

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

HIGHLIGHTS...

- | | | |
|--------------------------|-----------------------------|---------------------|
| - AZ Innovation | - Recap of February Meeting | - Former SAE Chair |
| - Message from the Chair | - Mine Tour | - A World in Motion |
| - Coffee Talk | | - Map to Meeting |

AZ Innovation: Competing in a Technology-Driven Industry by Bob Smith

The March meeting of the Arizona Chapter of SAE is excited to have Bob Smith as the guest speaker. Bob is the 2007 recipient of SAE International's Aerospace Engineering Leadership Award. Bob will be addressing the challenges of competing in a technology-driven aerospace industry. With struggling airlines, rising fuel costs and congested skies, the entire aerospace community has many opportunities for inno-

ventions. This is combined with the desire to have greener airplanes both in construction and in operation.

Mr. Smith will be speaking about a number of innovations that his company is working on, including high-density power generation and distribution, Nano technology, fiber optics and high temperature engine cycles.

BOB SMITH
VICE PRESIDENT OF ADVANCED TECHNOLOGY
HONEYWELL AEROSPACE



As Vice President of Advanced Technology for Honeywell Aerospace, Smith sets long-term technology growth strategies for the company, works with government science and technology organizations to foster technology investments, and matures technologies that are vital to new product developments. Prior to joining Honeywell in 2004, Smith was Executive Director of the Space Shuttle Upgrades Development Program. He also worked at The Aerospace Corporation where he was Systems Director of the NASA Programs Office and site manager for the company's Houston operations.

His other leadership roles include: President and Chair of the United States National Committee for the International Society of Airbreathing Engines; Board of Directors Member for the Arizona Technology Council; and Federal Aviation Administration Advisory Board Member for Airline Cabin Environment Research. Smith is the author of more than 20 technical publications. His awards include two NASA Achievement Awards for Shuttle Upgrades, the NASA Silver Snoopy, and the NASA Spaceflight Awareness Award.

In addition to his membership with SAE International, Smith is a senior member and technical committee chair of American Institute of Aeronautics and Astronautics, and a member of the American Astronautical Society and Tau Beta Pi.



Coffee Talk - AZ Synthetic Fuels

The Arizona Synthetic Fuels Project will capture and recycle carbon dioxide from the atmosphere and harnesses the power of renewable electricity in order to produce a carbon-neutral liquid fuel that is fully compatible with our existing gasoline infrastructure. The target product is methanol, an alcohol that is nearly identical to ethanol, can be produced domestically, sustainably and cost effectively -- and can be utilized immediately.

Like ethanol, methanol can be blended with gasoline (up to 20%) and burned in a conventional internal combustion engine with no modifications to the vehicle or the existing transportation fuel infrastructure; higher ratios of

DATE	TIME	LOCATION	COST With Dinner	Presentation Only
Mar 20	Social	- 6:00 pm	Members - \$22	\$10
	Dinner	- 6:30 pm	Guests - \$27	\$10
	Presentation	- 7:30 pm	Students - \$10	no charge
RSVP by 10:00am Tuesday Mar 18.			Call Sam Bethune: 602.364.7456	

Coffee Talk (cont.)

methanol, up to 85% (M85) can be used in today's flex-fuel vehicles. Also, producers and end-users of methanol as an alternative fuel are eligible for State and Federal subsidies. But unlike ethanol, methanol made from renewable energy will not add CO₂ to the atmosphere, does not depend on fossil fuels for its energy content, and will not affect food prices. When blended with gasoline, methanol decreases both fossil fuel consumption and vehicle emissions, while increasing engine performance due to a high octane rating and high oxygen content. Furthermore, this fuel is sustainable and is produced domestically with only three inputs: carbon dioxide, water, and renewable electricity.

Message from the Chair

Our SAE calendar year is rapidly approaching its end. Officers for our section, start as the secretary, and then the following year become Vice Chair and in their third year, they become Chair. This method provides an excellent training process to take on the responsibilities for being section Chair. We are now seeking candidates for the office of secretary to continue this section's work. Please contact me (bgest@esgeng.com) if you are interested providing leadership to the SAE section.



