

SAE ARIZONA • NEVADA SECTION

MEETING: OCT 16

Section Web Site: www.saearizona.org - Sign up for your newsletter on our website.

HIGHLIGHTS...



- GM's Desert Proving Grounds
- October Coffee Talk
- Message from the Chair
- E-Mail Newsletters
- Recap Sept Coffee Talk
- Recap Sept Presentation
- A World in Motion
- Map to Meeting Location

History of General Motors

Desert Proving Grounds

by Robert Holso

Mr. Robert Holso, Sr. Manager of the General Motors Desert Proving Ground, will be our guest speaker on October 16, 2008. He will be sharing the history of the testing facility, some of the unique vehicles tested, accomplishments achieved, and their pending move to Yuma.

As many of you may already know, GM originally announced the closure of their Mesa facility in 2000. The southern property was sold in 2004 and the current site was sold in 2006.

GM has been testing their products in the Phoenix area since the 1930s and the Mesa location has been GM's pri-



General Motors Desert Proving Grounds in 1960's

mary hot weather test facility.

In its heyday, the facility covered 5000 acres and had over 80 miles of track. Although many of the tests performed at the DPG have been hot weather related, (durability, HVAC/Thermal and PT Cooling, Fuel tests, dust, etc.) a significant amount of development work has been performed during the winter/spring seasons.

The wide-spread growth of the valley has finally engulfed the once isolated facility and has forced GM to relocate our testing operations to Yuma, AZ.

Bob Holso



Bob Holso has worked for General Motors for 35 years; 24 have been at the Desert Proving Ground (DPG) in Mesa. Mr. Holso has been associated with GM Engineering for nearly 30 years, primarily in leadership positions supporting vehicle testing. Bob was promoted to the position of Sr. Manager in 2006. He directs development and hot weather testing activities on GM worldwide portfolio at their 3200 acre facility in southeast Mesa.

Prior to becoming site manager of the proving ground, Bob was the CFO and HR manager at the facility. He has received numerous awards and commendations for projects within General Motors.

Bob is a board member of the Mesa United Way, former treasurer for the Foundation for Mesa Parks and Recreation and a member of ASU Polytechnic Provost's Advisory Council.

Coffee Talk

Don Robins, who now heads up our AWIM program, will give us firsthand look at his engineering history at General Motors.

DATE	TIME	LOCATION	COST	With Dinner	Presentation Only
Oct 16	Social	- 6:00 pm	Hilton Phoenix Airport	Members - \$22	\$10
	Dinner	- 6:30 pm	2435 S. 47th St, Phoenix-85034	Guests - \$27	\$10
	Presentation	- 7:30 pm	480.894.1600	Students - \$10	no charge
RSVP by 10:00am Tuesday Oct 14.			Call Sam Bethune: 602.364.7456		

Message from the Chair

Greetings. We are off to an amazing start this year - September's meeting drew over (60) people from across the state. Thanks to the board for their hard work and Bob Riley for his thought-provoking presentation on the XR3. As engineers, most of us have access to workshops and technology which can lead to individual technical achievement. Bob has provided us with a great example of that and I commend him for his work.



A few items of business:

Most of you know that this month will be the last in which paper copies of this newsletter are mailed to your home or office. As we look for ways to create value for our members, eliminating our most significant variable cost will afford us financial freedom to purchase equipment such as a projector and sound system. Of course, most of us use computers on a regular basis and the newsletters will be emailed to you, which can be printed out if desired. If you do not have access to the Internet or your email address has changed, please contact one of our board members and we will be happy to mail you a copy.

Next month's presentation promises to be just as incredible as the first. We are lucky to have Bob Holso demonstrate the history of the GM proving grounds in East Mesa and perhaps give us a glimpse of things to come as they relocate to Yuma and team up with the federal government. Thanks to Don Robins for lining this one up.

It was purely coincidental that our coffee talk and main presentation shared the same idea, that vehicle safety and mass are not mutually exclusive – yet how amazing was that. As such, I encourage someone to step up and present a 5-10 minute coffee talk about a topic of your choice, whether it be your field of expertise, a technical article you have read, or just something you feel is educationally pertinent to our members and can enhance the main presentation. All of us need practice on public speaking from time to time and this is the opportunity.

