

SAE ARIZONA • NEVADA SECTION

MEETING: SEPT 18

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

HIGHLIGHTS...

- | | | |
|-----------------------------------|--------------------------|---------------------------|
| - XR3 Plug-In Hybrid | - Message from the Chair | - A World in Motion |
| - Message from the Outgoing Chair | - Recap of May Meeting | - Map to Meeting Location |
| | - ASU Formula SAE | |

XR3 Plug-In Hybrid

A 125 – 225 mpg Three-Wheel Sports Car

by Robert Q. Riley

Arizona Section member, Robert Q. Riley, recently completed the design and prototype-build of a three-wheel on-road sports car – the XR3 Hybrid. The prototype will be on display at our first meeting of the new season where Riley will give a presentation on the vehicle and its hybrid power system.

The XR3 was designed as a super-mileage “personal mobility vehicle” – a plug-in hybrid sports car that gets up to 125 mpg on its three-cylinder diesel engine and can run 40 miles on its Li-Ion battery pack. Using a 220-volt outlet, batteries can be recharged with wall-plug electricity to 80 percent of full charge in 1-1/2 hours.



XR3 Hybrid

The XR3 has been under development for two years. The design showcases ideas expressed in his SAE book, “Alternative Cars in the 21st Century”. In Chapter Two, he focuses on the idea that green products will become more successful when they are designed for high emotional appeal.

He explains how ultra-light, super-fuel-efficient vehicles, when correctly packaged and styled, can carve out a large new market of their own. Product differentiation and raw emotional appeal are the two key ingredients. The XR3 has both automotive and motorcycle styling elements, which visually place it in a category of its own – something marketing execs call “product differentiation”.

Riley normally works as a product design consultant on a wide range of product categories. But his first love is cars where he has concentrated on innovative projects such as the Gibbs Aquada (<http://www.gibbstech.co.uk/>) and a two-passenger version of the Myers Motors NmG electric car (<http://www.myersmotors.com>).

This is the first public unveiling of the XR3, so you will not want to miss this meeting.

ROBERT Q. RILEY



Robert Q. Riley is an author, industrial designer, and a mechanical engineer with successes in a wide range of product categories.

In the automotive field he is known for producing several energy-efficient, high-performance three-wheel road vehicles, electric and hybrid cars, and conventionally powered automobiles of up to 128-mpg fuel economy. He pioneered the automotive application of FRP/foam composite and designed GM's Drive I electric car. He is also the first since the Wright Brothers to build and fly a Wright 1902 glider, which is now on permanent display at the California Science Center at Los Angeles. His most recent work is the XR3 Hybrid.

DATE	TIME	LOCATION	COST	With Dinner	Presentation Only
Sept 18	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 Sept 16.			Call Sam Bethune: 602.364.7456		

Message from the Outgoing Chair

One of the highlights of my engineering career has been the opportunity to serve as Chair for the Arizona-Nevada section. I would encourage all of our SAE members to consider serving as an officer for our section. I was blessed by a wealth of talented and dedicated people that make the Section run well and serving as Chairperson a delight. In particular, I would like to thank Larry Wilson for serving as treasurer, and Bob Riley and his granddaughter Melissa Beckner for serving as newsletter editors. These positions require hours of dedicated service to the Section and they have done a fantastic job for many years. John Lester who has been our treasurer for many years provided a smooth transition for Larry. I would also like to thank Josh Rudin for serving as Vice Chair. Josh also arranged for our February speaker. A special thanks to Michael Kremer for being our secretary, also providing the "Go to Meeting" computer and conference call capability for our Board meetings. This allowed our board members to call in and participate from their offices. We had great meeting turnout because of this. Michael also arranged for the very successful presentation by all of the University Deans at our May meeting.



I also want to thank Dave Vasquez who was the chair preceding me. Dave has continued to support the section by updating the website and handling the e-mail meeting notices for the Section. I would also like to thank Cathleen Gary for arranging the facilities and handling issues with the hotel. Thanks also go to Kevin Willson for supplying our section with projectors for our meetings.

Thanks to Hal Huele for arranging for aerospace speakers from Spirit Aero Systems for our October meeting, hosting a tour of US Airways for our November speaker Rich Schaum SAE International President. Also Hal arranged for our March meeting speaker from Honeywell. This was a unique meeting since we were able to have a joint meeting with the AAIA aerospace engineering organization.

I would also like to thank Derek Logan for representing the Section with the National, and his ongoing board support. Special thanks also go to Max Rumbaugh and Howard Daudet, who both provided me with profound advice and guidance while I served as Chairperson.

Thanks to Steve Trimble for arranging for Empire Cat to present at our April Meeting and arranging the tour of ASU in November for the SAE president. I would also like to thank Don Robins and his team for their work with the SAE's "A World in Motion" (AWIM) program. Don served on our board, arranged for the tour of AWIM school in November and a presentation by the AWIM at our April meeting. Finally, I would also like to thank our members who attend our dinner meetings, and help make the activities of the Section a success.

I would also like to congratulate Josh Rudin for being elected Chairperson for the Section for the 2008-2009 year. Josh is already doing a fantastic job as Chairperson and I am sure it will be a wonderful year. In addition, congratulations go to Mike Kremer for being elected to serve as Vice Chairman and Steve Atkins for being elected to serve as Secretary. All of these gentlemen are valuable assets to the Section.

Hope to see everyone at our September meeting.

--Bill Gest, Outgoing Section Chair

Message from the Chair

Welcome SAE members to another exciting year of technical presentations and networking with our colleagues. First and foremost I would like to thank last year's chairman Bill Gest who gave me my first engineering opportunity in the Valley over seven years ago and has continued to be an amazing resource of experience, tact and friendship.



