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## HIGHLIGHTS...

- The New Chrysler 300C
- Message from the Chair
- Recap of October Meeting
- SAE Mini-Baja 100
- Ford Escape Hybrid
- Electronic Newsletter

Dinner Presentation...

## The New Chrysler 300C

Presented by  
Joseph M. Grace



The new Chrysler 300C.

Joe Grace, Senior Manager of the Rear Wheel Drive Team at Chrysler will give a presentation on the new Chrysler 300C. The 300C is a pure performance car; one of the most performance-oriented passenger cars to ever emerge from the Chrysler "Skunk Works." With 85 more horses under the hood, the momentum continues for the Chrysler 300 and its HEMI® engine. In August, the Chrysler Group revealed the 425-horsepower 2005 Chrysler 300C SRT-8, which arrives in showrooms next spring.

"With a nearly 50 percent take rate, the HEMI is a critical ingredient to the success of the Chrysler 300," said Dan Knott, Director - Street and Racing Technology (SRT). "With the new 2005 Chrysler 300C SRT-8, we are now adding even more horsepower to the HEMI and even more performance to the Chrysler 300C."

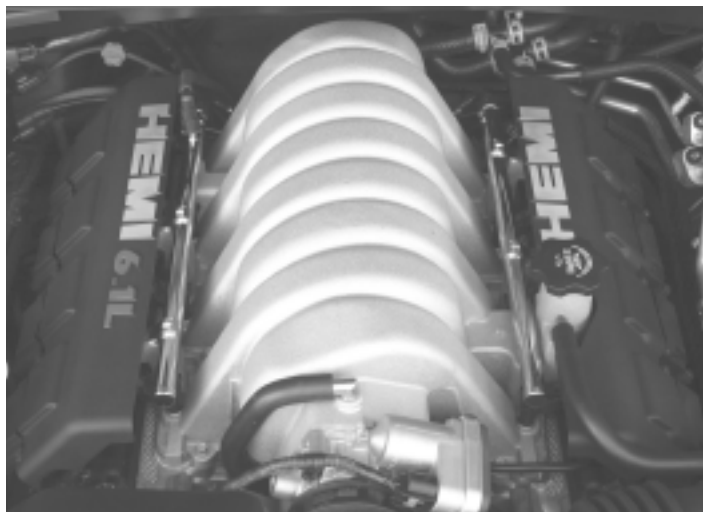
Preliminary performance targets for the 300C SRT-8 are 0-60 mph in the low 5-second range and quarter-mile time in the high 13-second range.

Joseph M. Grace  
Senior Manager - Program Management  
Rear Wheel Drive Product Team

Mr. Joseph M. Grace is currently Senior Manager - Program Management, Rear Wheel Drive Product Team. In this position, Mr. Grace is responsible for all Chrysler 300 and Dodge Magnum program management activities associated with the Rear Wheel Drive Product Team.

Mr. Grace joined the Chrysler Group in 1985 and has held a series of increasingly responsible positions in product engineering and manufacturing. Most recently Mr. Grace was Senior Manager - LX Vehicle Development, Synthesis & Dynamics, and was responsible for the engineering development of the Chrysler 300 and Dodge Magnum.

Mr. Grace holds a Master's of Business Administration from the University of Michigan, a Master of Science in Mechanical Engineering from the University of Michigan - Dearborn and a bachelor's degree in mechanical engineering from the University of Notre Dame.



Chrysler Hemi 6.1-liter 425-horsepower engine.

| DATE        | TIME         | LOCATION  | COST                      | With Dinner | Presentation Only |           |
|-------------|--------------|-----------|---------------------------|-------------|-------------------|-----------|
| November 18 | Social       | - 6:00 pm | Holiday Inn (Phx Airport) | Members     | - \$20            | \$10      |
|             | Dinner       | - 7:00 pm | 44th St. & Washington     | Guests      | - \$25            | \$10      |
|             | Presentation | - 8:00 pm | 602-273-7778              | Students    | - \$10            | no charge |

**RSVP by 2:00 pm Monday November 15. Call Bob Riley: 623-872-3475**

## Message from the Chair

One of the hottest topics in alternative fueled vehicles today is Hydrogen as a fuel and the Arizona-Nevada section of the SAE was fortunate enough to have not one but two speakers for October to present some of the latest information on this topic.



Kevin Willson in Dodge Viper.