I want to thank Josh Rudin for taking on the work of organizing our February meeting. Due to business, I found myself on a three-week marathon of travel and trade shows, and I appreciate Josh's keeping the section business going. Our speaker for February, John Capulli, presented an interesting approach to making decisions quickly using hitting a baseball as an example.

We were also fortunate to have Mike Lawson and Joseph Spadola from ASU, who made a presentation on an unmanned guided vehicle. This is their year long senior project. There are discussions that SAE International is considering adding a competition similar to that currently available for BAJA and Formula. Given the crowded highways on which we commute, guided systems for automobiles is a technology that will become extremely important in the future. It is good to see our young engineers working on solutions that will improve our future.

For March, we will have Mr. Bob Smith, Vice President of Advanced Technology for \$11 billion, from Honeywell Aerospace as our speaker. Bob will be addressing the challenges of competing in a technology-driven industry. This should be must attend meeting for anyone in the aerospace industry. Please pass the word to your colleagues.

In April, we will be having a speaker from Empire Machinery. Empire is the largest Caterpillar dealer and servic-

ing organization in the Southwest. Empire is unique in that it has its own engineering staff to solve field issues in conjunction with Caterpillar. The presentation will include an overview of some of the large pieces of machinery that they work with each day.

Also, on Saturday April 19th, Derek Logan has arranged for a tour of the Phelps Dodge mining operations South of Tucson. This is not a public tour, but rather a private tour. We will be carpooling from a location in Phoenix for this event. We are hoping to have many of our Tucson members also join us for the tour that day.

See you at the March 20th meeting!

Bill Gest, Section Chair

Recap of February Meeting

by Joshua Rudin

Coffee Talk-Unmanned Ground Vehicle (UGV): Mike Lawson and Joseph Spadola (below, left to right)

Senior design project consisted of fabrication of driverless cars for agricultural, construction, mining and military work.



The ASU model is a 1/10 scale that uses GPS resolution to navigate via remote-control. Navigation algorithms apply. This vehicle has been designed to traverse a 50% incline. A medium-scale model is being constructed in the future.

Suspension is 20" tires on two trailing arms giving 10" ground clearance. The finished model will be complete by April 26th and on display at the ASU Assessment Fair.

Main Speaker-How to hit a 95 MPH Fastball: John Capulli

Presentation broke hitting down into the OODA cycle—Observe, Orient, Decide and Act.

The time a pitch takes to get to the plate is 0.4 seconds. A hitter has 0.2-0.3 seconds to react.

Mr. Capulli likened this situation to the Satellite Attitude Control System in which the system is only as accu-



John Capulli (L) and Josh Rudin (R)

rate as the quality of observation.

The observables are pitcher release point, arm angle, grip on ball, pitcher tendencies and knee bend which results in lower release point.

After release an astute batter will notice the spin of the ball to identify its path. The strike zone is actually a 3-dimensional cone.

Controllables consist of the batter's stance which can be constant or variable. These variables are manipulated to maximize the time the ball will reach the plate and minimize the effort to get efficient bat velocity.

Good hitters can "slow down time" in which the 0.4 second interval is a highly concentrated observation resulting in a line-drive hit. Several slides were shown to illustrate open vs. closed stance and pitcher release point.

Former SAE Section Chair Passes

Dale Robert Johnson, 80, of Mesa, AZ, went home to be with the Lord on February 24, 2008. Dale was born in Chicago in 1927, but spent most of his young life in rural northern Wisconsin. After 16 months on a Navy troop transport at the close of WWII, Dale obtained a degree in mechanical engineering from the University of Wisconsin, then went on to enjoy a 30-year career with General Motors. He set up the General Motors Pikes Peak Test Facility in Manitou Springs, Colorado, in 1954, then moved to Mesa to work at the General Motors Desert Proving Ground as a test engineer. He was Arizona State Section Chair of the Society of Automotive Engineers (SAE) prior to being assigned to GM's Milford, Michigan Proving Ground to manage light vehicle testing, a job he held until transferring to the GM Technical Center in Warren. Dale was one of the early SAE Chairmen-(1968-1969), and was very instrumental in helping to get SAE established in Arizona. He retired in 1982 to return to Arizona. Dale continued to work on special assignments for GM until he began working for Allied Signal (now Honeywell), and was responsible for overseeing the move of the submarine testing center from California to Honeywell's facility in Tempe. Dale's love for the Lord Jesus Christ was manifested in service to his church as deacon and finance board chairman. In his retirement years, he loved working as a volunteer with children's ministries until his health prevented doing so. He very much enjoyed time at his family's cabin in Prescott, and though his favorite scenery remained his native Wisconsin forests, he tolerated family vacations every summer on the ocean in San Diego. A devoted husband,



