the next season.

Like our robots, we are so much more than the sum of our parts. We are a family of people brought together by a common cause and stuck together with duct tape. We don't just build a robot, we build lasting, meaningful, friendships. We are a big group of friends that just *happen* to build a robot each year. Alone, we are just people, but together, we are all Gearheads.



MEET ISALAH MAHONE

What brought you to Gearheads?

I joined the Gearheads because I wanted to learn how to build things and I heard it was a fun group where I could be social with people.

What do you want to accomplish on the team?

I actually want to become the captain of Fabrication, and maybe I want to become team captain at some point during my senior year, and I would like to be a major member of building the robot.

interviewed by Grace Cupolo

ROBOT DESCRIPTION: COURTESY OF RYAN HACKENBERGER

- Drive type system:** Mecanum
- Chassis size:** Current square 28*280
- Lifter type:** 4-Bar mechanism
- Length of four arms:** 45in
- Lifter arms:** Motion but final design needs to be determined

ROBOT FUNCTIONS:

- Able to lift an upright totes from the side flanges (not end flanges)
 - From the floor
 - From the top of one crate
- Able to place a tote on a stack of one, or two, or three totes to create a stack of three totes to score.
- Able to lift a recycle bin and place on top of a stack of one or two totes
- Able to lift and carry a stack of one, two or three totes and place the stack on the scoring platform

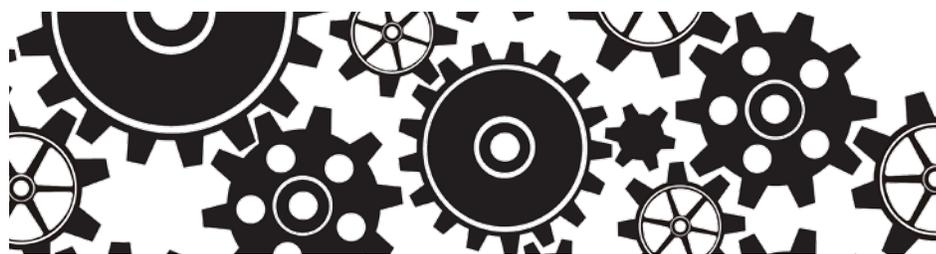
MAIN GAME STRATEGY:

- Pick up first tote (from the front grabbing the sides) and place the tote on the next tote.
- Pick up second tote and place it on the third tote
- Pick up the tote stack and move to the scoring platform.
- Pick up fourth tote and stack it on the fifth tote
- Pick up recycling bin from our side and stack it on the fifth tote
- Pick up the tote stack and place on top of the previously created stack that is on the scoring station.
- Repeat if time is available
- Will be able to pick up from both the feeding station and landfill station

Note: will have no interaction with the noodles or upside down totes (depending on grabbing mechanisms specific design).

ALTERNATE STRATEGY (BASED ON ALLIANCE STRATEGY)

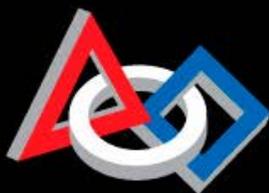
- Pick up and place one, two or stack of three yellow totes on the center beam or on top of one, two or three totes that is on the center beam to create a stack of four totes.
- Able to lift and carry a stack of one or two totes and one recycle bin (with or without noodle) and place on a stack of one, two or three totes that is on the scoring platform.
- Able to place a stack of one, two or three totes on the center beam
- Able to place a stack of one, two or three tote(s) on the center beam to complete a stack of four



MEET THE GEARHEAD: SARAH BUTTIGLIERI

Anna Karcher

Sarah Buttiglieri is one of our newest gearheads. As a junior at Grosse Pointe South, she is excited to start establishing our safety regulations on the team. She helps organize the team's safety binders and Material Safety Data Sheets (MSDS). Sarah first heard about the Gearheads through some friends. She thought it sounded cool, and decided to join for the 2015 game, Recycle Rush. Her favorite part about the Gearheads is "all the people you meet". Besides robotics, Sarah plays the trumpet in South's marching band and attends private trumpet lessons. She will also take part in the Solo and Ensemble this spring. Sarah believes that the problem solving skills and the new knowledge of heavy machinery she learned during meetings will help her throughout life. We are so happy to have Sarah as a new addition to our team.



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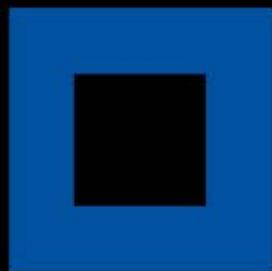


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