

CougarTech

FRC Team 2228



Business Plan



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Executive summary

Mission Statement

FIRST Team 2228, CougarTech strives to maintain a self-sustaining team, motivating young people to be leaders through challenging and exciting programs building science, math, engineering, and technology skills. These skills are acquired in build season and are refined during the workshops Team 2228 offers off-season. As a teaching team, we inspire self-confidence, communication, and leadership. These interpersonal skills result in stronger partnerships among students, better strategic decisions, and help team members develop creative solutions.

Team Formation and Current Team

Team 2228 was formed in 2006 with support from Honeoye Falls-Lima Central School after students and teachers interested in FIRST Robotics went to the Finger Lakes Regional competition. Returning, they gathered a group of potential students and mentors and began to prepare for the next build season. While CougarTech is hosted by Honeoye Falls-Lima (HF-L) High School, in 2009 the team merged with another local school to expand the team and increase diversity. Rush-Henrietta's team had been experiencing financial issues and HF-L voted unanimously to join the teams.

CougarTech had approximately 40 members during the 2014-15 season, but because of the large senior class our current team now has 33 members. We do have 17 mentors, however, and Team 2228 increased female students from 17% to 24% this year. Increasing our team size and getting more people involved in robotics are important goals we are working diligently toward.

Sponsors/Finance

CougarTech raises money through donations from individuals, businesses, private donations and fundraising. Budgeting is a full team, formalized process, where sub teams propose spending to be approved. Some sponsorship is non-monetary; companies provide us with materials or highly experienced personnel. SouthCo, for example, gives us raw materials which we use to build the robot, and Pittsford Federal Credit Union provides banking services and a website mentor.

Primary financial support	Other Support
General Motors	QVI
Xerox	Pizza D's
Carosa and Stanton Asset Management	Mendon Foundation
I dex	Honeoye Falls-Lima and Rush-Henrietta School Districts
SouthCo	
Skyport IT	
Pittsford Federal Credit Union	

Sponsors receive benefits based on the sponsor's level of donation. We gain sponsorship primarily by writing letters and setting up student presentations, explaining our team and what we do.



Community Outreach

We engage the community and spread the word of FIRST by appearing at local and regional events, including the Mendon Fireman's Carnival/Parade and several STEM fairs. In addition, school events allow us to showcase the robot and attract interest from prospective team members. We also sponsor HF-L's two middle school FLL teams where CougarTech mentors and student members act as advisors. We actively restarted this effort three years ago as we've found it the best way to recruit experienced new members who come already familiar with the core values of FIRST. CougarTech has deployed many resources to our school district this year by providing robotic equipment, mentors and students to support both the elementary and middle school's robotics program. By becoming mentors for the middle school team, Team 2228's student members can get even more out of their FIRST experience.

Team Growth

CougarTech has continued to grow over time as students come and go. Every year we recruit a large number of freshmen, but lose a significant portion of our team to graduating seniors. Our team has expanded to include students of both Rush Henrietta (RH) and Honeoye Falls Lima (HF-L) Central School Districts. On average, our team has around 35 members, and our current team hovers around this number currently, although every year we visit the upcoming freshman classes of RH and HF-L to gain new members, and employ thorough recruiting methods to strengthen the team.

CougarTech has grown financially over the last decade of being a team. We have structured our budget in order to allow for increased saving for future years in the event we qualify for additional competition, to reduce financial strain upon the team as we experienced in 2015, when we were invited to St. Louis to participate in the national competition.

Future Plans

Over the next 3 years, CougarTech has some ambitious plans/goals which we are working to accomplish. For a start, we want to develop a new comprehensive plan for approaching potential sponsors so we can expand our funding base. Related to this, training members to be better at presenting to judges, other teams, or potential sponsors is a goal we find very important not only for the prosperity of our team, but for the long term success of our members after they graduate. Completing a team image standard, marketing the team in such a way it retains a broad and stable membership, and planning a budget allows for our team to be sustainable from year to year. We educate all team members the details of the design process prior to competition, and make sure members of the various sub teams are trained with all required skills such as coding, CAD, and electrical work. Our team would like to continue our strong commitment to community outreach and STEM awareness. This includes increasing our interaction with our FLL Team, and other FRC teams, in addition to giving more public presentations to improve the public awareness of CougarTech.



Team History

2007: Rack and Roll

With a grant from a local legislator, and the support of the Honeoye Falls-Lima Central School District, CougarTech was born in 2006 after students and teachers interested in FIRST Robotics went to the Finger Lakes Regional competition. Our start-up contributor, Alstom Corporation, supported the cost of building the robot, competition registration, travel expenses, teacher stipends, and team shirts. We also gained the support of the Xerox Corporation, SouthCo, Icuiti Video Eyewear, Kirkwood Oil, and Simcona Electronics. In our rookie year, Team 2228 won the *FIRST* Rookie All Star Award and the Highest Rookie Seed Award at Finger Lakes Regional. We earned a trip to the national competition in Atlanta, which proved to be a fantastic bonding experience for the team and good competitive start.

