The 2003 FIRST Robotics Competition

What is the FIRST Robotics Competition?

The FIRST Robotics Competition is an exciting program that teams sponsors, collegiates and technical professionals with high school students to demonstrate their solution to a prescribed engineering challenge in a competitive game environment. The program has resulted in life-changing, career-molding experiences for its participants. It is also a lot of fun.

In 2003, our reach will expand to over 20,000 students representing over 800 teams. These teams will come from almost every state in the U.S., as well as from Brazil, Canada, Great Britain, and Germany. FIRST has truly become an international program and is continuously growing. These teams will participate in 23 Regional Competitions and the annual Championship Event. The competitions combine the practical application of Science and Technology with the fun, intense energy, and excitement of a championship-sporting event.

This year's challenge will be presented at the 2003 Competition Kick-off on January 4, 2003. All teams will be shown this year's game field for the first time and will receive a kit of parts and a manual of game rules and regulations. The parts kit will include motors, sensors, shafts, bearings, and other materials that can be used in the design and construction of their robots. They will also receive a multi-channel radio control system and a 12V battery power supply. The kit is meant to provide a level starting point for all teams. The game rules also provide for team purchase of additional items. When you add dedicated, enthusiastic students, teachers, engineers and other professionals, in six weeks of construction time they will produce well designed, tried and tested, amazing machines that are competition ready.

The 2003 Playing Field

This year's playing field is 24 feet wide by 54 feet long. It is enclosed on its long sides by a pipe railing that is 20 inches high. The end sections consist of four "Driver Stations" that are located behind 36-inch high aluminum diamond plate walls with 48-inch acrylic safety view panels on top. A 4-foot wide by 12-foot long by 2-foot high plastic-surfaced platform is located in the center of the field. Access to the platform is provided by 12 foot wide, welded steel wire mesh surfaced ramps on each of the long sides. These ramps are 8 feet in length and are set at approximately 14 degrees from horizontal. 2-foot high sheet plastic walls protect the open sides of the ramps and platform. At each side of the platform is a 6-foot wide alley that connects the opposite ends of the playing field. These alleys are divided at midfield by a pipe rail. The surface of the playing field is carpet. The carpet will be marked to allow for the use of optical sensor tracking and navigation. The human player containers will have reflective tape on them for sensor tracking.

The 2003 Game – <u>"Stack Attack"</u>

This year's game requires robots to collect and stack plastic storage containers on their side of the playing field. The location of the containers and the height of the stacks will determine each team's score for each round.

Each match will feature two-team alliances playing from diagonally opposite ends of the playing field. There will 29 containers located across the top of the center platform in the shape of a pyramid. Also, each alliance will be allowed to have a human player from each team enter the playing field before the start of the match to freely place or stack eight additional containers.

The robots from each of the four teams will be placed in starting positions in the alleys at each side of the center platform on the opposite side of midfield from their drivers. After the human players have been allowed 10 seconds to place their containers and exit the field, the robots will be allowed 15 seconds to function autonomously, without driver control of any kind, to race to the various container stacks to collect or maneuver them for scoring opportunities or, perhaps, to knock down their opponents containers. After the "Autonomous Period", the robots will be under complete control of their drivers for the remaining 1 minute and 45 seconds of the match.

The object of the game is to collect and stack containers on your team's side of the field. Each legal container on your side of the field counts as one point. The final score is the result of multiplying the number of containers in the highest stack by the total number of legal containers in your alliance's scoring zone. An additional 25 points is awarded for a robot that is positioned on the top of the ramp platform.