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Los Altos Academy of Engineering



BUILDING A CLEANER, MORE FUEL EFFICIENT TOMMOROW



infusion lives!

By: Edward Lu

On October 11, 2008, the Los Altos Academy of Engineering ran Infusion near the parking lot of our school. Both of our interim drivers got driving time and learned the basics of driving Infusion. There were a few minor bumps along the way, but we got over them smoothly. We plan on taking Infusion out a lot more so our drivers can feel comfortable and we can see the capabilities of our vehicle.

Infusion, Los Altos hydrogen fuel cell vehicle was completed about two years ago. It is a completely student built vehicle. It uses many innovative and cutting edge technologies. The suspension used torsion bars until weight limits cut them out. The body was created using fiberglass in

a process called infusion. In this process, the entire mold is vacuumed so that there is a perfectly even distribution of resin. The vehicle runs on a hydrogen fuel cell with hydrogen being provided by a hydride tank. The fuel cell sends electricity to a 1.6 horsepower Scott motor controlled by a motor controller. This vehicle is capable of going 40 MPH for up to an hour. In past Shell Eco-Marathons, it has attained the equivalent of a 1,000-plus MPG.

This year, our goal for Infusion is to fix the minor problems it had. We hope to run Infusion many times this year to get a better feel of it and to make the correct modifications to make it run smoother. One of our biggest challenges will be meeting the weight requirement for the Shell Eco-Marathon. The weight requirement this year is 20 kg lighter than last year's. This will be extremely challenging as we already cut as much weight as we could to make last year's race. In the end, we may be using Infusion as just a practice vehicle for our drivers.



a day at the beach

By: Angela Chen

On September 15–16, the Los Altos Academy of Engineering presented at The Future is Green, a conference at the Long Beach Convention Center hosted by AQMD. High schools from all over Southern California attended to learn more about programs like LAAE and ways that they could help the environment towards a greener future.

The students from LAAE presented side-by-side with Gabrielino High School, La Mirada High School and Cal State Los Angeles. Although the role of LAAE was to present to others so that the students from other high schools and colleges could learn about the engineering program at Los Altos, the students who presented learned about the projects that La Mirada and Gabrielino worked on as well. LAAE presenters taught high school and college students about the solar boat, HICE, Infusion, DARPA and Botball projects.

In addition to the high school presentations, students listened as representatives from California Edison explained procedures the students could take to save energy. In addition to

presentations going on upstairs, there was an exhibition hall downstairs where the LAAE displayed side-by-side with companies. Students from various colleges and high schools seemed very interested in the projects LAAE worked on and some even wanted to start ones like Botball. In the end, the Los Altos Academy of Engineering students learned more than they thought they would about a greener future.



Cars, movies, and laae

By: Adrienne Lee

On July 20, the city of South Pasadena hosted its second Clean Air Car Show and Film Festival. In association with the State Senator Gilbert Cedillo and Assembly man Anthony Portantino, the city of South Pasadena held this event to raise awareness and educate the people of Southern California about the effect of vehicles on our environment.

The festival featured nearly 30 top-of-the-line next generation vehicles, some already available to the public. Movies presented how vehicles damage our environment and methods of restoring and preserving our earth. Mini-seminars were available addressing issues about climate change, the harmful effects of vehicles on humans and pets, tax plans on alternate fuels, and transit options. Booths and exhibitions showcased topics including health, environment, energy, automotive, and transportation options. There were also separate exhibitions for cars using alternate fuel sources such as an electric Chrysler Gem and a vegetable oil-powered 1982 Mercedes.