2008: First Overdrive

In the 2008 season, our most notable achievements were made at the Ohio Buckeye Regional where we made it all the way to the finals. Our student retention rate for year was ninety five percent, a great achievement for a second year team. Sponsors were Alstom Transport, and Xerox.

2009: Lunacy

In the 2009 season, Team 1930, The Comets of Rush Henrietta (R-H), New York found itself unable to continue as a FIRST FRC robotics team. Losing the team was devastating for its most dedicated members, especially since the school district could not provide assistance. The team was well respected and a symbol of technological innovation and scholarship., but had no resources to draw upon. Early in November of 2008, members of former team 1930 came to HF-L to ask if there was any possibility of becoming part of team 2228. Without hesitation, the team unanimously voted to graciously accept seven complete strangers from R-H to their team. Since then, this relationship has become well cultivated.

Achievements for the year included advancing to the quarterfinals at the Finger Lakes Regional and participation in the Hartford regional. We also added Parsons Engineering as a sponsor. We received a generous donation from the Garelick family in memory of Lee Garelick, an important patron to the Rush-Henrietta team. Other primary sponsors were Alstom, Xerox, and Sage Rutty.

2010: Breakaway

In the 2010 season we lost one of our lead sponsors, Alstom, a severe blow to the financial security of the team. Fortunately we received the continued support of Xerox, along with new support from Forsythe Technology. We also earned a NASA grant, which allowed us to travel to Raleigh to attend their regional. We were semi-finalists in Raleigh and we attended the Finger Lakes Regional for our fourth consecutive year. We also continued the partnership with the students from R-H, who formed a rookie FTC team the school year.

2011: Logo Motion

The 2011 Season was a year of accomplishment at competition. We placed 7th at the RIT Finger Lakes Regional winning the Entrepreneurship Award *sponsored by Kleiner Perkins Caufield & Byers* and the Cooperation™ Award. This was the *first* year a mini-bot was used for competition; our bot was very successful. It was one of our most difficult financial years because of a lack of sponsors. The majority of our financial support came from only two sponsors, Xerox and Forsythe Technology. Our other sponsors could not donate money, so instead they donated their services, i.e. welding, cutting aluminum, providing acrylic plastic, and electrical wire. We thank Smidgens, Dynak, Allworx and Mendon Foundation for sticking with us.



2012: Rebound Rumble

The 2012 season went particularly well for CougarTech. Our team consisted of 41 members, 17% of which was female. This year our team competed at two regionals, the RIT Finger Lakes Regional and the Buckeye Regional, which was achieved through a record corporate sponsorship. After the team's 2011 financial crisis, CougarTech made a plan to get more sponsors. This consisted of finding a mentor who specializes in corporate sponsorship, having students give presentations to local companies, and asking our mentors to approach their management. General Motors and Carosa Stanton Asset Management became supporting sponsors. Along with our continued support from Xerox, Forsythe Technology, Allworx, and the addition of Quality Vision International, and Dynak we finally reached a sustainable level of contributions. We operate on about \$20,000 per year.

At the Finger Lakes Regional, we won the Entrepreneurship Award sponsored by *Kleiner Perkins Caufield & Byers* and at the Buckeye Regional we won the Industrial Safety Award sponsored by Underwriters Laboratories both of which we worked very hard to accomplish. The highly reliable autonomous scoring helped us be alliance captains at both regionals. Team 2228 achieved Website Excellence much to the pleasure of everyone on the team.

2013: Ultimate Ascent

Reliability is the key word for 2013. At competition our robot; Tiberius, consistently scored in autonomous mode guaranteeing 18 points. Robot designers perfected maneuverability and consistent high goal scoring allowing us to score 5th at the Buckeye Regional. Off the field, the team sustained corporate sponsorship, and increased community projects to a record breaking 14. Primary sponsors are General Motors, Xerox, Forsythe Technology, and Carosa Stanton Asset Management. QwicNet, Quality Vision International and SouthCo rounded out the list of corporate sponsors. Meanwhile, Honeoye Falls-Lima was exploring ways to increase STEM course offerings and interest. Team 2228 was tasked with helping the school district meet their strategic goal.