Beginning with the latest on Fuel Cell Vehicles (FCV), Rick Reinhard presented what is being developed by Nissan for a Hydrogen powered vehicle. Using technology being developed by several different companies, the X-Trail FCV is being looked at as a production vehicle to be released within the next few years. This vehicle has been tested in Arizona using Hydrogen produced by the APS Power Park in downtown Phoenix.

As our main speaker, Ray Hobbs presented to the section the results of APS research and development into the infrastructure needed to support hydrogen powered vehicles. In cooperation with the Department of Energy (DOE), APS has converted a pilot hydrogen station into a Power Park complete with hydrogen refueling, hydrogen production, blended hydrogen and natural gas vehicle fuels, hydrogen fueled power generation and photovoltaic renewable energy. This Power Park is only a few blocks from Bank One Ballpark, right in downtown Phoenix. This operation demonstrates the feasibility and safety of hydrogen refueling and production in a populated area as well as the financial practicality of this type of clean burning fuel.

This dinner meeting highlights one of the increasing concerns of Engineers around the world: the environment. As clean burning fuel technologies are developed, the point comes when the financial hardships of new technology takes on less importance than the alternative of continuing to pump pollutants into the air. APS has demonstrated that Hydrogen can be handled safely and that the cost of this technology is getting closer to that of gasoline everyday. With the advances of companies like APS and Nissan I hope that we will be seeing this type of technology on the road soon.

With that said I would like to thank our October speakers, Ray Hobbs and Rick Reinhard for their exciting presentations on this alternative fuel technology. Rick was a last minute substitution who had to fly in from California just for our dinner meeting so thanks to Rick and to Nissan for their generous commitment to the SAE section. I would also like to thank Allan Watts for bringing Ray Hobbs to us and Derek Logan for setting up our Coffee Talk with Rick.

Kevin Willson  
Section Chair

## Recap of October Meeting by Allan Watts



Allan Watts (left) thanks Ray Hobbs for an excellent presentation.

Raymond Hobbs, senior consulting engineer in the Technology Development Department at Arizona Public Service, gave a very informative presentation on work that he is doing in the development of the "Hydrogen Infrastructure". Ray explained that he and his engineers have designed, built, and are now operating an internationally-recognized hydrogen refueling station in central Phoenix. Ray explained that one of the biggest hurdles that they have had to overcome is to satisfy the fire marshal that the hydrogen refueling station is safe in a metropolitan area. Ray was successful at convincing the fire marshal, and in over 2 1/2 years of operation, the station has not had a single lost-time accident.

The hydrogen refueling station produces hydrogen through electrolysis of water, compresses the hydrogen for storage in ASME code pressure vessels, and dispenses the hydrogen to vehicles in a manner similar to a conventional gas station from the perspective of the customer. The station also dispenses compressed natural gas (CNG) and blends of hydrogen and CNG. Ray and his team have also designed the next generation of hydrogen refueling stations, using lessons that he and his team learned while putting the current station into operation. Because hydrogen can be stored for later use, an electrolysis unit, such as the one APS is using, could produce hydrogen with electricity produced by solar power, wind power, or with off-peak power produced by conventional means. Ray also told us about work that he has done with hydrogen powered vehicles, including modifying internal combustion engines to operate more efficiently on hydrogen.

During the coffee talk, Rick Reinhard provided a very interesting presentation on the work that Nissan is



Rick Reinhard (left), our Coffee Talk speaker, Kevin Willson (right).

doing with fuel cell vehicles that operate on hydrogen. These pollution-free vehicles efficiently convert hydrogen directly into electricity, and use the electricity to power electric motors that drive the vehicle. Nissan is testing a fuel-cell vehicle called the X-Trail in an effort to develop the clean technology for marketing to the general public one day.

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### *SAE Mini-Baja 100 to be Hosted at Caterpillar*



Car built by students at Wichita State University shown at the 2004 Mini-Baja competition in Portland, Oregon.

In celebration of the 100-year anniversary of SAE, Caterpillar is hosting the Mini-Baja 100 at their Tinaja Hills proving grounds near Tucson.

Mini Baja® consists of three regional competitions that simulate real-world engineering design projects and their related challenges. Engineering students are tasked to design and build an off-road vehicle that will survive the severe punishment of rough terrain, and in the East, competition-water.