Because Los Altos Academy of Engineering focuses on building a cleaner and more fuel efficient future, this festival was perfect for us. The members who went to the festival, primarily team leaders, took and presented our fuel cell vehicle, Infusion. LAAE was considered a special exhibition since Infu-

hice Starts Out nice

By: Eduardo Barrera

The Hydrogen Internal Combustion Engine vehicle is still in the design stage. Once we finish designing all the parts for HICE, we will begin the infusion process to create a composite body. Our goals for HICE include making a chassis out of composite material to save weight, finishing and testing HICE at least one month before the Shell Eco-Marathon competition this year, and successfully running a Honda GX35 four stroke engine on hydrogen. This last goal is our most ambitious. Although we got it to run last year, it was not as consistent as we would like. Running hydrogen on an internal combustion engine would be more efficient and clean. Hydrogen internal combustion engines may be the future of the car industry.

On Saturday September 27, all eyes were focused on the Honda GX35 motor. For the first time this school year, students lead by Dipak Prasad attempted to start the motor on hydrogen. The attempt failed due to an oily motor and the timing of the pull start. Even though the attempt was a failure, it certainly wasn't a waste of time. "Mistakes are worthless unless we learn from them," said Mr. Edward Richter, LAAE advisor.



On a more current note, on Saturday, October 18 the highly optimistic members of the Mechanical team reattempted to run the Honda engine on hydrogen. This time the team achieved a steady motor run for 30 seconds before the motor was turned off. The maximum amount of time the motor can be left running is still unknown. This is a giant leap for the HICE project team.

The composites team had set the date of Saturday February 8 for the end date of the HICE body. The composites team was very successful with the Infusion process. Having a body by the first semester will place the HICE team in an excellent position to finish HICE by April 15 for the Shell Eco-Marathon.

the firework stand is a blast

By: Eduardo Barrera

The Los Altos Academy of Engineering works on many projects which give students many opportunities to grow and learn. However, with these projects come many expenses. Our LAAE booster club is always on the watch for new fundraisers and other ways to acquire money. Thanks to the Veterans of Foreign Wars the LAAE booster club was able to acquire a Fire Work stand.

In haste, the boosters and the men from the VFW drew up a plan to split the profits. Volunteers were gathered from all reaches of the LAAE family. Parents, alumni, students, and friends gathered together for fourteen hours everyday from July 1-4.

None of the days could compare to the rush of people that came for fireworks on the Fourth of July. The volunteers at the stand found themselves short staffed and running low on morale. Total chaos spread through the stand. Orders felt like missions as certain supplies were running low and the crowds grew more impatient. Once all was said and done, the volunteers didn't get home until 1 A.M.

In the end, the firework stand yielded \$4600 for the Los Altos Academy of Engineering. The LAAE would like to thank the VFW and all of the volunteers and people who came by the stand to buy fireworks. The LAAE is planning to do this fundraiser again next July. Please set the dates and come by to buy your fireworks.

botball . . . robots in disguise

By: Liza Magat

After sweeping the Southern California Botball Regional Tournament at the University of San Diego, the LAAE Botball team was able to move on to nationals. The team traveled all the way to Norman, Oklahoma where they were both excited and nervous upon their arrival. The team had placed 16th in seeding, 17th in double elimination, and 19th overall at nationals. Although the team did not achieve what they were hoping for, they still walked out with their heads up, already planning for the next year.

The goals of the Botball team this year is to be more prepared. One of the improvements that the LAAE team has been working on is better planning, organization, and even communication. These improvements have been passed along with the other projects that we are working on. Botball

has been more organized than ever, already planning and making deadlines on the calendar.

With new members being recruited to make up the team, the goals seem within reach. The members carry with them the interest of being a part of the botball team, as well as their knowledge of building and programming robots.



new success, new year, new plans

By: Crystal Lopez

Last year's Solar Cup competition was a successful one for the Los Altos Academy of Engineering Solar Boat team. Our 2007-2008 boat, Monsoon, placed fifth overall and has been the most victorious LAAE has built. Even though the team went home without a trophy, they were still very proud of their work and consider the boat successful. For the endurance race in the competition, the team decided to put in a titanium shaft, fused by team member Eric Munoz, which reduced the weight of the boat. Although the team was eager to use this same shaft for the sprint race, advisors and former team members advised them not to install it for that portion of the race because it has never been tested going at high velocity. Another factor that made the boat triumphant was the experience that the team members had with the competition and the skills that they learned working with the boat.