2014: Aerial Assist

Over the summer of 2013, FRC Team 2228 decided FLL needed to be revived due to lack of students and mentors. Team 2228 took responsibility for paying FLL team registration, finding a place to work, locating and consolidating parts kits, and supplying one student mentor. As a result, Team GearFreeze was able to compete in our 2013 local competitions. Corporate support is located for next year, and parent and advisor support is ready for future years. The student team mentor is now assisting with an afterschool robotics club for fifth graders. The goal of creating on-going interest in robotics is achieved for this year. Sustaining sponsors are GM, Xerox, Ortho Clinical Diagnostics, grant from NASA to attend New York Tech Valley Regional. Other sponsors are General Electric, Caro and Stanton Asset Management, QwicNet, Quality Vision International, Southco, and a gift in memory of Richard A. Loiselle.

2015: RecycleRush

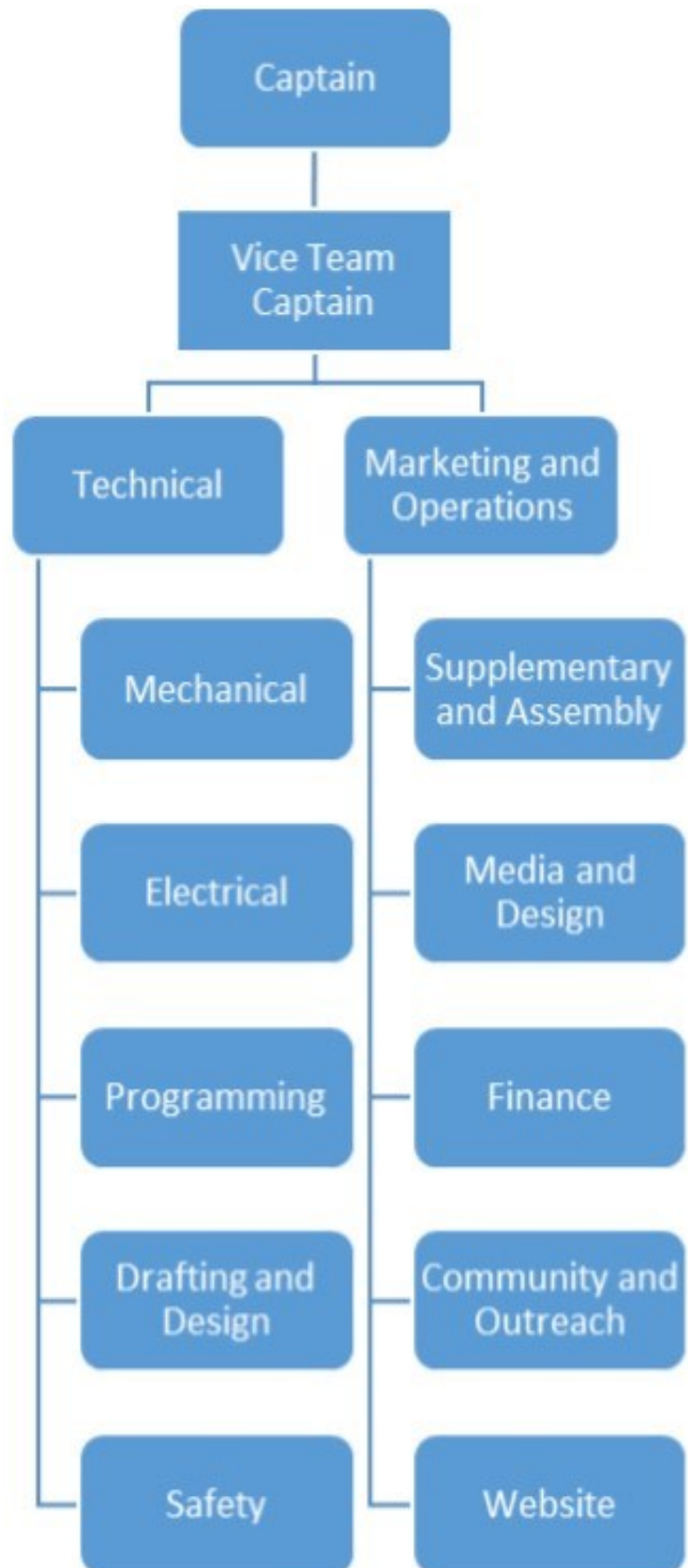
In the 2015 season, CougarTech had lost a substantial group of team members who graduated out of the FIRST program. Our team, however was able to overcome this change and preform exceptionally at competition. CougarTech took the opportunity to participate in the Greater Toronto East Regional, where we finished as the captain of the 3rd alliance, ranked 3rd. Our second competition of the season was at the Finger Lakes Regional where we were once again the captain of the 3rd alliance and finished ranked 6th. We were invited to attend the FIRST Championship in St. Louis where we able to learn valuable knowledge from more experienced teams. We are hoping to make it to St. Louis again in the 2016 season.



Team Organization

When a student joins CougarTech, they are given a tour of the team and shown the responsibilities and general work of different sub teams. Then, the student can choose which area they want to spend the bulk of their time.

