Mississippi State University

Challenge X Outreach Team

Year 2

Update #1

June 2005 through October 20, 2005

Amanda McAlpin – Outreach Coordinator
Terri Christian
Bill Bain
David Oglesby

Year 2 Goals and Strategies

During the second year of outreach for the MSU Challenge X team, the outreach team hopes to use last year's outreach as well as the guidelines for this year as a base for our activities. Then we would like to build from there by adding more and different kinds of events and strategies.

Particular points we would like to improve on are our K-12 outreach, our website, and our newsletter circulation.

For K-12, we hope to add additional classroom visits and field trips to our schedule. We plan to begin scheduling these earlier so that we can easily work with teachers' schedules. We are also holding a contest aimed at K-8 students to name our Equinox. This contest will be publicized in our newsletter and by flyers sent to schools, and will be accompanied by visits to several local schools to talk about Challenge X and explain the contest. We have begun advertising the contest, and the deadline for submissions is January 15. We also hope to get involved with more K-12 organizations such as Boy Scouts and Girl Scouts, and have begun contacting area leaders of these groups.

We recently lost our website designer due to another job; however we are in the search for a replacement and will hopefully have more than one person working on it this year. We hope to improve our website by including things to increase traffic flow. We also want to add several new features to the website such as a media room for reporters and other media.

As we do outreach events, we have been taking sign-up sheets for our newsletter with us. This adds to our list of those receiving the newsletter by mail, and we are searching for ways to get more names on our distribution list. We have already begun adding all our sponsors to the list, and we are searching for more venues. We think the newsletter is a great way for people to keep up with MSU's progress in the competition, especially for those that aren't geographically close to us. This year we plan to place newsletters in high-traffic areas and send the newsletter to more professors, not just those in engineering. We'll encourage them to let their students know about the newsletter and where they can sign up to receive it.

We also hope to incorporate new and unique outreach events into our program for this year. For instance, we are in the process of planning an hour long training session aimed at women which will be open to the community and college students. The class will focus on teaching basic car care that will enhance the gas mileage of the vehicle. We hope unique events like this will provide the MSU team with fun ways to get involved with the outreach, as well as have an interesting hook for the public to learn about Challenge X.

We would also like to improve our team's visibility and identity. We now have a graphic designer on our team, who is currently working on designing a brochure about our team. We would also like to print T-shirts with our team's logo. During the year we plan to develop more ideas to enhance our team's visibility and identity.

Community Outreach:

- **MSU Engineering Day**
  Key Participants – Amanda McAlpin, Outreach Coordinator; Terri Christian, Radar; Bill Bain, General Business Manager; Brian Christian, Team Member; Christopher Whitt, Team Member
  Time and Date – September 24, 2005
  Location – MSU Campus, Starkville, MS
  Audience – Held on a home football game day, Engineering Day invited alumni as well as high school students and their parents to come and visit engineering departments before the game. The Challenge X group set up a booth with brochures and display board, and put the Equinox in front of all the activities.
  Description – General overview of Challenge X and MSU's progress in the competition. *See figure 1 and 2.*

Figure 1. Bill Bain talks with high school students at Engineering Day.

Figure 2. The Equinox displayed in front of Engineering Day tents.

- **<u>Presentation to Mississippi Development Authority</u>**
  Key Participants – Marshall Molen, faculty advisor.
  Time and Date – July 22, 2005
  Location – Jackson, MS
  Audience – Mississippi Development Authority members
  Description – Dr. Molen presented an overview of Challenge X in an effort to procure sponsorship.

- **<u>Challenge X Overview to West Point, MS Rotary Club</u>**
  Key Participants – Justin Crapps, team member.
  Time and Date – August 4, 2005 1 p.m.
  Location – West Point, MS
  Audience – West Point Rotary Club, approximately 40 people.
  Description – General overview of Challenge X and MSU's progress in the competition.