Even though the team was happy with the outcome, they decided to discontinue their participation in the Solar Cup competition. They came to this decision because they wanted to dedicate this next school year to working with other newer projects. The boat project will be handed down to new members of the program and to students who are part of the pre-engineering class. Former Monsoon team members understand this means that the team might not do as well as it has done in the past, but they still think their decision is for the betterment of the program. Not only will leaving the boat a job for newcomers give the other LAAE members more time to work on other projects, but it will also bring fresh new faces and minds into the program.



a new look for a new year



website now runs under one unifying template page. The new template page takes advantage of our new sidebar, menu, and headers. The new sidebar and menu features are created in-house, by LAAE's own Information Technology team. These provide a smoother method of navigating our website than ever before. In addition to our photo galleries, a brand new video gallery has

By: John Weng
The Los Altos Academy of Engineering website has recently received a complete overhaul. These changes range from aesthetic to the underlying design of the website. In addition, we now feature a new color scheme. The previous version's white and silver scheme has been improved with additional colors, giving a more organized feel. The base, or template, page has also been redone and improved upon. The old Hydrogen Internal Combustion Engine and our Infusion vehicle's pages, which were unorganized and inefficient, have adopted this template as well . With this new change, the entire

www.lasu.org

the advisory committee



On November 15, the LAAE Public Relations team geared up for one of the most important meetings of the year, the Advisory Committee meeting. The Advisory Committee meeting consisted of engineers and supporters of the LAAE program. The attendees were briefed on all current projects and had the opportunity to give advice and express concerns about the program. The safety procedures of our upstairs shop were one of the main topics that concerned all the advisors. The members of LAAE and the advisors dis-

cussed on the various ways to improve the level of safety for the students and concluded to hold regular safety meetings to address all safety precautions of the upstairs shop. Tom Knipe was nominated as this year's chairman of the committee by the previous chairman Laurie Marshall. Then the committee decided on whether or not the program should continue; the committee unanimously voted to keep the pro-

gram running. This year's committee was comprised of Derek Mayeda, Norm Ong, David Vedder, Laurie Marshall, Mitch Kodama, Nikki Kodama, Tom Knipe, Richard Cheng, and Stanley Chu. The Los Altos Academy of Engineering would like to thank all the attendees that came to the Advisory Committee meeting.



By: Eduardo Barrera



LAAE 2008-2009

Top Row: Elliot Jung, Mark Norris, Jeff Ong, Wynn Chen, Edward Lu, Dipak Prasad, Sungyop Whang, Brian Yang, Daniel Ma, Jerry Ho, Steven Rodriguez, Michael Saldivar, Ryan Tsao, Eduardo Barrera

Middle Row: Marina Macias, Arielle Barnes, Joseph Lin, Calvin Lee, Vincent Tieu, Stephanie Hsu, Mark Aguilar, Abraham Lin, Ernest Ortega, John Weng, Alexander Sosa

Bottom Row: Sharon Shim, Adrienne Lee, Danny Shin, Angela Chen, Paola Gonzalez, Crystal Lopez, Andy Lopez, Richard Wong, Alex Najarro, Liza Magat

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WE WOULD LIKE TO THANK OUR BOOSTER CLUB FOR SUPPORTING OUR PROGRAM AND SETTING UP ALL OF OUR FUNDRAISERS. THE FIREWORK STAND WAS A GREAT ACCOMPLISHMENT DURING THE SUMMER. OUR MORE RECENT FUNDRAISER AT ROUND TABLE PIZZA WAS ALSO A GREAT SUCCESS.

WE WOULD ALSO LIKE TO THANK ALL THE ADVISORS WHO ATTENDED OUR ANNUAL ADVISORY COMMITTEE MEETING. WE APPRECIATE ALL THOSE WHO CONTINUOUSLY SUPPORT OUR PROGRAM.

-LAAE