

BATTLE BOTS

Victorian Edition

Art, Science and Technology Mesh at FIRST Steamworks Competition

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Airships, gears, robots, steam power and buzzer-beating theatrics highlight the 2017 FIRST (For Inspiration and Recognition of Science and Technology) Robotics Competition known as FIRST Steamworks.

For this year's event, organizers were interested in combining the steampunk aesthetic with a traditional robotics competition, according to Frank Merrick, director, FIRST Robotics Competition.

Students were given a kit of parts including motors, batteries, control system components, construction material and automation components. They had six weeks to work with adult mentors to design, build and test their robots to meet the engineering challenges of the competition.

The game itself consists of two alliances—three teams per alliance—facing-off in matches that last only two minutes and thirty-seconds. The concept of FIRST Steamworks is to prepare airships for a long distance race by fueling the ship, completing the geartrain and getting their robots on the craft prior to 'take-off.'

How exactly is all this accomplished?

First, the competitors utilize robots to collect fuel (whiffle balls) and build steam pressure (launch whiffle balls into high and low boilers for various points). Robots also deliver gears to the pilots on the airship for installation. Once the geartrain is complete, the pilots can turn the crank to start the rotors. Before time expires, the robots must also latch on to their respected airships by essentially climbing a rope to board the craft.

The alliance that is best prepared for 'take-off' when time expires wins the race and the match.

For the first time in the history of the competition, you'll find human players on the field right in the middle of the action.

"Pilots must make sure they get the gears delivered by their robots installed quickly and correctly to get those rotors turning, and must deploy the ropes the robots will eventually climb at the end of the match. It's a high-stakes, high-pressure position, and the students love it!" Merrick said.

The final moments of each match when six robots are trying to climb their ropes before the buzzer sounds can be heart-stopping, according to Merrick, and they add a level of excitement to this year's competition.

"We've never had a rope-climbing challenge in any of our games before, and had no historical information to use to



estimate, but the teams have delivered the goods with climbing-capable robots!" Merrick said.

There are currently about 3,350 FIRST Robotics Competition teams worldwide. While most of those teams are school-based, they also come from Girl Scouts, 4H and other community organizations. There are even independent teams with no formal affiliation with other groups.

The competition has grown so large that they have scheduled two FIRST Championship locations this year. One will take place in Houston, Texas, on April 19-22, 2017 and the other in St. Louis, Missouri, on April 26-29, 2017.

Winning alliances at each event receive trophies, banners, medals for team members, and automatic invitations to the 2018 FIRST Championship. Additionally, the Chairman's Award is presented to the team that embodies the purpose and goals of FIRST competitions. This team is inducted in the FIRST Robotics Competition Hall of Fame and receives a lifetime invitation to the FIRST Championships.

Every time Merrick attends these competitions, he becomes more optimistic about the future of science and engineering.

"I see young people working so hard, in teams, on seriously challenging problems for which there is no 'right' answer! It honestly runs counter to the stereotypical image of lazy, over-indulged teenagers. *FIRST* isn't easy, and it's designed to not be easy, so when student participants complete a season they can look back with authentic pride in their accomplishments. This gives them a taste of their true capabilities."

(www.firstinspires.org) **PTE**