FIRST provides opportunity's for students to gain experience in a variety of different fields. CougarTech wanted to make it easy to understand the different areas students could participate in while maintaining a professional and efficient structure. From this emerged our current organizational layout which achieves both of these goals. It also allows students to progress up through the team providing experience in working with a hierarchical business structure. Each sub team has its own lead, and these leads report to the branch leads who in turn report to the vice captain and captain.





Team Leadership

The Team Captain and Vice-Captain are elected as a team and are empowered to make decisions affecting the entire team. They set the direction for the team and are responsible for communications from the team to outside organizations. While the Captain is responsible for approving the final budget for the team, the Vice Captain is expected to provide assistance and to stand in when the Captain is absent.

Technical

The lead for this branch is appointed by the team captain to define the general work of each of the following sub teams, stepping in if skill training is needed, seeks mentor assistance, and works with the executive branch.

Drafting: Responsible for drafting all the robot hardware elements. This team maintains the mass, properties, and other data on the robot. They are responsible for submitting the Autodesk Award to *FIRST*. They also perform training and process improvements relative to CAD in the off-season.

Electrical: Responsible for designing, procuring, assembling, and testing the robot's electrical system. They perform electrical system training, research, and development in the off-season.

Mechanical: Responsible for designing, procuring, and testing the robot's mechanical systems.

Programming: Responsible for designing, procuring, and testing robot control software. Perform programming training, research, and development in the off season.

Safety: Responsible for educating team members on safety rules, regulations, and procedures (team developed and school required). They are responsible for ensuring safety of anyone who enters the pit during competition.

Marketing and Operations

The lead for this branch is appointed by the team captain to define the general work of each of the following sub teams, steps in if skill training is needed, seeks mentor assistance, works with executive branch, as well as overseeing the completion of various award submissions such as Chairman's Award and Entrepreneurship Award, along with grant submissions, such as the NASA grant.

Community and Outreach: Works on public relations as well as sponsor relations. The responsibilities of this sub team involve all communication involving the team with outside organizations as well as regularly updating the team's social media accounts.

Media and Design: Creates necessary graphics for the team image, such as buttons, t-shirts, pit design, and banners. Posters and other projects are completed as needed.

Website: Responsible for designing, creating, and testing the website.

Supplementary and Assembly: Responsible for designing, procuring, and testing field elements. Perform projects like crate and cart improvements in the off-season.

Finance: Finance is responsible for sending letters to, attaining, and updating our sponsors, as well as maintaining accurate bookkeeping for all the team's expenses.

Build team

During build season the Electrical, Mechanical, and Programming teams work on creating our teams robot.



Sponsors

CougarTech raises money through donations from individuals, businesses, private donations and fundraising. Budgeting is a full team, formalized process, where sub teams propose spending to be approved. Some sponsorship is non-monetary; companies provide us with materials or highly experienced personnel. SouthCo, for example, gives us raw materials which we use to build the robot, and Pittsford Federal Credit Union provides banking services and a website mentor.

General Motors

GM is a Founding Sponsor of FIRST and proud supporter of CougarTech who understands the importance of developing future engineers, scientists, and leaders who will help fulfill our mission in the future. GM has been sponsoring CougarTech for 5 years.



Xerox

The world's leading enterprise for business process and document management. CougarTech has been sponsored by Xerox for all 10 years our team has been participating in FRC.



Carosa and Stanton Asset Management

A Registered Investment Adviser specialize in providing exclusive private independent investment counsel to individual trustees and fiduciaries.



IDEX

Our newest sponsor; IDEX, is a global fluidics leader serving high growth specialized markets. This is the first year they are sponsoring us and we hope to maintain our relationship with them in the future.



Sky Port IT

Provider of full service IT support for business, specializing in medical and manufacturing markets. We have been sponsored by them for 2 years.





SouthCo

SouthCo has built and invested in a strong global footprint of technical sales, marketing, engineering and manufacturing operations throughout the world. We have been sponsored by them for 4 Years.



Pittsford Federal Credit Union

A not-for-profit financial cooperative offering a full array of personal financial services. We have been sponsored by them for 2 Years.



Mendon foundation

We have a partnership with the Mendon foundation started in 2009 allowing CougarTech to become a registered 501-c3 organization.



QVI Inc.

A leader in innovative and advanced technologies used in industrial measurement and inspection for quality and process control. QVI has sponsored us for 4 years.



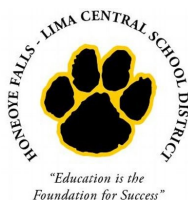
Pizza d's

A pizza shop in the village of Mendon provided with delicious pizza during the build season.



Honeoye Falls-Lima and Rush Henrietta school districts:

The two schools who make up CougarTech. They provide the educated students and facilities we need to function.





