



LOCK  
TIGHT  
NIGHT

## January 18th, 2014

Central Indiana weather did not cooperate enough to allow Lock Tight Night 2013 to take place in 2013. With two delays, several days of closed school, and the 2014 robotics season filling up schedules, many of the schools who had previously competed for the past several years were not able attend. Likewise, many of the company teams found it a challenge to participate in this year's event as a result of the delays and busy schedules. Despite these setbacks, a group of six high school and a single middle school team converged on Columbus Signature Academy the weekend of January 17th to compete against a brave lone Cummins team. At 8pm on Friday evening, the student teams learned that the game this year would be based upon the game Minecraft. With robotics kits for every team provided by a combination of grants from the Department of Education and Cummins, the students set out to build a robot capable of stacking two different sized blocks. Shortly after 8:00, the kits were distributed and the design process was under way.

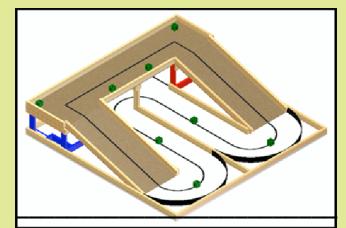
As has become a tradition the past several years, we were fortunate to have a representative from Henkel, the corporation that produces the Loctite family of products. A brief demonstration of the Loctite products began around 10:00 with free samples distributed to each team for use on their robots. It did not take long for the students to find innovative ways of using the donated products to enhance their designs. By the end of the night, barely a single robot could be found that did not incorporate one or more of the Loctite products. As is also tradition, the hosting school provided a gift package to each team that included short rubber bands, tongue depressors, and two rack & pinion gears. Several of the teams combined both the Loctite products with the CSA presents to customize their designs.

By 1:30am, some of the teams were already starting to utilize the playing field to test their preliminary designs. The Junior High School team began to show signs of fatigue and by 2:00am, the young team decided their robot was finished. By 2:30am when one last present was distributed, all but a single student on the Junior High School team was still awake to receive it. This time, the present was a collaborative effort between Columbus Signature Academy and Cummins to provide a motor with a motor controller cable. This brought the total count of motors up to five to allow for the potential of one more axis of motion to help grab and stack the boxes. Some of the teams recognized the benefit immediately and began conjuring ways of using the name component on their robot. One of the students ran down the hallway to tell the rest of their team that this could be the game changer they were looking for. By 8am when the robotics competition officially started the preliminary rounds, most teams had already incorporated the fifth motor on their designs.

When the Cummins team arrived, they were allowed to begin designing their robot ahead of schedule due to a winter storm front that was set to arrive in the afternoon. The Cummins team agreed to a starting time of 1:00pm so that the student coaches would hopefully be able to begin the journey home before the road conditions worsened. While this decision was in the interest of safety, the strategy would prove to work against the Engineer team as they struggled to work out the last minute bugs before the first round of the finals. After missing the first match they were scheduled to participate, the team decided that they had to simply live with the nuances of their design or risk missing the competition. Unfortunately, the Cummins team would never quite recover from having missed the first match. Their design, which relied upon gravity to keep their claw parallel to the ground as it grabbed a block, would prove capable of assisting in the stacking process. However, with limited time to drive their robot and a default loss from missing a match, they could not keep pace with the practiced students.

Each team seemed to have their own unique strategy in their handling of the competition. One of the veteran teams worked thoroughly through the design process before even assembling a single part. The Junior High School team decided that collaboration and a good night sleep were the best way to find success the next day. Several of the teams had already been collaborating with other teams by figuring out which robots could perform certain tasks. Many of the teams approached the stacking of blocks with a conservative approach to ensure all of the progress leading up to the final moments of each match did not end with collapse. In the end, four teams would take away a trophy based on their performance in the finals. One team would be hand-picked to take home the Engineer's Choice award. Likewise, a single team would earn the Community Service award for their donations of canned food. But at the end of the competition, we hope all the teams take back a unique experience that will inspire them to be the one that rises to the occasion in all that they do in life.

# Lock Tight Night Robotics Competition 2013 Results8



## Trophies

### *Lock Tight Night Trophy*

- First Place Alliance
- First Place Alliance
- Second Place Alliance
- Second Place Alliance
- Engineer's Choice Award
- Community Service Award

### *School*

- "Martinsville High School
- "Central Nine Career Center
- "Dmqo kpi vqp"Uqwj
- "I tggpudwi "Lwpkqt"J ki j "School
- "Dmqo kpi vqp"Uqwj
- Southport High Schoqn



## Company Rankings

### *Company Participant*

### Ranking Out of 8 Teams

Cummins

8th place



## Corporate/Community Support

### *Sponsor*

- CSA New Tech Facilitators
- Visual Edge
- Cummins
- Loctite
- CSA Cafeteria Staff
- Ivy Tech Community College
- Robotics Parents
- Nicole Otte

### *Donation*

- Countless Hours of Work & Support
- Discounted Vex Robotics Kits
- Engineer Team Volunteers
- Seminar Volunteer & Product Samples
- Cafeteria Support throughout the Competition
- Robotics Kit Grants for first year teams
- Hospitality Room Donations
- Keeping the vision alive

## Minebots

Minebots is very similar in concept to a popular video game that requires participants to maneuver around a place that contains elements such as lava pits and boxes that must be stacked to achieve success. In the case of Minebots, the robots have a three minute time period in which to stack as many small blocks and large blocks as possible while working as an alliance team. Each partner begins on opposite sides of the playing field to eventually converge onto the same area to perform the stacking process. Each team's score is based on the height of the tower in which inches are translated into points. A second designated area can be used by the team to place a single block that will decrease the opposing team's score by half.

A portion of the playing field is designated as lava and must have a block placed in a designated area to allow safe travel across it.