- **<u>Challenge X Overview to American Welding Society of Northeast Mississippi</u>**
  Key Participants – David Oglesby, team leader.
  Time and Date – September 15, 2005
  Location – CAVS, MSU
  Audience – American Welding Society of Northeast Mississippi, approximately 10
  Description – General overview of Challenge X and MSU's progress in the competition.

- **Presentation to Miltech, Inc.**
  Key Participants – Bob Kirkland, staff advisor.
  Time and Date – September 19, 2005.
  Location – CAVS, MSU
  Audience – Key Miltech employees, approximately 3 people.
  Description – General overview of Challenge X and MSU's progress in the competition.

- **Press Release on MSU College of Engineering Website**
  Time and Date – Month of October, 2005
  Location – http://www.engr.msstate.edu
  Audience – Website visitors
  Description – Press release was written by the outreach coordinator about MSU Challenge X attending the fall workshop. Press release was displayed on the MSU College of Engineering Website.
  See attachment 1.

- **MSU Challenge X Newsletter**
  Time and Date – Published semi-monthly
  Location – Sent to email list, hard copies sent to professors of all MSU engineering schools, and posted to the MSU Challenge X Website.
  Audience – Website visitors, community, and engineering professors.
  Description – The Challenge X newsletter contains updates on what the team has been working on, carries announcements and calendars, and spotlights students.
  See attachment 2.

Media Outreach:

- **Vehicle Donation Ceremony**
  Key Participants – Marshall Molen, Faculty Advisor; Bob Kirland, Staff Advisor; 8 members of the Challenge X team, Millsaps Chevrolet Dealership
  Time and Date – July 12, 2005 2 p.m.
  Location – Millsaps Chevrolet in Starkville, MS
  Description – Media were invited to attend the ceremony when the dealership owner gave the Equinox to the Challenge X team. The story was covered by 2 television stations, one newspaper, and campus university relations.
  See attachment 3.

- **Picture with article on MSU Website**
  Time and Date – Late July, 2005
  Location – http://www.msstate.edu
  Description – Picture of MSU team at vehicle donation ceremony and accompanying story appeared on the MSU website homepage.
  See attachment 4.

- **Press Release on Roboticsonline.com**
  Key Participants – Neil Littell, team member.
  Time and Date – September 5, 2005, still posted.
  Location – Millsaps Chevrolet in Starkville, MS
  Description – Neil wrote a press release for the DELMIA Company detailing the MSU team's use of DELMIA software.
  See attachment 5.

- **Article in Starkville Daily News**
  Date – October 10, 2005
  Description – The outreach team invited the Starkville Daily News to cover Challenge X. A reporter visited us and interviewed Bob Kirkland, staff advisor, and Amanda McAlpin, outreach coordinator. The article appeared on almost a full page in the Lifestyle section of the Sunday edition of the newspaper with two pictures of the team and the vehicle.
  See attachment 6.

K-12 Outreach:

