

Team Number

2551

Team Name/Nickname

Penguin Empire Robotics

Briefly describe the impact of the *FIRST* program on team participants with special emphasis on the current season and the preceding two to five years

Within this season, our team has gained more than just technical skills. Members gained the skills of teamwork, autonomy, initiative and self-confidence through the process of prototyping, implementing ideas and spreading the message of FIRST through community events. Team alumni have gone on to study robotics engineering and computer science at UC Santa Cruz, mechanical engineering at UC Berkeley, among other prestigious programs. All have been influenced by the program that exists here.

Describe the impact of the *FIRST* program on your community with special emphasis on the current season and the preceding two to five years

The Penguin Empire Robotics Team spreads FIRST Robotics ideals to our community. This involves getting the students in our area interested in STEM fields. Evidence of this is found in the creation of a STEM program at our host school five years ago, and the dramatic rise in club membership within the last couple of years. Five years ago, our club had approximately 15-20 people. Since then, our club has grown to 45 members, spreading the values of FIRST Robotics to growing numbers of people.

Describe the team's innovative or creative method to spread the *FIRST* message

We conduct outreach programs through a multitude of channels. Some of these are fairs and festivals, such as the North Bay Science Fair and the Novato Space Festival. Others include media efforts, such as being featured in the school and local newspapers. We go to middle schools in our school district to hold robot exhibition days in an effort to excite the younger audience about our team. Through this, we can reach an estimated 25,000 people yearly.

Describe examples of how your team members act as role models and inspire other *FIRST* team members to emulate

Penguin Empire believes that no matter how fierce the competition may be, we have an obligation to help one another. From the day Penguin Empire Robotics participated in a competition, Penguin Empire set the standard for interacting with other teams by asking about the robot's capabilities, offering encouragement and embracing the spirit of cooperation. Penguin Empire never hesitated to offer materials, tools and expertise to any team in need, even teams that might be our opponents.

Team's initiatives to help start or form other *FIRST* Robotics Competition teams

The Penguin Empire has been conducting intensive outreach programs from its inception. Most recently, we have been instrumental in helping Team 6814 (Ellipse) from Sonoma Academy navigate their way through their rookie year. We attended this year's kickoff with the team and we have helped them formulate a viable strategy for their FRC robot. We gave their captain access to our forums so that Team 6814 can see an example of the communication used by a senior team.

Describe the team's initiatives to help start or form other *FIRST* teams (including *FIRST* LEGO League Jr., *FIRST* LEGO League, & *FIRST* Tech Challenge)

Within our school district, the influence of robotics and its related disciplines was limited before our team's inception. However, within the last 3 years, Penguin Empire has championed *FIRST* robotics values through the implementation of a sister middle school team. By creating a pipeline to provide younger innovators with an outlet for their ingenuity, we have set the basis for a future *FIRST* team. Aspiring engineers compete within the team and at regional events to hone their skills.

Describe the team's initiatives on assisting other *FIRST* teams (including *FIRST* LEGO League Jr., *FIRST* LEGO League, & *FIRST* Tech Challenge) with progressing through the *FIRST* program

Currently, our team is promoting initiatives to transform our existing sister middle school robotics team into a *FIRST* team. Our reason for not aiding existing teams is simply that there are no teams in the area that we could help. Being the only FRC team in the county, we have decided to help start a new team. The gradual influence of the new members capture a wider audience than what was present only a few years ago.

Describe how your team works with other *FIRST* teams to serve as mentors to younger or less experienced *FIRST* teams (including *FIRST* LEGO League Jr., *FIRST* LEGO League, & *FIRST* Tech Challenge)

Since our club has existed, we have attempted to assist new, less-experienced *FIRST* teams in our local area, as well as we continually trying to create new *FIRST* teams. The Robotics Club that we formed at nearby Sinaloa Middle School is a candidate. Yet, unfortunately, our team is currently the only *FIRST* robotics team in our county. We are trying to change this current situation, not only by exciting support at the local middle school, but area wide through multiple outreach opportunities.

Describe your Corporate/University Sponsors

We have a wide variety of sponsors who support us in a multitude of ways. These range from sponsors like our local bank, Bank of Marin, who make financial contributions to our team, to sponsors like Sound Vision, who provide technical expertise. Only by utilizing the full value of our community support can we continue to give back to the broad range of people we impact.

Describe the strength of your partnership with your sponsors with special emphasis on the current season and the preceding two to five years

Our relationship with our sponsors goes much deeper than pure finance. The CEO of SoundVision has evolved into a mentor who comes and shapes our team into a professional team. Another example is our sponsors at the technology startup DeepFlight. Using their experience in personal submarines, they provide us a grounding in applications of our skills. We also have a unique relationship with our local Rotary Club, where we contribute the manpower necessary for some of their events.

For *FIRST* Robotics Competition teams older than 5 years, briefly describe your team's broader impact from its inception

The innovative, creative, and collaborative spirit of our team influenced the creation of the award-winning STEM program of San Marin High School. The STEM program, which has earned the California Gold Ribbon award, and is headed by a Milken Educator Award recipient, continues to foster engineering education in "The Makerspace". The values of innovation, creativity, collaboration, which are values that are aligned to the values of *FIRST*, are adopted into the STEM Marin framework.

Describe how your team would explain what *FIRST* is to someone who has never heard of it

FIRST is a program that grows interest in engineering through intense mental and academic competitions. Despite the competition, the members and schools that participate create an expansive and welcoming community that practices "gracious professionalism" and good sportsmanship. Through this process, its participants gain skills that can be used for the rest of their life.

