



Mississippi State University

X-cited!

Team Reaches Out to K-12 Students

Special points of interest:

- The Challenge X team reaches out to K-12 students. See the adjacent article.
- See what each thrust is working on in our regular Thrust Update Area.
- Bill Bain is featured as this edition's Student in the Spotlight.
- Elementary and junior high school students! Give us your ideas for a name for our Equinox! See page 2.

Challenge X is not just for college students. This year the team has been regularly involved with K-12 students in many different ways.

In addition to regular K-12 outreach, which is part of the Challenge X project, this year the team has worked with junior and high school students on more specific projects.

Justin Crapps, a member of Challenge X, has been mentoring Jordan Keasler, an 8th grader, on Jordan's science fair project. Jordan chose to do his project on regenerative braking, something that many of the Challenge X team members are more than familiar with.

"Jordan is an incredibly bright young man," said Justin. "I was blown away with how quickly he could receive information and understand it. He is going to make a great engineer!"

The Challenge X team has also continued its work mentoring a



The Challenge X group poses with Jordan Keasler (center.) Jordan brought his science fair project, on the subject of regenerative braking, to practice with the team for the science fair. Some members of the group regularly judge junior high and high school science fairs.

solar car team from Houston, MS. The Challenge X team aids the solar car team, made up of high-school students, in fine-tuning their design.

As always, the outreach continues to visit and present at K-12 classrooms and other venues, such

as MSU Discovery Day, Engineering Day, and other campus events.

If you'd like information on how Challenge X can visit your school or K-12 group, please contact Amanda McAlpin at amcalpin@cavs.msstate.edu.

Thrust Update Area: What are they working on?

Vehicle Modeling and Controls

After having developed a set of control algorithms, the controls team is all set to perform Hardware-in-the-Loop testing using the Moto-Tron control unit.

Also, some effort has been focused upon minute details like setting up the GM diesel internal combustion engine wiring harness. Once the HIL is done, we will be looking to an incremental powertrain integration of the electric motor with the stock gasoline engine and later the diesel engine.

Thrust Leaders: Jimmy Mathews and Kennabec Walp

Mechanical

We have finished fabricating the cradle and the engine is mounted in the Equinox. We are working on the axles and electric motor mounting.

Thrust Leader: Brian Christian

Electrical

We are continuing to work on the implementation of the electric drive and battery pack. Schematics are being drawn up for the 12-volt system and also for the high voltage system. Modifications have been made to the diesel engine harness.

Thrust Leader: Ron Lewis

Powertrain

We have installed a new rear cradle and the Ballard drive.

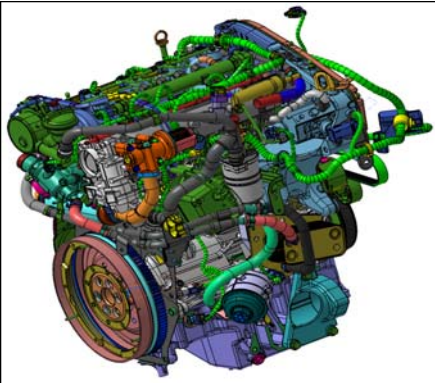
Most of the components for the fuel system and the Ballard cooling system have arrived and installation is 90% complete.

Thrust Leader: Christopher Whitt

Outreach Program

On March 2 Bill Beggs, our GM mentor, will be bringing a check from GM designated to cover travel expenses to competition in Mesa, AZ in May. The donation ceremony will be held at CAVS, and all are welcome to attend.

Outreach Coordinator: Amanda McAlpin



This colorful rendition of the new engine in the Challenge X Equinox is illustrated using computer design software called CATIA. Using this software, the students are able to see inside the engine, and from angles they wouldn't be able to see in the real engine.

Atta-Dawgs

- Thanks to **Christopher Whitt** for getting the rear cradle waiver completed.
- To **Christopher and Brian** on completing the new cradle fabricating and installation.

Upcoming Events

February 24—Intrepid Controls Tech Talk

February 28— Progress Report # 3 Due

March 1-3—GM Mentor visit

March 2 — General Motors check donation ceremony, 1 p.m., CAVS

March 16—Competition pre-inspection

“Name our Vehicle” Contest

Open to grades K-8

Submit your idea for a great name for our vehicle! If your idea is chosen by the Challenge X team, we'll put it on our Equinox and you'll get a prize!

Deadline March 15

Please submit name ideas with your name and contact information to:

Challenge X
200 Research Blvd
Starkville, MS 39759

Students in the Spotlight

This column gives you a behind-the-scenes look at the students who are working on the Challenge X competition at MSU.

This week's student in the spotlight section features Bill Bain, general business manager for the team. Bill joined Challenge X last summer, and has contributed a lot to the team by making sure all business details are taken care of. Bill also helps with outreach, and has made many great presentations for the team. That's why we chose him for this edition's spotlight.

Name: Bill Bain

Hometown: Arlington, TN

Major: Mechanical Engineering

Here Bill answers a few questions about his experience with Challenge X.

Q. What do you feel like you are gaining out of being part of Challenge X?

A. I'm getting a unique opportunity to see where the auto industry is headed in the future. Development in this area has always interested me, and now I'm able



Bill Bain, AKA "Billy The Bain"

to see it from a hands-on perspective. I've also benefited greatly from talking with people about the competition. People from the community are always fascinated with what we're trying to accomplish, and it has really been fun telling

them about our progress. They are always interested and have encouraging words for the team.

Q. What is the most difficult part of being the general business manager?

A. It seems our difficulties come when we order parts we need and they are delayed. When one item is delayed, our status gets stalled, which is frustrating. We always overcome, though.

Q. What do you most enjoy about being a part of the team?

A. I enjoy the people. The members of our team are brilliant, hard-working, dedicated, and know how to have a good time. It's been a pleasure to meet and work with them.

Q. What do you plan to do after you get your degree?

A. I plan to test the job market in the next few months to see what is available. I'd also like to pursue an MBA. I'd like to get a job I enjoy and live in a good place with my wife happily ever after.

For newsletter suggestions or corrections, please contact Amanda McAlpin at amcalpin@cavs.msstate.edu.