Levels of Sponsorship

SPONSORSHIP BENEFITS	Sustaining Sponsor \$10,000+	Leading Sponsor \$5,000-\$9,999	Associate Sponsor \$2,500-\$4,999	Partner \$1,000-\$2,499	Patron \$500-\$999	Friend \$100-499
Thank You Note	X	X	X	X	X	X
Picture of Team	X	X	X	X	X	X
Website Presence	X	X	X	X	X	X
Print Media Presence	X	X	X	X	X	X
Proud Sponsor Poster	X	X	X	X	X	N/A
T-Shirt Promotion	Top Billing Largest Font	Second Billing Medium Large Font	Third Billing Medium Font	Fourth Billing Small Font	N/A	N/A
Tickets to Team Awards Banquet	X	X	X	X	N/A	N/A
Robot Promotion	X	X	X	N/A	N/A	N/A
Trailer Promotion w/5-year commitment	X	N/A	N/A	N/A	N/A	N/A





COUGARTECH

FIRST TEAM 2228

Budget and Financial Data

CougarTech Income			
		2014-2015	2015-2016
Carry Over		\$ -	\$ 14,800.00
Indirect Donations			
GM		\$ 5,000.00	\$ 5,000.00
Xerox		\$ 5,000.00	\$ 5,000.00
Sub Total		\$ 10,000.00	\$ 10,000.00
Direct Donations			
Carosa		\$ 5,000.00	\$ -
Southco		\$ 2,000.00	\$ 2,000.00
PFCU		\$ 1,000.00	\$ 1,000.00
Lego		\$ 500.00	\$ -
Skynet		\$ 500.00	\$ 500.00
QVI		\$ 500.00	\$ 500.00
Xylem			\$ 1,000.00
Other		\$ 1,000.00	\$ 1,100.00
Sub Total		\$ 10,500.00	\$ 6,100.00
Fundraising		\$ 1,500.00	\$ 1,500.00
Total		\$22,000.00	\$ 32,400.00
		</	

To increase the strength of our team over time, CougarTech has organized our surplus budget into three distinct funds where money is allocated specifically every year. The first of the three funds is the Hardship Assistance reserve, where we save \$1000 to ensure the ability of anyone to participate in FRC regardless of financial background. The second is the World Championship reserve where we save \$5000 to cover the cost of attending the World Championship in the future. The final is the Operating Reserve, where we hold-over up to \$20,000 to allow the team to be able to fund yearly activities and pay for the Robot, in the case we lost all of our sponsors.



The Benefits of FIRST

The mission of FIRST is to inspire young people to be leaders in science and technology. CougarTech accomplish this by engaging our student members in exciting Mentor-based programs which build science, engineering, and technology skills, while instilling and inspiring innovation. This improves important life skills including self-confidence, communication, and leadership.

FIRST has had a positive impact on every member of CougarTech. 100% of our current members plan to go on to college, in part made possible because of FIRST scholarship availability, confidence, and skills they have gained from FIRST participation. 67% of team members said they have learned valuable STEM skills, and 22% say they have learned valuable leadership skills. In addition, many of our students say robotics has had a big impact on the relationships they have formed; many of our alumni return to hangout with friends on the team while contributing their knowledge.

As students stay on the team, they build their expertise in a certain field to the benefit of themselves and the team. Eventually, they make their way up to leading the sub team where they can learn leadership skills and further their understanding of their field. A student could enter a sub team with essentially no experience in the topic and graduate from FIRST an expert.

Marketing: What Students Learn

Finance

Members can learn how to write a business plan and manage the finances of CougarTech, working in a similar fashion to a small business. Students interested in economics and finance gain experience in budgeting, the distribution of resources, and obtaining funding.

Media and Design

Creates necessary graphics for the team image, such as buttons, t-shirts, pit design, and banners. Posters and other projects are completed as needed. Media and Design is also responsible for pit décor, videos, brochures, the letterhead, and presentation materials. As the major designers of the team image, they are responsible for ensuring the visual promotion of FIRST at every event we attend, and also ensuring our sponsors are represented properly.

Community and Outreach

Students learn the importance of being recognized in the public space positively and what needs to be done to achieve this. Organizing events is a very complicated task, but students with the help of their mentors develop the knowledge and skills to be capable of doing this and gain experience from actually doing so.

Website

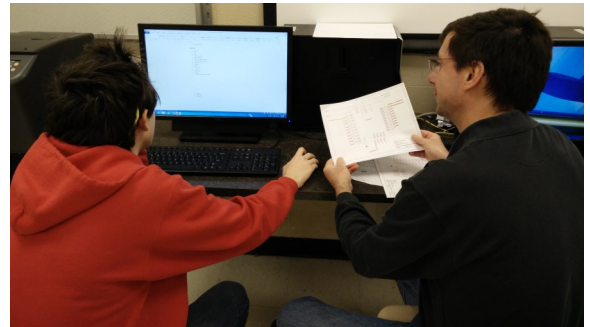
Students interested in web design, but lacking experience, can join this sub team and learn everything they need to know to be able to run a website independently, thanks to our excellent mentors. As a result they have the experience and ability to pursue a field of growing importance.