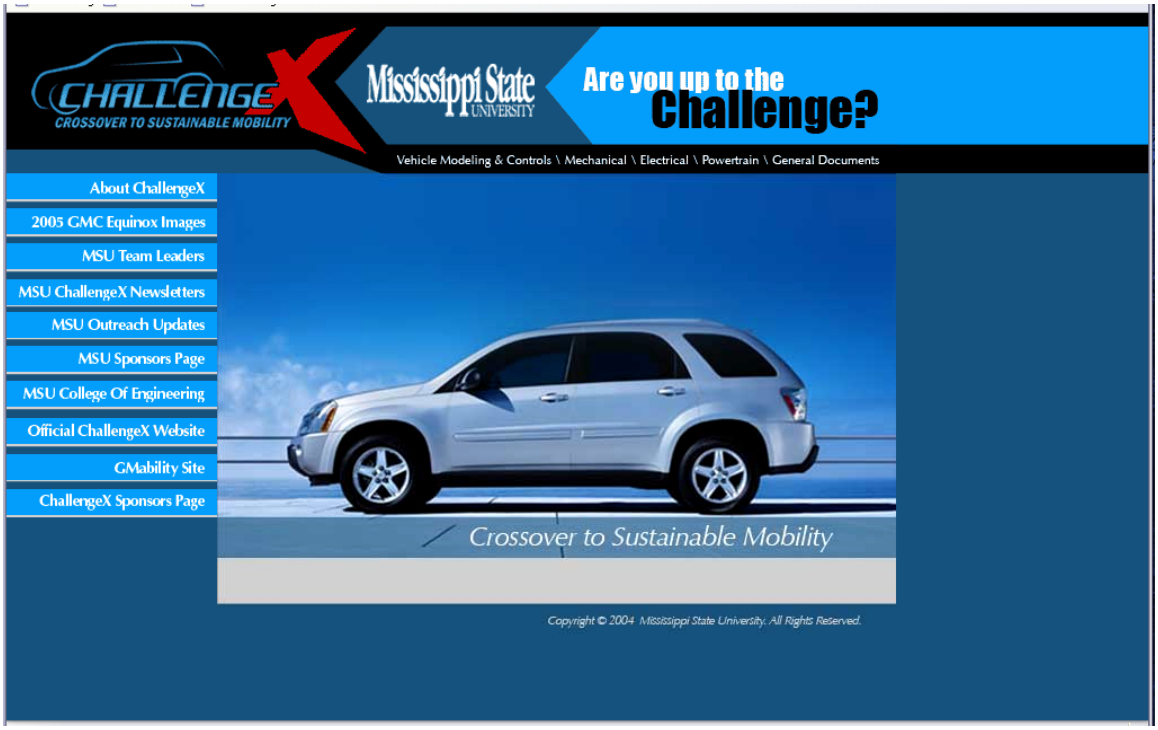
- **Quest Summer Program Student**
  Key Participants – David Oglesby, Team Leader; Brian Christian, Team Member, Mason Ruhl, Quest student.
  Time and Date – December 4, 2004
  Location – Starkville, MS
  Description – The Quest high school student program is a 3 week program over the summer designed to allow high school students interested in majoring in engineering to work in some kind of engineering environment. Our student worked with Brian Christian for 3 weeks on several different Challenge X projects.

Website:

The update for Year 2 for the website has been completed. The website contains:

1) Information about the Challenge X Competition
2) Updated technical goals for year 2.
3) 2005 Chevrolet Equinox pictures
4) Updated MSU Team leader information
5) MSU Challenge X Team Newsletters
6) MSU Team Sponsors Page
7) Links to
    a. MSU Bagley College of Engineering
    b. Gmability
    c. Challenge X Competition Sponsors page
    d. Mississippi State Website (linked through word mark)

There is also a link to the MSU Challenge X website on the homepage of the Bagley College of Engineering website.



Attachment 1.

Newsroom

Challenge X team learns about vehicle design

A group of Mississippi State students traveled to the heart of American car manufacturing last week to learn about modern vehicle design processes.

The students are participating in the Challenge X competition, sponsored by General Motors and the Department of Energy. The three-year competition requires the students to take a 2005 Chevrolet Equinox and redesign it to get the best fuel economy possible while minimizing exhaust emissions. The vehicle must also maintain or exceed standard vehicle performance and driver comfort. MSU is one of seventeen universities chosen from across North America to participate.

The 3-day workshop in Detroit, Mich., held September 29 through October 1, focused on training sessions on competition events, GM vehicle communications, GM Diesel engines, and the proper use of equipment. The students will use this information as they implement their unique design for their hybrid vehicle.

밿his workshop really gave us motivation to work harder on getting our vehicle ready for competition,?said Kennabec Walp, a graduate student in computer engineering who attended the workshop. The students had opportunities to make personal contacts with GM engineers and recruiters from Challenge X sponsoring companies.