father, and grandfather, Dale's greatest joy was his family. All four of his children and all eight grandchildren live within minutes of Dale and Carolyn's home. He is survived by his wife, Carolyn; son, Rob Johnson (Lynn); daughters, Mary Lou Edwards (Tim), Cyndi Johnson (Paul), and Laurie Verdugo (Rick); and eight grandchildren.

Mine Tour - April 19, 2008

Saturday, April 19th:

Mark your calendars for our first tour of 2008!

SAE AZ-NV Section is planning a tour of the Phelps-Dodge Sierrita Mine and Processing Facilities near Green Valley, AZ.

This mine is one of the safest open-pit hard-rock mines in the U.S.

Our tour will bring us up close to their gigantic mining vehicles and we will also learn about their copper, molybdenum and rhenium processing.

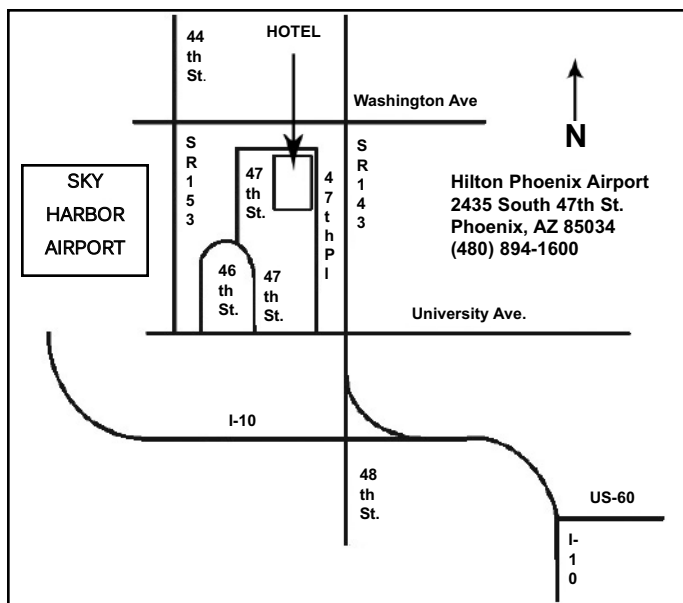
Tentative timing to start is 10am, so those driving from far away will have plenty of time to arrive. Cost: \$5 per member/non-member. Students are FREE! Please look for more information in our April newsletter.

A World in Motion - In Arizona

by Don Robins

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.

*** Meeting Location ***



THE UNIVERSITY OF ARIZONA ANNOUNCES:

The 34th Annual Reliability Testing Institute provides coverage of how to implement and manage the Design-for-Reliability process through testing, to implement an integrated Reliability & Maintainability Engineering management strategy, learn a practical approach to attain the high Reliability goals demanded nowadays, to improve our worldwide competitive posture by creating more Reliable products through thorough testing, to determine the useful life of our products, and more. Dr. Dimitri B. Kececioğlu and 10 speakers from 10 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 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 34th ANNUAL APPLIED RELIABILITY TESTING INSTITUTE
May 5-8, 2008

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.
Professor of Aerospace and Mechanical Engineering
The University of Arizona
1130 N. Mountain Avenue, Bldg. 119, Room N517
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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

Mar 20	- AZ Innovation - Honeywell
Apr 17	- Empire-Caterpillar
May 15	- Future of Engineering - Deans from ASU, U of A, and NAU

Bill Gest Section Chair bgest@esgeng.com	Joshua Rudin Vice Chair 602-369-6487	Mike Kremer Secretary MKremer@esgeng.com	Larry Wilson Treasurer wilson.lawrence@orbital.com	Robert Riley Newsletter Editor 623-872-8010
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