Technical: What Students Learn

Drafting

Students become highly skilled in creating CAD models of the robot which requires them to take fine measurements and understand how it works. They also learn how to complete electrical schematics of the robot; a very important and transferable skill. At the end of build season, drafting does a full inventory of the robots parts determines the weight and other specifications which gives them accounting skills, the ability to work in production inventory and control, and builds their organizational skills.



Electrical

Students learn all about how the robot runs and gain experience which allows them to be able to create and work on an entire system. More basic skills like soldering, understanding electrical units, knowing how to take different measurements, and working with wires and cable management are all taught during our teams electrical training. During the build season they expand and implement their knowledge and skills even further. For example, student have to wire the Robo-Rio which has a variety of different inputs and outputs, and motor controllers. Students also learn how to make and read electrical schematics for quicker, more efficient diagnostics.

Mechanical

Students gain vast experience in using machinery and tools to build our robot and to help it function effectively. They learn how to work with metal, prototype, and design a robot to certain build parameters and allow it to complete the required tasks. Working with a variety of different tools and materials allows students to gain experience and be creative in solving problems like integrating other systems such as electrical or pneumatics into the robot. These students do the same things engineers and mechanics do in real life, and later go on to study engineering and mechanics in college.



Programming

Skills and knowledge required to design, procure, and test robot control software are all developed on this sub team. Students learn how to code in python and java script and work with smaller computers like Raspberry Pi or Arduino. The autonomous part of competition requires advanced programming and really hones the skills of our programmers. In the offseason, this sub team also preforms programming training allowing for interested students to obtain the necessary training and skills.



Team Experience

Apart from the individual skills learned on a sub team, CougarTech student members also learn important skills in regards to working with a team. Different sub teams, sometimes of different branches, have to work collaboratively in order to achieve different goals and overcome obstacles. For example, our finance team has to collaborate with our build team to organize purchases, and the build team has to work with the CAD team to make sure they are following the proper design, and the CAD team then has to work well with the programming team to make sure their design ideas are feasible. This is just a little glimpse at the complicated teamwork and strategy necessary to run our team and maintain organization, which is very important for competing. Having the limited work time of build season also gives experience of working against a deadline which is vital for essentially all careers. Being able to adapt and work efficiently with people you may not know incredibly well in what can be a stressful environment is an important skill to have.

Another way CougarTech helps to improve the collaborative skills of our team is with individual responsibility. Each member of our team has a job, involving working with other students, they are expected to get done. In order for the robot to be finished, everyone has to rely on other members of the team to do their part, so everything will come together in the end. This gives students the experience of being responsible for a job and having others rely on them to get it done, which is a very common situation in the business world. Teamwork is the most important skill our team has, and it makes our members prepared and experienced for their future careers.



Scholarship Opportunities

One way FIRST helps to ensure a successful future for our members is through supplying scholarships to student who excel in the program. This current year, FIRST has \$25,000,000 in available scholarships from over 200 different sources. We take great pride in the scholarships members of our team have been offered. To further illustrate, over the past 6 years, students from our team has been awarded \$400,000 in FIRST scholarships. This sum of money has helped our team members to go to a college they strive to attend and ensure a successful future for both the students and our team.

FIRST scholarships make it much easier for students to attend college financially, and being a member of a FIRST team is a huge advantage on college resumes helping students get into excellent engineering schools like Clarkson or RIT. 100% of our team plans on going to college, so these scholarships are huge when it comes to our members. FIRST scholarships also convince students to try out robotics, bringing in members to our team. When students hear they could earn scholarships and a better college resume, they will be more apt to join our team and learn about FIRST, the competition, our team, and STEM.



Community Outreach

Cultivating an image, both unique and memorable should be an important goal for any organization seeking to promote social change. Team 2228 takes its public image very seriously knowing we are a representative of the *FIRST* community and it's message. We engage the community and spread the word of FIRST by appearing at local and regional events, including the Mendon Fireman's Carnival/Parade and several STEM fairs. In addition, school events allow us to showcase the robot and attract interest from prospective team members.

At competition we create we present awards to other teams for gracious professionalism, team spirit, game play, design, and rookie teams. In competition, we present ourselves as an enthusiastic and supportive team. In our schools, Team 2228 has been very active in promoting the *FIRST* mission. Also, our team has been featured in local media, such as community newspapers and newsletters.