Walp뭗 teammates that also attended the workshop included mechanical engineering graduate students Christopher Whitt and David Oglesby, computer engineering graduate student Ron Lewis, electrical engineering graduate student Jimmy Mathews, and mechanical engineering undergraduate student Brian Christian. Marshall Molen, a distinguished professor of electrical and computer engineering and the team뭗 Center for Advanced Vehicular Systems (CAVS) faculty advisor, also made the trip.

Dr. Marshall Molen, faculty advisor to the team, expressed how important the trip was for the students.

밿he students had the opportunity to have one-on-one interactions with GM engineers which further enabled them to understand the design processes employed by automotive engineers. This unique interaction with practicing engineers and their vehicle design processes was an invaluable experience for engineering students.?br /> Challenge X is housed in the CAVS facilities. CAVS provides faculty sponsors, equipment, and work area for the program, as well as financial support. CAVS is a research center devoted to the studies of all aspects of vehicles. CAVS is a part of the Bagley College of Engineering at Mississippi State University.

For more information on the team, or to inquire about becoming a local sponsor, please contact Bob Kirkland, at 662-325-1454.

Attachment 2. Example of MSU Challenge X Newsletter

Volume 2, Issue 2 October 15, 2005

MSU are you up to the challenge? CHALLENGE X CROSSOVER TO SUSTAINABLE MOBILITY

Mississippi State University

X-cited!

Team Members Attend Fall Workshop

Special points of interest:

- *Team members get valuable information at a workshop in Detroit, see adjacent article.*
- *See what each thrust is working on in our regular Thrust Update Area.*
- *Jimmy Mathews is featured as this edition's Student in the Spotlight.*
- *Elementary school students! Give us your ideas for a name for our Equinox! See page 2.*

Six members of the MSU Challenge X team traveled to the heart of American car manufacturing last month to learn about modern vehicle design processes.

The 3-day workshop in Detroit, MI., held September 29 through October 1, focused on training sessions on competition events, GM vehicle communications, GM Diesel engines, and the proper use of equipment. The students will use this information as they implement their unique design for their hybrid vehicle.

"This workshop really gave us motivation to work harder on getting our vehicle ready for competition," said Kennabec Walp, a graduate student in computer engineering. The students had opportunities to make personal contacts with GM engineers and recruiters from Challenge X sponsoring companies.

The team poses with an antique Cadillac as they tour the GM Heritage Center in Detroit.

Walp's teammates that also attended the workshop included mechanical engineering graduate students Christopher Whitt and David Oglesby, computer engineering graduate student Ron Lewis, electrical engineering graduate student Jimmy Mathews, and mechanical engi-

Thrust Update Area: What are they working on?

Vehicle Modeling and Controls

After having run quite a few simulations in PSAT for analyzing both the default and newly-devised control strategies, we are now putting together the actual production control strategy. We have begun from scratch by documenting all possible modes of operation of our hybrid and are presently conjuring the logic diagram for mode-transitions and optimal torque distribution. We are also deliberating about some critical features that our strategy should possess.

Thrust Leaders: Jimmy Mathews and Kennabec Walp

Mechanical

The mechanical group has been working on light-weighting issues, building a battery box for our trailer, and just removed the "spare" Equinox's engine.

Thrust Leader: Brian Christian

Electrical

We have been working on getting the Ballard drive wiring harness finished.

Helping the controls group with the control strategy.

Working on implementing the lead acid battery pack for testing purposes.

Thrust Leader: Ron Lewis

Powertrain

We have been continuing our work on the rear cradle redesign, the Ballard cooling system, and updating the fuel system schematic. Began collecting the CAD files necessary to position the GM Diesel engine and the transmission.

Thrust Leader: Christopher Whitt

Outreach Program

Our team was featured in the October 9th Starkville Daily News with an article and pictures of team members.

We'll be at Discovery Day on the Drill Field with the Equinox on October 22. Stop by!

Thrust Leader: Amanda McAlpin

neering undergraduate student Brian Christian. Marshall Molen, faculty advisor for the team, also made the trip.

Molen expressed how important the trip was for the students.