The competition provides SAE student members with a challenging project that involves the planning and manufacturing tasks found when introducing a new product to the consumer industrial market. Teams compete against one another to have their design accepted for manufacture by a fictitious firm. Students must function as a team to not only design, build, test, promote, and race a vehicle within the limits of the rules, but also to generate financial support for their project and manage their educational priorities.

Vehicles are powered by a ten-horsepower Intek Model 20 engine donated by Briggs & Stratton Corporation. For over twenty-five years, the generosity of Briggs & Stratton has enabled SAE to provide each team with a dependable engine free of charge. Use of the same engine by all the teams creates a more challenging engineering design test.

For information on attending or assisting, contact Derek Logan at: [derek.logan@email.sae.org](mailto:derek.logan@email.sae.org).

### *January Program...*

### *The 2005 Ford Escape Hybrid*

In January, we'll get a look at the new 2005 Ford Escape Hybrid SUV. The Escape Hybrid's 70-kilowatt traction motor can launch the vehicle on clean electric power - up to 25 mph. When needed, the generator can smoothly start the gasoline engine in less than 400 milliseconds, without the increased emissions produced in starting up a conventional engine. The combination of the gasoline engine and electric traction motor provides seamless, strong response similar to a V-6 engine.



The 2005 Ford Escape Hybrid.

When coming to a stop, Escape Hybrid's electric motor and regenerative braking system capture energy that normally would be lost as heat developed by the four-wheel disc brakes. As the driver presses the brake pedal, Escape Hybrid's electric drive system transforms the vehicle's momentum into electric energy. This energy gets transferred to the hybrid battery, where it is stored for later use, saving gasoline and eliminating the need to plug the vehicle into an electric outlet.

Escape Hybrid features a fuel-saving engine stop/start function. As the vehicle comes to a stop, the system automatically checks the battery to ensure it has adequate power. If it is sufficiently charged, the gasoline engine rests to save fuel, and the vehicle operates on electricity alone, achieving the highest fuel economy and emissions benefits. There's no need to restart before hitting the accelerator.

In pure electric mode - indicated on the tachometer by a "green" zone below 0 rpm - the Escape Hybrid's gasoline engine rests to save fuel. It automatically switches in and out of this rest state depending on the driving situation and vehicle demands.

The only difference in packaging between the Escape Hybrid and other Escape models is the integrated ductwork in the driver-side rear quarter window for the battery's temperature-management system. It occupies only a little more than one cubic foot of space, distributed along the side panel for minimal loss of effective storage space.

THE UNIVERSITY OF ARIZONA  
*Announces*  
THE 42<sup>nd</sup> ANNUAL  
RELIABILITY ENGINEERING AND  
MANAGEMENT INSTITUTE  
November 15-18, 2004  
In Tucson, Arizona

**INSTITUTE OBJECTIVES**

To provide all engineers, and particularly Reliability Managers and Engineers, and Product assurance Managers and Engineers in government and Industry, with a working knowledge of Reliability Engineering Theory and Practice; Mechanical Reliability Prediction; Reliability Testing and Demonstration; Accelerated Testing; Failure Analysis Techniques; Complete Industry Product Assurance; Maintainability; Quality Management; Concurrent Reliability; World Class Manufacturing Techniques; Variability Reduction; Customer Satisfaction Strategies plus many more! Numerous practical applications of these methodologies will be presented. This Institute will also prepare and help participants with their ASQ CRE Examination.

**STAFF**

Dr. Dimitri B. Kececioglu, Professor of Aerospace and Mechanical Engineering, Professor-In-Charge Reliability Engineering Option, The University of Arizona, Fulbright Scholar, Internationally Renowned Educator, Reliability and Maintainability Consultant, and the Director of this Institute, plus 10 speakers from 15 sponsoring industries will take part in expertly covering the subject matter of this Institute.

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[www.u.arizona.edu/~dimitri](http://www.u.arizona.edu/~dimitri)

## Meeting Schedule

|             |  |
|-------------|--|
| December    | - No Meeting                           |
| January 20  | - Ford Escape Hybrid                   |
| February 17 | - Automotive Tire Technology & Testing |
| March 17    | - Harley Davidson Motorcycle           |
| April 21    | - The Boeing 7E7                       |
| May 19      | - Product Liability Issues             |

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Allan Watts  
Vice Chair  
602-382-6267

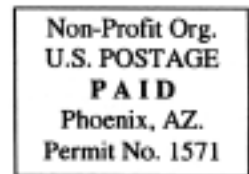
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