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Midnight Mayhem VI

University of Rochester Baja SAE recently competed in an off-season competition known as Midnight Mayhem, held in Kentucky. The competition includes many of the same events as an official competition, but the endurance race runs from 8pm-12am, hence the name. There were 21 members in attendance, including five new recruits and three Baja alumni. We brought three cars down with us, spanning 2009-2014.

Despite unseasonably cold temperatures, the competition was a great success. Every new member gained experience with competition driving, quickly diagnosing car problems and effecting repairs. Our returning members got to practice their skills and everyone got the chance to learn from Pat, Jakob, and Kim, our alumni attendees. We had one car queued 6th out of 78 at the beginning of the endurance race, and had another car finish 18th in maneuverability.

We are hoping to keep the tradition of attending Midnight Mayhem alive in the coming years. Our goal is to include both alumni and new members so that the most experienced and inexperienced members of the team can work together to help the team succeed. Please consider joining us at this event in the future.

-Alycia Abbott, President
Baja Strikes an Arc
New Welding Equipment and Classes for members!
It was a sad day in the shop when our Lincoln Electric TIG welder finally struck its last arc. In use for many years, the loud buzz of the mammoth red welder was a staple of life in the Baja shop. Yet there was a silver lining, for once we decommis-sioned the old welder, we were able to acquire not one but two new welders from Mahany Welding Supplies. The first, a member of Miller’s Diver-gent series of welders, is designed for TIG welding which provides higher quality but slower welds. The other, a “Millermatic” welder, is used for MIG welding which is a faster but lower quality alternative to TIG. Both welders have since seen a great deal of use in our shop for a wide variety of proj-ects including jigs, suspension arms, steering links, rack adapters and the upcoming 2014-15 vehicle frame. Because of the expanded capabilities offered by MIG welding, we will be able to move even faster with our manufacturing process, producing essential component jigs in minutes that may have taken hours to finish with our old setup.

University of Rochester Baja’s partnership with Mahaney Welding Supply and their instruc-tional studio, the Rochester Arc and Flame Center, has greatly benefited us. In recent years, the in-structors at the Arc and Flame Center have taught free introductory welding classes to new members and seasoned veterans alike. These classes are a wonderful opportunity for members to learn the fundamentals of arc welding from trained profes-sionals. Classes in both Metal Inert Gas (MIG) and Tungsten Inert Gas (TIG) welding have been pro-vided.

Safety is a number one priority of our organ-ization and we place great importance on provid-ing a low risk working environment. Because of this, we are constantly exploring new safety equip-ment such as auto darkening welding helmets as well as welding shirts and gloves. In addition to this, we are continuing the “Welding Wednesday” sessions begun last year which provide an open time slot Wednesday evening for members to practice their welding skills. These are supervised sessions ultimately meant to bring members closer to passing the mandated SAE welding sample tests required of Baja frame welders.

The members of University of Rochester Baja are constantly striving to expand our design and fabrication horizons. New welders, new equip-ment and better training will help us continue to improve our competition vehicle. With help from alumni, faculty and community sponsors, we have been able to consistently improve the experience provided for our members in our metal shop. The acquisition of our new welders and the continu-ation of member training are just a few ways that University of Rochester Baja is striving to be “ever better”.

-Chris Plunkett, Chief Welder, Frame Team Lead
STATE OF THE SHOP

Last fall, we annexed the unused lab space behind the Baja shop, effectively doubling our space. Not only did this allow us to work on a wider variety of projects, but also to do this without tripping over each other or the Baja vehicle! We gained both bench and floor space, allowing each Design Team to have their own space to work and keep parts organized.

We also gained a design studio in the basement. This is a small room off of the ME senior design lab in the basement of Hopeman. We now have dedicated space for more than five members to design as well as space to organize our catalogs and other documents. This Fall, we were also able to purchase larger monitors for two of our three workstations.

This December, we will be moving to the shop space previously occupied by Facilities next to our shop. Unfortunately, we will be losing over a third of our space, including our fume hood. However, this relocation will allow us to place tools and benches on wheels, add a tube rack to the welding table, and add many other needed improvements to our shop. We will gain a dedicated air compressor, better welding ventilation, and extension cord reels. This new smaller space will be somewhat temporary, and the administration is working to find us a more suitable space in the coming years.

We have been told that the physics shop in Bausch and Lomb will be consolidated with the student shop in Taylor Hall this semester, expanding our member access to this equipment. It is clear that the relocations of our shop and the physics shop will put strain on our fabrication schedule, but we are working hard to mitigate this before it becomes an issue. Fabrication on the frame is starting in October, and the rest of the schedule will follow from there to reach our goal of a 90 day testing period before the Alabama competition.

Looking forward, we will be pursuing the acquisition of CNC for rapid prototyping and the expansion of our tube-bending capabilities.

These past few years have seen enormous improvement within UR Baja SAE, and we continue to be one of the hardest working groups on campus. Our shop is generally open every weekend of the academic year, so if you are in town, please stop by!

-James Powers, Chief Mechanic

Overall Project Plan

End of November 2014 - Complete design process
- CAD and FEA for frame, suspension, drivetrain, brakes, and electronics
- Materials selection and budgeting for frame, suspension, drivetrain, and brakes

End of January 2014 - Finish rolling vehicle
- Assembling and fitting of frame and suspension, along with wheel bearings
- Testing for suspension and driver fitment

Early March 2015 - Finish final vehicle
- Adding drivetrain, brakes, composites, and electronics to rolling vehicle
- Begin drive testing and transmission tuning
- Travel logistics (rooms, food, travel time, etc)
- Scheduling truck and equipment rentals (welder, generator, etc)

Early April 2015
- Attend Auburn, Alabama Competition

Late May 2015
- Attend Portland, Oregon Competition

A depiction of our new shop. Created by James Powers
This year we have a large number of returning members supplemented by a strong group of new recruits. Our design board has been hard at work all summer, and this has enabled us to be further along in our design than in previous years. At the time of writing, we have already started the manufacturing phase for the frame of the car, and anticipate beginning other components within the next week. Due to the earliness of our first competition, and the anticipated disruption to our schedule due to transitioning shops, it is vital that we remain on schedule and avoid any major pitfalls. We are also looking to attend two competitions this year which will require a significant fundraising effort on our part.

As such, any contributions to the team, whether it be advice, design or monetary related would be greatly appreciated. If you are interested in discussing a specific design feature, please feel free to contact the team leader directly. We also have an additional way you can pass your knowledge to future generations of Baja: a team wiki. This was created by our previous president Nick Brown last year. If you are interested in obtaining write access to the wiki, please contact me.

On our part, we will do our best to provide updates on the team’s progress through our facebook page, website, and of course, through these newsletters (look for the next one around late January).

Sincerely,

Alycia Abbott
UR Baja SAE President ‘14-15

P.S. If you donate through the Advancement page (details on our website), please know that we have been working to be provided with monthly updates, and therefore, there may be a slight delay before you are thanked for your generosity.