"The students had the opportunity to have one-on-one interactions with GM engineers which further enabled them to understand the design processes employed by automotive engineers. This unique interaction with practicing engineers and their vehicle design processes was an invaluable experience for engineering students."

The team will now have to put the training to use as they begin working on removing the drive train from the Equinox and replacing it with their own design.

Atta-Dawgs

- Good job **Stephen, Brian, and Ron** on the nice progress made on our battery test trailer.

Upcoming Events

October 20—Outreach Report #1 Due
October 22—Discovery Day—We'll be on the MSU Drill Field with our Equinox from 9 a.m. to noon. Come by and see our booth!
November 4—First team progress report for Year 2 due.

"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 January 15

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

Challenge X
200 Research Blvd

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 Jimmy Mathews, a leader of the modeling and controls group. Jimmy joined the Challenge X team in May and quickly became one of our key members thanks to his talent, skill, and get-the-job-done attitude. Jimmy is an excellent student, and it carries over to the quality work he does on Challenge X. That is why we chose him for this edition's spotlight.

Name: Jimmy Mathews
Hometown: Mumbai, India
Major: Electrical Engineering

Jimmy Mathews was relatively new to the team in June as they traveled by van to the Year 1 competition in Detroit. But as the team got to know him, they found him to not only be very personable, but also intelligent and talented.

Jimmy now helps lead the controls and modeling group, and he's very enthusiastic about Challenge X.

Jimmy poses with an engine.

"I am simply awed by the sheer abundance and diversity of talent that the MSU Challenge X team possesses. I feel lucky to be a part of something so creative and mind-stirring," said Jimmy.

Jimmy said that he gets a lot out of being a part of Challenge X.

" Challenge X has given me the privilege of walking up to some key figures involved in changing the face of the global automotive industry and hear their thoughts. That includes distinguished people from top officials in General Motors and Argonne National Laboratory, to our very own Dr. Molen. Also, having had many opportunities to interact with students from universities across the US involved in Challenge X, I value the sense of camaraderie and commonness of the trials and tribulations that we share."

Of course, as the name implies, Jimmy knows there are challenges to be met with the competition, also. Jimmy said one of those challenges for him is ensuring that the vehicle eventually would be mass producible, not just a prototype.

As the team heads into the second year of competition, Jimmy is looking forward to several things.

"The mere thought of doing well at next year's competition gets my adrenaline pumping. All tiny bits and pieces of stuff that we put together will be subject to some real tight scrutiny. I am impatient to hear the engine rev-up and the motor spin. I am looking forward to seeing the grin on everyone's faces."

Not only does Jimmy add great talent and skill to the MSU team, he does it with a grin on his own face.

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

Attachment 3.

AUTOMOTIVE MAKEOVER

MSU one of 17 universities selected for Challenge X

By EMILY JONES
Starkville Daily News

It looks perfectly good sitting shiny and new on the new car lot at Millsaps Chevrolet-Pontiac-Buick and GMC.

But the silver 2005 Chevrolet Equinox is about to be taken apart and subjected to a sort of auto make-over that could revolutionize the industry.

Described as a "crossover vehicle," the brand new automobile combines elements of both a sport utility vehicle and a passenger car.

The U.S. Department of Energy and General Motors are teaming up with other sponsors to challenge the best and brightest engineering students from 17 universities throughout North America in the contest they have nicknamed "Challenge X: Crossover to Sustainable Mobility."

The automobile was turned over to students and officials of the MSU Center for Advanced Vehicular Systems (CAVS) on Tuesday.

It was driven to the CAVS facility located in the Thad Cochran Research, Technology and Economic Development Park. There it will receive a major overhaul during the next three years.

"A team of some 50 engineering students will work with CAVS personnel to develop leading-edge automotive propulsion, fuels and emission-control technologies during the course of the program," said Bob Kirkland, business development officer for CAVS.

He noted American consumers have tended to purchase family-sized vehicles that offer more utility during the last decade. The trend has produced increased energy consumption and vehicle emissions.