At no time in recent history has the role of automotive engineers been so pivotal. All of us stand at the epicenter of a 'perform storm' of sorts, one that has our industry sharply deviating from known paradigms of the past one hundred years. Environmental concerns have rendered emissions technology, thirty times improved from 1970, inadequate and have our colleagues scrambling to develop an increasingly cleaner mode of transportation as mandated by the federal and state governments.

On the economic front, there have been concerns of a crumbling domestic industry at OEM and sub-tier levels due to foreign competition and outsourcing, an overall malaise that threatens the continued longevity of our very engineering careers at a given company. On the international political front, the United States has had increased incentive to wean itself from oil dependency from rogue nations due to the war on terrorism.

Conversely, our industry needs us more than ever due to a shortage of qualified engineers and scientists. These are tough times and some analysts contend the worst is yet to come.

In spite of all this known phenomena, I see a glimmer of hope that occurs quite regularly. This occurs internally when I solve a free-body diagram or thermal calculation at work, externally when I am fortunate enough to exchange ideas from colleagues with respect to materials science and vicariously when I read about advancements in the infrastructure that will improve our nation's consumer safety, environmental and economic perspective. This is an exciting, yet challenging time indeed.

Please join me in enjoying our curriculum of guest speakers throughout the transportation industry this year. Individually and collectively, I am confident our skills will make a significant difference to our families and respective communities at large.

--Josh Rudin, Section Chair

Recap of May Meeting

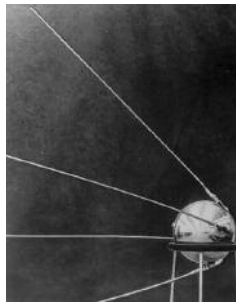
by Josh Rudin

There was a global meeting in Paris in May. The U.S. is not the only country concerned about the lack of engineers entering professions. Europe and Canada are seeing the same trend. Comparison of engineering graduate rate. U.S. is graduating a total of roughly 70,000 engineers per year. China and India are graduating 300,000 to 500,000 – over seven times the U.S. rate at our universities. In a very real way, we are educating our competitors.

When asked about the attrition rate of engineering students, the theory is a result of “indoor plumbing.” It used to be several generations ago, that many boys growing up on a farm, look at engineering as a method to get ahead and move from the country to the city for a better lifestyle, at least one with indoor plumbing. Now, most people are already living in urban areas, with smooth access to technology. Therefore there is less interest in engineering.

Sputnik and the resulting space race was another factor in the interest in engineering in the 1960's-70's. To get students interested, they must see the creative side of engineering. The emphasis today is looking for people who like math and science. Students need to be exposed to the benefits that engineers provide society. It was noted that in most countries engineers are the leaders of the country and hold great respect. Only in America are almost of all of our leaders are politicians and attorneys. The reader will decide what this fact says about voters' priorities, philosophy and focus on infrastructure.

When asked about the emphasis on reducing number of engineering classes required to graduate, the answer's denominator was bureaucracy. There are 60 people on the engineering accreditation board. There is also input from the Board of Regents and President. The problem is unless every school changes to five years, those who do will lose students as students and their parents are focused on cost versus completeness of education. Civil engineering is driving toward a five year degree and is requiring a master's for professional registration. The move for other engineering fields is to push for a 4 year bachelor's degree and one additional year for a master's degree.



Sputnik

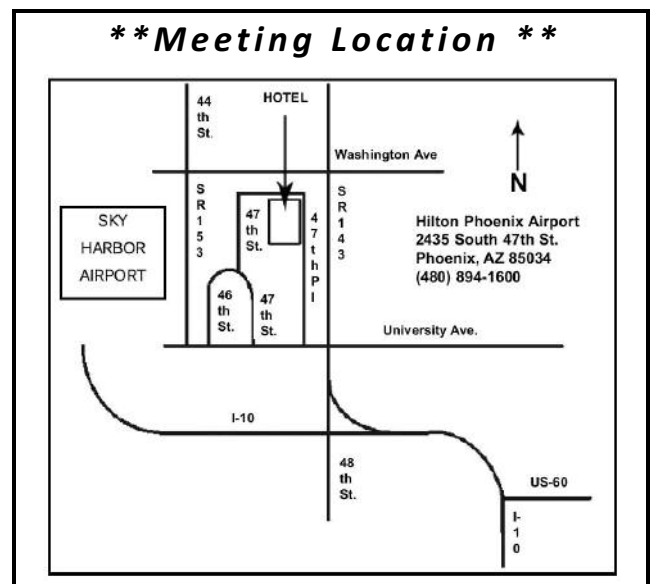
ASU Formula SAE - June 25th



On June 25, 2008 ASU's Formula SAE team became only the second in fourteen years at ASU to make it to the FSAE competition. Pushing the car to its limits for five days on the track and presenting the design process to judges proved an amazing learning experience; something better than any class could ever provide. With odds stacked against them it required countless man-hours, many long nights, and a lot of hard work for the team to receive a very respectable 56th place finish.

A World in Motion - Arizona

AWIM brings math and science principles to life through highly interactive learning experiences that incorporate the laws of physics, motion, flight, and electronics. The curriculum joins teachers, students, and engineers in exploring physical science. The program is designed for students in grades 4 - 10. For more information, go to www.awim.org or call 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

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

For Details and Technical Information, please write to:
Dr. Dimitri B. Kececioğlu, P.E.
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The University of Arizona
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You can also Call: 520-621-6120, Fax: 520-621-8191,
Or Email: dimitri@u.arizona.edu
Please see his website at: <http://www.u.arizona.edu/~dimitri>



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**

Sept 18	- XR3 Plug-In Hybrid
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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