

CURRENT EVENTS

New Cell Selection, Project Tracking System, Battery Balancing, & More!

Hello Buckeye Current friends, family, alumni, and sponsors! With the first snowfall here in Columbus the team has been hard at work continuing to prepare our bike for race season all while team members wrapped up their fall semester.

In the past week, the team finalized what cell we will be using to build our new battery pack this year, deciding on the Imr Efest 26650 which is intentionally the same size as the cells the team used last year. With the cells being the same size, the physical design of the pack subassembly does not have to change and will streamline the process of constructing the pack. Construction should take the team roughly 4 months to complete without major design changes.

As discussed in last month's newsletter, our run up Pikes Peak this past June left our current battery pack on the verge of death. "Many of the cells have high internal resistances and are damaged from being discharged so low," Technical Expert Polina Brodsky said. "We're trying to get the pack charged and balanced so we can still do full vehicle testing at low power in controlled environments." Balancing is currently being done by isolated power supplies and balance chargers that charge up to 10 series cells at a time. This is a major improvement in time and safety from the team's previous method of balancing cells one at a time.

Some of the new systems that have been implemented this year include training modules for new members and a new project management tracking system. The training modules are split into electrical and mechanical categories and are meant to test the skill level of anyone who wants to work on a project in those areas. "It was definite-

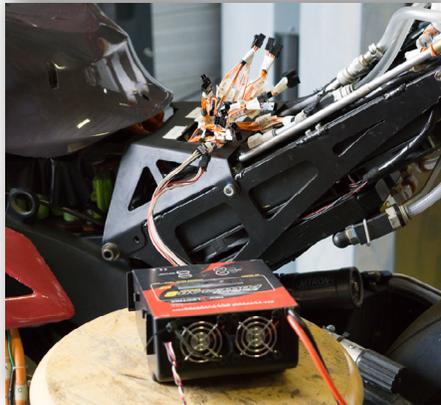
ly a challenge in the beginning because I used Autodesk inventor for 4 years," Daniel Mikrut, a Mechanical Engineer who joined the team this fall said, "For sure a useful thing to learn because so much of what we do in the club revolves around modeling things in SolidWorks."

The project management system is the same waterfall style that has been used in years past with a few changes. "We are borrowing some traits from a more Critical Path style of management," Project Manager Brody Ringler said. "This is enabling us to keep unexpected feature creep to a minimum and ultimately allowing us to take on paralleled multivehicle development."

There have also been a few important things that the team did over the past few months that didn't make it into the last newsletter. In September the team took our past isle of man bike (RW-2x) and our current Pikes Peak bike (RW-3x2) to the American International Mortocycle Expo where we got to display our accomplishments to over 500 other exhibitors and countless public visitors. The Expo provided us with a medium to establish technical contacts within local and international companies alike, enabling us to promote our brand and open doors to increased aftermarket support and advanced manufacturing methods.

In October the team took a day trip to flat rock MI to visit the proving grounds of one of our key sponsors, Bosch. After exchanging presentations and enjoying lunch together the team got to head out to the track for demonstrations and test rides in a Cadillac CT6, Corvette, and Polaris Ranger alongside some of Bosch's test engineers.

Lastly, the team wishes everyone a happy holiday season. We will see you all in 2018!



Fairing Design Progression 2014-2017



RW-2
2014



RW-3
2015



RW-3X
2016



RW-3X2
2017

Technical Highlight

Important for aerodynamics, bike interior access, and general style the fairings are an integral component for our team's success. As the team designs the fairings for our 2018 Pikes Peak bike, we're also looking forward to the design for our 2019 Isle of Man bike. These two races are about as different in style as can be, and the fairings must be designed with different parameters accordingly. "At Pikes Peak, the race isn't as fast so aerodynamics isn't as important" said Evan Crowe, the Aero Project Captain. "Isle of man is a faster race, and the faster you go the larger role aero drag plays in the overall road load on the bike."

The involvement of non-aero-team members boils down to visual input. After hearing the team's thoughts, the aero team modifies the design. "We digest [the teams] input to make something cohesive that will also meet other requirements, like mounting points and ability to manufacture." Crowe said.

Although cohesive in their design process the aero team has different opinions on what they find to be the most difficult part of the process. "Trying to draw on paper what you envision in your mind," Aero Team Member Cullen Willet said. "I find that I lack intricate drawing skills and am not able to convey the style or details that I am going for on paper". For Crowe the manufacturing process is the most troublesome as it is the most time consuming and it acts as a roadblock before the layup can be done.

Currently the team is in the process of manufacturing the lower shroud mold for the 2018 bike and finalizing the concept for the 2019 bike with plans to start CAD design in January. This year's aero team consists of members Cole Schott and Cullen Willet and is led by Evan Crowe.



Evan Crowe



Hometown: Centerville, Ohio

Year: Junior

Major: Aerospace Engineering

Hobbies: Squash and Rock Climbing

Projects: "Last year I designed the tail, which is where I spent most of my time. I also worked a bit on making the CAD model of the upper shroud that we already had. We CMM'd it (Coordinate Measuring Machine) to generate a point cloud then imported it to CAD to make a model. My current project is fixing the ground interference with the lower shroud. It's a simple redesign just to bring the bottom part of the lower shroud to a higher point above the ground."

Favorite Part of Team: "One of my favorite parts last year was definitely seeing the fairings we made in carbon fiber because it took many hours to get to that point in design work, sanding the molds, and manufacturing. Sanding the mold takes a very long time because you sand, then spray paint to find any scratches then sand it again. By the end it's around a thousand grit. It took us all day every day for a week."



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