As SAE members, we have a responsibility to ourselves and our colleagues to maximize our technical aptitude. Without exception, we must manage our most precious resource responsibly by taking a more active role in the group. Please do your best to ensure that this essential condition is achieved. Best wishes to you and your families as we advance into the 'sweet spot' of our calendar year.

Josh Rudin

Change to E-Mail Newsletter

The section board has been reviewing our operating expenses. Diners are provided at a break-even price. Our major expense is the cost of publishing and mailing the hard copy of the monthly newsletter - normally \$240/month or \$1,920/year.

The newsletter is an important communication tool. But we can maintain this tool and save on expenses by switching to e-mail instead of regular US mail. This money can then be used to provide needed equipment for the section and/or provide additional sponsorship to our student's organizations. In addition, we will avoid the delays in delivery of the newsletter that we have encountered with "snail" mail

All board members and officers have been receiving their newsletter by e-mail for the past year with good results. The board is planning on e-mailing the newsletter to all members starting with our November newsletter. We will use the e-mail address that is provided to the section by SAE International. If you have not provided SAE International with your e-mail address, please submit it to them ASAP at www.sae.org

Thank you in advance for your support of this needed change.

Bill Gest

September Coffee Talk Recap ***by Mike Kremer***

Section chair Josh Rudin delivered a "coffee talk" presentation on vehicle safety.

One of the common misconceptions is that smaller and lighter vehicles are less safe. Research data, however, shows that lower vehicle mass, as a risk to the occupant, pales in comparison to other factors. These factors include vehicle intrusion, restraint system function, and rollovers. When these factors are considered, risk to occupants of conventional cars is somewhat less than risk to the occupants of heavier vehicles such as pickup trucks and SUVs.

Another consideration is the risk of injury or death to others caused by heavier vehicles. Differences in bumper heights, "aggressive" truck frame structures and other incompatibilities between cars and trucks create additional hazards. The data from American Scientist magazine shows that injury risk to the occupant of the vehicle colliding with a truck or SUV is almost three times higher.

Currently, there is significant pressure on automakers to produce more efficient lighter vehicles. Careful examination of the facts shows that this trend will not necessarily increase traffic injuries and fatalities. It appears that using new lighter materials and giving consideration for car and truck crash compatible geometries may actually increase traffic safety.

This presentation was done as part of this year initiative to allow members to share their engineering knowledge and experiences by making short coffee talk presentations. We appreciate Josh Rudin taking the lead and encourage other SAE members to follow suit. Please contact a member of the Section Board to reserve a spot for the opportunity to share your engineering knowledge.

XR3 Presentation Recap by Mike Kremer

Robert Q. Riley presented his new creation - the XR3 Hybrid three-wheeled vehicle. The presentation, which also included a vehicle demonstration, drew a record number of attendees.

Following the demonstration, Robert introduced members of the surprisingly small team who worked on the project. Robert Riley described the XR3 design process as a successful sequence of vehicle packaging, styling, and frame/chassis design. The distinction between the XR3 and typical automotive architecture extends much beyond the fact that it has only three wheels.

First, the XR3 Hybrid is a super-fuel-efficient two-passenger plug-in hybrid that claimed 125 mpg on diesel power alone, 225 mpg on combined



XR3 in front of Hilton hotel lobby before presentation.

diesel and electric power, and performance like a conventional automobile. At almost 1500 lbs, those are very impressive fuel economy numbers, and Robert indicated that actual numbers may be higher when tested.

Second, the body. Fiberglass over foam core technology provides for a strong yet light structure. The canopy and the entire front clip of the body are bolted to the frame and removable. Removing the front body section provides complete access to engine and suspension components for major servicing.

Third, the power train. Naturally, one would expect IC and electric power to be tied together by a sophisticated control system much like large automakers do. However Robert Riley took a completely different approach with the XR3. The two front wheels are powered by the small diesel engine, and the single rear wheel is electric powered. The two power systems are not integrated within the vehicle. The connection between the conventional and electric power systems is provided solely by the road.

According to Robert, this architecture allows the occasionally-needed acceleration power burst to be stored in batteries. Conventional cars use much larger displacement

engine instead, thus hurting overall fuel economy.