Catherine Ragedale/SDN
Above and left, staff members and students at Mississippi State's Center for Advanced Vehicular Systems pick up the new Chrevolet Equinox that they will use as part of Challenge X.

The long-term implications of stress on the environment and energy supplies prompted the partnership between the automotive industry, the U. S. Government and academia.

The auto makeover project is part of a three-year engineering competition that will challenge the selected universities to explore solutions to minimize energy use and reduce vehicle emissions.

The students will be challenged to do intensive testing to find alternative fuels, such as hydrogen, ethanol, and biodiesel, and to develop an innovative approach to minimize impact on the environment. The goal, Kirkland said, is a sustainable transportation future.

MSU is currently seeking additional sponsors for the program in order to include additional students.

The sponsors will contribute such key elements as fuel cells, propulsion systems, fuels, emissions technology and raw materials.

For more information contact Kirkland 325-1454 or log onto http://www.challengex.org for more information.

Attachment 4.

Mississippi State UNIVERSITY

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CHALLENGE X TEAM — Members of Mississippi State's Challenge X team show off the new 2005 Chevrolet Equinox they received recently during an event climaxing the first year of the national competition. The team of students and faculty advisers, representing the Bagley College of Engineering and Center for Advanced Vehicular Systems, is among 17 collegiate squads nationally that are re-engineering the cross-over sport utility vehicle over a three-year period. In the foreground (l-r) are Kyle Crawford, faculty adviser Marshall Molen and Justin Crapps. In the background (l-r) are staff adviser Bob Kirkland, Ron Lewis, Christopher Whitt, CAVS staff member Amanda McAlpin, Kennabec Walp, Matthew Tucker, Terri Christian, Brian Christian and Jimmy Matthews.
(*Jul 13, 2005 Photo by Megan Bean*)

Attachment 5.

DELMIA? Used in General Motors/Department of Energy Challenge X Project by Mississippi State University

(Posted 09/06/2005)

Simulation software ensures fit and form of redesigned Chevrolet Equinox

Auburn Hills Mich., USA ?August 9, 2005 - Dassault Syst?es (NASDAQ: DASTY: Euronext Paris: #13065, DSY.PA), today announced the use of its DELMIA?V5 Human and Virtual NC software by the Center for Advanced Vehicular System (CAVS) at Mississippi State University (MSU) as primary engineering tools for the General Motors/Department of Energy (DoE)-sponsored Challenge X project.

The mandate of project Challenge X: Crossover to Sustainable Mobility has the MSU CAVS team focused on re-engineering a 2005 Chevrolet Equinox hybrid vehicle to reduce energy consumption, decrease emissions and maintain the performance and utility features of the compact SUV. DELMIA tools are being used for process verification of the new design. For example, DELMIA V5 Human, a human modeling package that creates and manipulates user-defined human manikins, is being used to help create an ergonomically optimal configuration of the vehicle뭘 internal controls to improve both safety and the driving experience. In addition, DELMIA Virtual NC -- a digital manufacturing tool for emulating, simulating and optimizing NC machine processes -- is being used to program CNC equipment that will create prototype parts for the Challenge X project.

To support this research program and others, the CAVS is developing curriculum to teach the principles of PLC control and robotics programming, and employing the simulation capabilities of the DELMIA product suite to verify the programs. Students will develop programs for industrial equipment and robotic arms and then simulate the programs prior to running them on real equipment. In addition, live motion capture is being incorporated with DELMIA V5 Human in order to study the motion of manikins for ergonomic considerations in the workplace.

Besides the DELMIA suite of products, the CAVS has selected the entire Dassault Syst?es V5 product line as its engineering tool platform including CATIA?for product design and SMARTTEAM?for resource management.

The CAVS was established at Mississippi State in 2001 with the support of the State of Mississippi in order to enhance the interaction of the state with the automotive manufacturing community. Its mission is to research and develop design and manufacturing means and methods for producing superior quality vehicles with advanced features and functions at reduced costs and shorter product development times, and exploiting the underlying technologies for broader industrial use. The mission

also includes engineering extension, education and workforce training outreach for industry.