Briefly describe other matters of interest to the *FIRST* Judges, if any

Penguin Empire Robotics began as a small, 10-person team in the autumn of 2007. Since our team's creation, we have worked tirelessly to promote the values of *FIRST* spread interest in STEM in our local community. We have reached out to our community and our classmates to spread our passion for science and engineering and we will continue to do so.

words): Judges encourage creativity of expression but the essay must clearly deliver information and facts describing what the team is all about. The essay should draw attention to the strengths of the team. This essay, along with the other information, will serve as the basis for the judges to make the decision on which team earns the Chairman's Award.

Luctor et emergo— We struggled and survived. That is the motto of Team 2551— Penguin Empire Robotics— of San Marin High School. Indeed, after years of toil and trials, Penguin Empire has survived and emerged as an impactful and integral part of our community.

The impact our team has had on our community can be described in two words— positive and significant. Penguin Empire Robotics has strived to be a positive impact on our community. Our team has helped create a strong STEM culture at our school, mentored and inspired rookie teams, and spread the message and values of FIRST to the next generation of engineers and world-changers through our community events and outreach.

One of these outreach methods is evident by the creation of San Marin High School's STEM program. In 2013, San Marin created its STEM Program, which has since received statewide acclaim. Our team helped foster an interest in engineering that helped make this program possible, because its creation has contributed to the increased participation in the team's membership.

“Our STEM Marin students are heavily involved in robotics,” Physics teacher and STEM Program Coordinator Nick Williams said. “We have a really high percentage of kids who are passionate about robotics and are helping push forward cool and innovative ideas, and they bring that back into their STEM Marin classes and push forward the thinking of all the other students”

But our team has done more than simply promote the field of STEM. Penguin Empire has actively helped improve our school's facilities. Last year, San Marin created a new workshop called the Makerspace for students to create new projects. As a result of this endeavor, the school has newfound access to 3D printers, a CNC machine, and other heavy equipment. Students from Penguin Empire helped to create, organize and maintain the newly constructed area. Brian, a leader of one of our build teams, is one such student.

“[Putting the makerspace together] required a lot of work, looking for the best quality tools and a good selection of tools so that classes can complete a wide variety of projects in an efficient manner, while also doing it safely and cleanly. [I also constructed] some walls to hold wood, and now anyone who uses the makerspace can make use of all this lumber,” Brian said. “It was really rewarding to [see the makerspace] go from a concept to a fully functioning maker space with lots of tools that a lot of classes get to use, and it's really cool to get to teach the kids who are using the makerspace how to use it properly and how to use different tools to succeed in their classes”

Penguin Empire has embraced FIRST's message of coopertition, helping Team 6814 (Ellipse) from Sonoma Academy— a team that will be competing against us in the San Francisco Regional— navigate through their rookie year.

"[Team] 2551 has been a wonderful help through our rookie year by guiding us through all sorts of rookie hoops to jump through," said Bryce, the captain of Ellipse.

Penguin Empire attended kickoff with Ellipse and helped them strategize. Noah, our most experienced programmer and team president, has shared advice and knowledge with programmers from Ellipse. The captain of Ellipse was given access to our new online workspace. From there, the rookie team can view all of the communications about the robot, outreach, and awards.

Penguin Empire is also committed to inspiring the next generation of world-changers through our involvement in community events and supporting a robotics club at nearby Sinaloa Middle School. Our team has consistently attended the North Bay Science Festival and the Novato Space Festival, as well as travelling to middle schools to exhibit our team. Through this, and attendance of community STEM events, Penguin Empire has spread the message of FIRST and inspired thousands from the next generation to explore the field of engineering.

One such person inspired is our Construction Captain Zach.

"I was first inspired to explore robotics and join Penguin Empire when I visited their stand at the North Bay Science Festival four years ago." Zach said. "I had never even heard of FIRST or Penguin Empire, but when [the team members] explained to me the impact the FIRST robotics competition had had on them, I was inspired to reach out and explore a field I had previously never thought about exploring."

But beyond our outreach to the next generation, Penguin Empire has worked to create partnerships with sponsors in order to help fund our program and enable us to continue to reach out to and inspire the world-changers of the next generations. We are very grateful to have such kind and loyal sponsors, who provide much more than just money to finance our program: They provide advice and inspiration. The team has been supporting the local Rotary in their community building efforts. Our team members staff Rotary events, making them possible.

A local technology startup specializing in personal submarines, DeepFlight, provides not only capital, but first-hand insight into the world of a functioning robotics company. One of their lead engineers comes down to our school during the build season to offer advice. From this, we have gained valuable information on how a professional robotics firm runs.

Scott Sullivan, the owner of SoundVision, one of our local sponsors, became a mentor for our team, helping us strategize and become a more professional organization.

"I came to check [the team] out, because I always though this kind of stuff was cool, and it didn't exist when I was a kid," Sullivan said. "I got to see the stuff we were doing here and I thought 'wow, this looks like fun stuff.' I decided to show up and help, to play with tools and build

robots. My role has been helping the kids understand process. I'm a believer that culture matters, that process matters and that a great project is the byproduct of a great program and a great process."

Penguin Empire will continue to have a positive and significant impact upon our community. The team that once struggled and survived is now a beacon of hope and inspiration, inspiring the world-changers of tomorrow with its actions of today.