In addition, while designing the car Robert gave significant consideration to safety features which is rather surprising for such short project. Just to name a few:

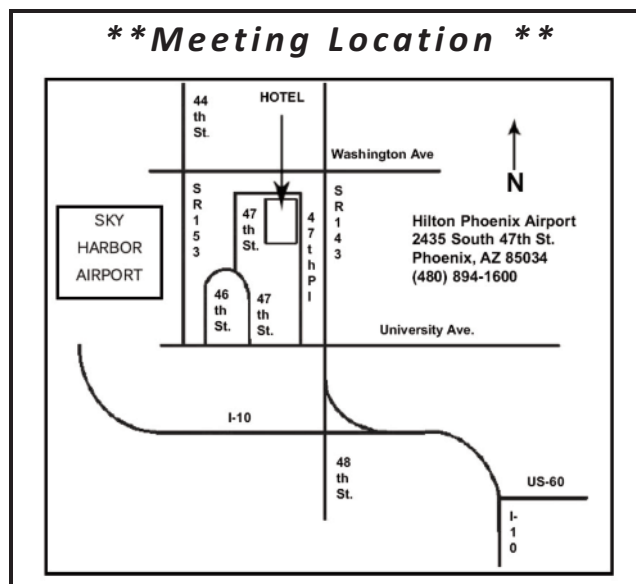
front portion of the front clip is foam-filled to absorb low-speed frontal impacts; the sides of the vehicle are filled with foam; composite roll bar is built into the perimeter. According to Riley, the car is at least as safe as production cars of similar size.

After the presentation, Robert answered a number of questions related to designing three-wheeled vehicles with interesting facts on vehicle dynamics and handling. Many of the members headed right back outside to take one more look on the X3 prototype.

A World in Motion - Arizona

Since 1990 AWIM has brought math and science principals to life thru highly interactive learning experiences. The program is sponsored by SAE and is designed for Elementary and Junior High students. In Arizona, 2 years ago, SAE volunteers worked with 2 schools, 4 schools last year, and this school year we will have programs in 6 schools in the Phoenix area.

One goal this year is to recruit some ASU SAE engineering students as volunteers. Training will be in Dec (4 hours), and the 6 week program will start in January. Volunteers go into the schools, one day a week (2-3 hours), to work with the teachers and students on 'hands on' science projects. Industry volunteers provide technical assistance and serve as role models to students who may not have considered pursuing a career in the science or engineering fields. For more information, go to www.awim.org or contact Don Robins @ 248.807.3604.



THE UNIVERSITY OF ARIZONA ANNOUNCES:

The 46th Reliability Engineering and Management Institute provides all engineers, particularly Reliability Managers and Engineers, 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, and more. Dr. Dimitri B. Kececioğlu and 10 speakers from 15 sponsoring industries will take part in expertly covering the subject matter of this Institute. For more information, please see the contact information below.

THE 46th ANNUAL RELIABILITY ENGINEERING AND MANAGEMENT INSTITUTE
use contact information below to receive date information

Clarion Hotel, Tucson Airport
6801 S. Tucson Blvd.
Tucson, Arizona 85706
520-746-3932 or 800-526-0550
November 10-13

Registration Fee: \$1500 Proceedings Cost: \$50

For Details and Technical Information, please write to:
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ESG Engineering (WWW.ESGENG.COM) is a full service mechanical engineering consulting company located in Tempe, Arizona. We provide Industrial Design,

CAD Design and Engineering Analysis including linear and non-linear Stress, Dynamics, Fluids, Thermal and Tolerance. We also sell the Z Corp rapid prototyping machines and scanners; SensAble design software and the full line of Altair HyperWorks analysis software. How can we help you? Contact Bill Gest at 602-618-1304.

ESG Engineering is growing, contact Mike Kremer at MKremer@esgeng.com for career opportunities.

**ARIZONA-NEVADA SECTION:
Meeting Schedule**

Oct 16	- History of GM
Nov 20	- SAE Presidents

Joshua Rudin Section Chair 602-369-6487	Mike Kremer Vice Chair MKremer@esgeng.com	Steve Atkins Secretary Steve.Atkins@nau.edu	Larry Wilson Treasurer Wilson.lawence@orbital.com	Robert Riley Newsletter Editor 623-872-8010
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