About DELMIA
DELMIA is a premier brand for digital manufacturing solutions, focused on two unique software applications that can be used to streamline manufacturing processes. DELMIA Automation provides solutions to digitally design test and validate the control of a machine, workcell, or entire factory line and DELMIA PLM provides the process and resource capability to enable continuous creation and validation of manufacturing processes as related to the product throughout the entire product lifecycle. DELMIA serves industries where the optimization of manufacturing processes is critical, including automotive, aerospace, fabrication and assembly, electrical and electronics, consumer goods, plant, and shipbuilding sectors. Information about DELMIA is available at http://www.delmia.com.

About Dassault Syst?es
As world leader in 3D and PLM (Product Lifecycle Management) solutions, the Dassault Syst?es group brings value to more than 80,000 customers in 80 countries. A pioneer in the 3D software market since 1981, Dassault Syst?es develops and markets PLM application software and services that support industrial processes and provide a 3D vision of the entire life cycle of products from conception to maintenance. Its offering includes integrated PLM solutions for product development (CATIA? DELMIA? ENOVIA? SMARTEAM?, mainstream 3D design tools (SolidWorks?, and 3D components (Spatial/ACIS?. Dassault Syst?es is listed on the Nasdaq (DASTY) and Euronext Paris (#13065, DSY.PA) stock exchanges. For more information, visit http://www.3ds.com

Attachment 6.

LIVING

STARKVILLE DAILY NEWS
SUNDAY, OCTOBER 9, 2005 B

Challenge X

MSU students seek to build a better car

By EMILY JONES
Starkville Daily News

With motorists' anxiety rising about as fast as prices at the pump, the push to produce a more fuel efficient car has intensified.

A group of Mississippi State University (MSU) students are way ahead of the game. They have been working for a year and a half to build a hybrid sports utility vehicle that gets better gas mileage than most small cars. The project is clicking along right on schedule and could impact the automobile industry of the future.

The students are competing in Challenge X, a three-year competition sponsored by General Motors and the U.S. Department of Energy. MSU is one of 17 universities chosen from across North America to participate. The university was selected from 53 universities applying for the opportunity to compete.

The Center for Advanced Vehicular Systems (CAVS) is providing the students with facilities and equipment as well as the expertise of faculty members who work closely with the MSU team. CAVS is a part of MSU's Bagley College of Engineering.

"The Challenge X competition has already had a tremendous impact on the instructional program in the Bagley College of Engineering at Mississippi State University," said Marshall Molen, professor of electrical and computer engineering and the CAVS faculty advisor for the Challenge X team.

"Because of their enthusiasm for automobiles, many students have been motivated to explore the technical aspects related to the many challenging problems associated with hybrid vehicles. They can learn about the most recent advances in the industry, have one-on-one interactions with automotive engineers, and have hands-on experience with the actual components."

"I've always liked fooling with cars," said Bill Bain, a mechanical engineering student who serves as business manager for the team. "My Dad could always fix things on an automobile and I guess I inherited some of that ability." He added that it wouldn't hurt to make contact with the industry reps he may be dealing later about a job.