We also sponsor HF-L's two middle school FLL teams where our mentors and student members act as advisors. We actively restarted this effort three years ago as we've found it the best way to recruit experienced new members who come already familiar with the core values of FIRST. By becoming mentors for the middle school team, Team 2228's student members can get even more out of their FIRST experience



Website and Social Media

In 2007, Team 2228 launched its first website. Hosted by one of the team member's family, the website was updated each year. In 2011 with major changes to the banner, the website was re-launched. Finally, in 2012, with an experienced adult website mentor, and a new host, the website was redesigned and expanded. One of the most serious problems we face is the school district's lack of an html or any other web design language course. The skill building required to maintain the website is significant, but we teach html to our members, rather than using a template.

Currently, Team 2228's website includes useful resources for rookie and veteran teams as well as information about FIRST and links to frequently used sites about science, technology, engineering and math. In 2013, the website team began to experiment with the use of social media. We maintain some activity on Facebook, Twitter, Tumblr, and many others. Team 2228's Twitter account is used to share videos, pictures, and status updates of CougarTech. The reason behind posting the same content to multiple sites is to reach a wider audience. One of the issues facing our team is the multitude of social media sites and the different audiences for each site. As a result, we have mentors posting comments and articles on LinkedIn and on other *FIRST* sites to involve our team within the organization, and students updating our team social media accounts to develop our team image outside of *FIRST*.

In the future we would like to have meeting notes on the internet, optimize our website for mobile devices, and create more ways to engage potential users.



The Threats, Weaknesses, Opportunities, and Strengths (SWOT) of CougarTech Team 2228

Over the last year, our team has been brainstorming our strengths and weaknesses. We have been able to compile a general idea of our biggest strengths, weaknesses, opportunities, and threats. We have been able to decide how to take advantage of our strengths and opportunities, while tempering our weaknesses and avoiding the threats. The list below shows our current SWOT analysis.

Strengths

- Training modules for technical
- We have plenty of experienced mentors
- We have an experienced team (the team has been around for 10+ years)
- We have obtained financial stability - we are able to set aside money for one year ahead
- Our team is a non-profit
- Our team is made up of two schools.
- We get open invitations to carnivals and parades (to help spread the word of FIRST)
- Our team is student led (teaches students about stem fields and management)

Weaknesses

- We have only a wood shop; no metal shop, and the shop is shared with classes
- We have limited machining capabilities
- 42% of our members are new, meaning inexperience
- We have a lack of space for storage
- We have a small marketing membership
- 42% of our team are seniors in high school, meaning they will depart at the end of the year

Opportunities

- We have a new FLL team to recruit members from
- Our team helped start a computer science course in our high school (as well as an AP course), which can be used to get students interested in STEM
- We have a website where we post materials for other teams to use(technical training, where to get parts, and managing training) and also for our team to utilize

Threats

- Many other teams have been around longer than ours and are able to start more teams then we can
- Many of our members participate in athletics (taking members)
- Our economy may lose sponsors due to an economic down turn)
- We may lose mentors to business closings
- We have a lengthy design process



Growth

CougarTech has continued to grow over time as students come and go. Every year we recruit a large number of freshmen, but lose a significant portion of our team to graduating seniors. Our team has expanded to include students of both Rush Henrietta (RH) and Honeoye Falls Lima (HF-L) Central School Districts with requests from other schools from joining students. On average, our team has around 35 members, and our current team hovers around this number. Every year we visit the upcoming freshman classes of RH and HF-L to gain new members, and employ thorough recruiting methods to strengthen the team.

CougarTech has grown financially over the last decade of being a team. We have structured our budget in order to allow for increased saving for future years in the event we qualify for additional competition, or in the case of a shortage of sponsors.

Future Plans

For the next couple of years, CougarTech has some ambitious goals which we are working to accomplish. For a start, we aim to develop a new comprehensive plan for approaching potential sponsors so we can expand our funding base. We take the training of our new members very seriously, and will continue to do so in future years, not only for the prosperity of our team, but for the long term success of our members after they graduate. We really focus training new recruits on completing a team image standard, marketing the team in such a way to retain a broad and stable membership, and planning a budget allows for our team to be sustainable from year to year. We educate all team members on the details of the design process prior to competition, and make sure members of the various sub teams are trained with all required skills such as coding, CAD, and electrical work. Our team would like to continue our strong commitment to community outreach and STEM awareness. This includes increasing our interaction with our FLL Team, and other FRC teams, in addition to giving more public presentations to improve the public awareness of CougarTech.



COUGARTECH FIRST TEAM 2228

Strong Hold

In 2016, more than 3,000 teams comprised of 78,000+ students from around the world will compete for glory in *FIRST STRONGHOLD*SM. In just six weeks, they will build, program and test robots with the guidance of adult Mentors. (From first website)

*FIRST STRONGHOLD*SM is played by two alliances of three teams each. Alliances compete against each other to breach their opponents' defenses, known as outer works, and capture their tower. They score points by crossing elements of their opponents' outer works, scoring boulders in their opponents' tower goals, and surrounding and scaling their opponents' tower itself. (from first website)

In order to create a successful robot, the students, and mentors, some of which are team alumni, began our teams design process which consist of five main stages.

Robot development

Game Analysis

- Scoring Analysis
- Game Strategy/Game Simulation
- Robot Function Definition

Concept Development

- Concept sketches
- Electrical Hardware Requirements
- Software Function Definition
- Prototypes

Detailed Design

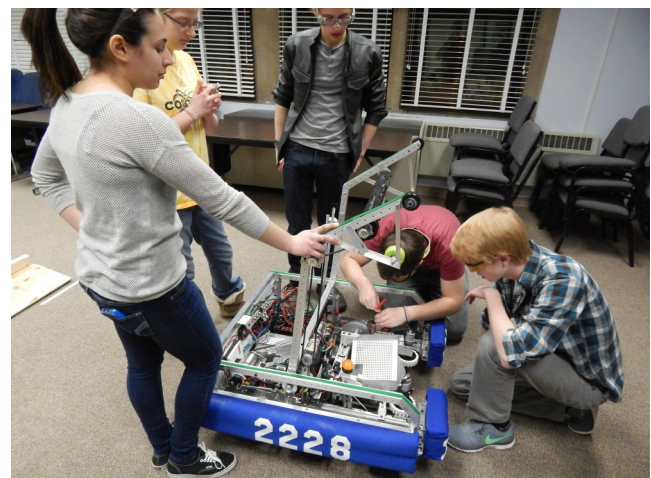
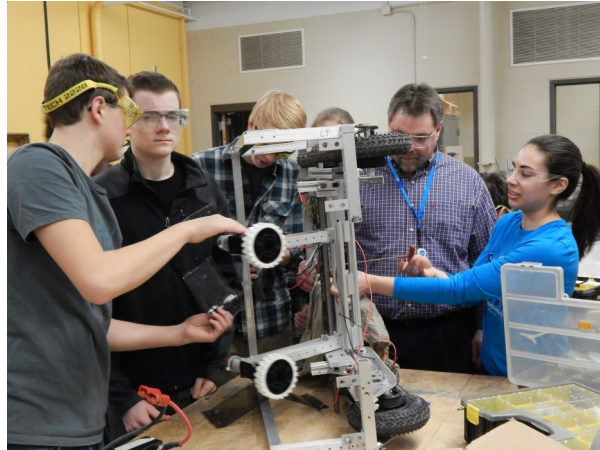
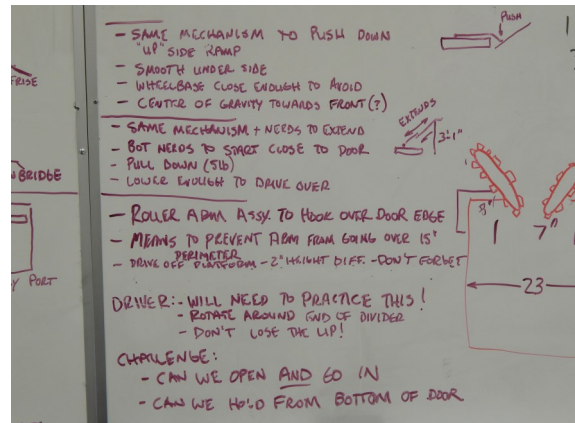
- CAD design / BOM

Fab/Assembly

- Module fab and assembly
- Module Unit testing

Test /Optimize

- Electrical Power up testing
- Software I/O Testing
- Software program verification
- Driver practice/robot optimization





COUGARTECH

FIRST TEAM 2228

Kappa

Our robot this year is named Kappa in honor of Cougar Tech's tenth year as a team. For the purpose of this year's games, Kappa's arms are capable of quickly acquiring and shooting the ball into both high and low goals. Kappa is able to go over almost all defenses with little to no difficulty. Our design process focused on determining the necessities Kappa needed to possess in each specific part to be successful throughout the games. Team leads assigned separate groups to work on each part for maximum efficiency, each group focuses on specific aspects such as the shooting and or acquiring arms. First, each group had to come up with specific configurations for their part, and then all of the groups came together to build the robot as well as create a practice bot so we could test our robot on different obstacles. Our widely adept team was broken up randomly as to achieve an advantageous spread of minds throughout the groups. Kappa is an excellent example of CougarTech's combined capabilities.



Contact us

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Sponsorship Information:

Checks should be made payable to CougarTech 2228

Donations may be tax deductible; please contact the team for more information