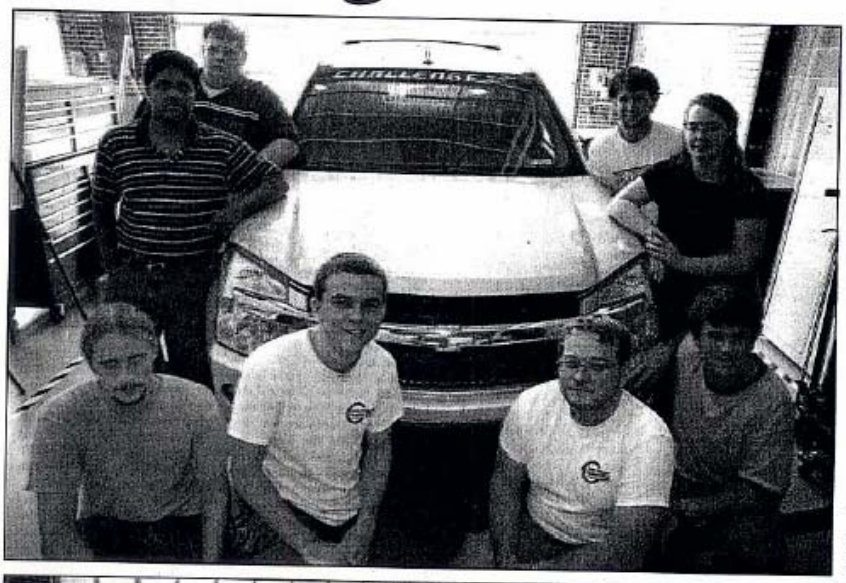
The 30 team members include engineering, communications and graphic design students. They are in their second year of a competition between the participating universities and excitement is high. At the conclusion of each year the teams are called on to report their progress. The vehicle must be driveable and meet a rigorous safety inspection by March, 2006, in preparation for the second year's competition that will be held at General Motor's proving grounds in Mesa, Ariz. in June, 2006.

In June, the MSU Challenge X team attended the first year-end competition in Detroit, Mich.

After several presentations and project reports, the judges decided that the team was ready to work on a real vehicle. General Motors donated a 2005 Chevrolet Equinox, which the team is taking apart and reassembling using their own design and theories.

The MSU outreach team tied for first place overall and won first place in the media and community outreach division.

The team also took third place for their technical presentation, and second for their project initiation approval presentation.



CAVS

Becky Wilkes/SDN

Kneeling from left are Challenge X members Stephen Phillips; Bill Bain; John Gibson, Jr; and Brian Christian. From left to right standing are Jimmy Mathews, Christopher Whitt, Amanda McAlpin; and Kennabec Walp. Left, Amanda McAlpin is pictured with the 2006 Equinox which is being overhauled.

Soybeans may fuel the MSU hybrid

"Our hybrid vehicle uses a small turbo diesel engine to power the front wheels and an electric motor and rechargeable battery pack to drive the rear wheels," said David Oglesby, the team leader and a graduate student in mechanical engineering. "With this design, we are hoping to get 35 miles per gallon when the vehicle is finished while maintaining standard acceleration rate and towing capabilities."

The plans are to use a fuel combining 80 percent diesel and 20 percent bio-fuel extracted from soybeans, which is a nice fit for a state heavily engaged in soybean production.

Faced with gasoline prices headed toward the ozone layer and mounting environmental issues, consumers and auto industry leaders are watching the project with interest. The students spend hours each week transforming the gas powered vehicle into a hybrid while maintaining its high performance and drive comfort.

"Everyone is concerned about gas prices, and it's great to work on a project that could someday make a difference in that area," said Oglesby.

Local sponsors involved in the project include Amsouth Bank, NBC, TVA, 4-County Electric, Ellis Steel, Millsaps Chevrolet, Sears of Starkville, Northeast Mississippi Coca Cola, Allen Edwards Body Shop, 96.1 Radio, 94.9 Radio, and Battery Sales and Service/Trojan Batteries.

Other sponsors include Magneshocks, Inc., Audio Advantage, Gojaks, Vetronix, Matthey, Intercomp, Green Hills Software, Keene Automotive Engineering and David Riddle Company.

"I really appreciate the in-kind and financial support from the local sponsors. Without their support the team could not accomplish their goals and objectives to the degree they have," said Bob Kirkland of CAVS. "I would like to encourage others to become a sponsor since it is bringing national and international recognition to the university, State of Mississippi and the local area."

For more information on Challenge X or to inquire about becoming a sponsor, contact Kirkland at 662-325-1454.

The team is also anxious to share their progress with local groups. Any area teachers interested in having the Challenge X K-12 program, come to their classroom, please contact Amanda McAlpin at 662-325-5562.