SAE® International

MARCH 2004

ARIZONA-NEVADA SECTION NEWSLETTER

NEXT MEETING MARCH 18
(Please notice special beginning-time for this special event.)

Section Web Site: www.saearizona.org

HIGHLIGHTS...

Dinner Presentation...

Senior Executive Panel: Can Aero and Auto Engineers Gain Technology From One Another?

This is a rare opportunity to hear what senior executives in our community think about the future directions of engineering. The panel will discuss topics such as lean thinking, advanced automotive electronic systems, technology transfer, Systems Engineering, Network Centric Warfare and Netted Weapons, Product Line Architectures with modular components and vehicle collision avoidance systems.

Lean thinking and increased productivity in engineering can mean making better use of available resources and better efficiency in the engineering function. Engineering and research dollars are stretched. One means of getting more out of our engineering dollar may be to look for technical solutions from non-traditional sources. What does this mean to you?

Many aero companies are adopting lean thinking in their engineering and manufacturing operations. The principles of these were developed and deployed in the auto industry. On the other hand, the ground vehicle industry is rapidly adopting advanced electronics on their vehicles. Such new automotive systems include collision avoidance using technology from target identification radar and friend/foe discrimination. Do both industries need to reinvent these technologies for their applications?

Senior executives in our community will be providing you with valuable insight on the future directions of engineering. What are their perspectives on "Not Invented Here", Technology Transfer, Lean Thinking, Systems Engineering, Network Centric Warfare and Netted Weapons, Product Line Architectures with modular components, and/or the need or lack of need for technology interfacing between the these two industries? How well is technology transfer taking place within a company? Are there opportunities to use your knowledge to develop new products within your company for use in the other industry?

Often it is stated that creativity springs from the application of one technology or concept in a completely different situation.

Come to SAE in March, bring your boss, be challenged, get a glimpse of the future and interface with senior executives here in the valley.

Panel Members

- Gretchen McClain, Vice President of Engineering, Honeywell Engines as the Moderator

- Albert L. Winn, Vice President, Boeing Apache Programs.

- Vicki E. Panhuise, PhD., Vice President, Programs and Site Leader, Honeywell Aerospace Electronic Systems.

- Alan R. Dohner, Ph.D., Senior Fellow, Raytheon Missile Systems. (Dr Dohner has had extensive experience with advanced auto and heavy duty vehicle electronic systems.)

DATE	TIME		LOCATION	COST	
Thursday March 18	Social	- 6:00 pm	Holiday Inn (Phoenix Airport)	Students	- $10
	Dinner	- **6:45 pm**	44th St. & Washington	Members	- $18
	Presentation	- **7:45 pm**	602-273-7778	Guests	- $19

***RSVP by 2:00 pm Monday March 15. Call Robert Q. Riley: 623-872-3475**

Message From the Chair.....

Thank goodness for SAE members like Randy Frank. Last fall, I received an unsolicited phone call from Randy. I don't even recall what the exact reason was that he called, except that at the end our conversation he offered to give a presentation to our section any time, even on short notice. It's the kind of phone call that section chairs wish they got more often!

Due to some miscues, our scheduled February presentation fell through at the last minute. Here we were: the newsletter was about to go to press and we didn't have a speaker for the month. I remembered Randy's offer and quickly contacted him. True to his word, he was ready and willing to pinch hit for us. He sent the requested information to Bob Riley later that day and we got the newsletter to the printers on time-never missing a beat.

We had a great audience for Randy's presentation on February 19th, and he did not disappoint! He took the group through the history of electrical loading in automobiles and presented several options that automotive manufacturers have put forth to deal with the increasing power demands that are coming in future automobiles. Randy's extensive background in automotive electronics gave additional stature to his remarks to us. Thanks again to Randy for a great talk! It was very informative and enlightening. I'm sure we will be inviting him back to speak to us again the future.

Our March meeting also promises to be a great event for our section. Max Rumbaugh, our local retired senior SAE executive, has been working tirelessly to put together a unique opportunity for SAE members to meet and interact with several top executives from industries here in the Valley. Many of you have probably already heard about it and Max has provided plenty of information regarding the meeting elsewhere in this newsletter. We would also encourage each of you to bring your boss to the meeting in March. If you're retired, you know who your "boss" is-bring her too! Please note that we will begin the program a little early this month: 6:45 instead of the usual 7:00 for dinner.

And last but not least, be thinking of how you can contribute to your AZ section for the 2004-2005 year. We will be putting together a nominating committee soon to choose candidates for next year's governing board. 2005 will also be the 100th Anniversary of SAE.

I hope to see many of you at our special event in March!

Todd

Recap of February's Meeting

by Kevin Willson

The Arizona Section of the SAE would like to extend our greatest thanks to Randy Frank for not only giving a wonderful presentation on "What's Happening to 42V?", but being able to present on short notice due to a cancellation of the originally scheduled speaker. Randy presented to us the state of Automotive Electrical systems today and the direction they will be going in the near future. His knowledge of this topic brought wonderful insights to the group as to the reasons for the proposed changes in standard automotive electrical systems.

Speaker Randy Frank (left) receives a custom-made SAE basket, presented by Section Chair, Todd Zuercher (right).

Randy comes to us from Scottsdale as founder of Randy Frank and Associates, Ltd. and as an SAE Fellow with over 30 years of automotive and power electronics experience. At American Motors, Randy was responsible for introducing the first electronic engine control systems and also developed ignition, cranking and charging systems. At Motorola, he was involved with semiconductors including the introduction of several new power MOSFETs, IGBTs, smart power ICs and sensors. He also helped launch dozens of new automotive power management products while at International Rectifier.

Randy's presentation led the audience through the reasoning behind a move to a 42V automotive electrical system and how the industry has responded. With more and more demands being placed on a vehicle's electrical system, the current on the standard 14V electrical system is becoming increasingly high to accommodate the increased load. This increased current ultimately results in increased losses in the electrical system and therefore decreased efficiency. With a move to a higher standard of 42V, the current for a given load is decreased allowing a more efficient electrical system.

If that were the end of the story, the industry would have switched to 42V a long time ago. But the reality is that all of the systems in today's automobiles were designed around a 14V standard. From engine electronics, to navigational systems and entertainment devices, lighting and convenience features, all of these devices will have to be redesigned to accom-

modate a 42V standard. Plus, the higher voltage systems put different demands on items such as disconnects and packaging. The battery cables on a standard 14V system have no problem handling the small electrical arcs that occur when connecting and disconnecting from the battery. These same types of cables on a 42V system would be damaged by the sustained arcing that can result during connection and disconnection.

The safety aspects of switching to a different standard are also of great concern. How should connectors be designed so that they will not interconnect with the wrong type of battery? How should electronic devices be configured so that they will be connected to the correct voltage requirements? The International Standards Organization (ISO) in cooperation with other organizations such as the Society of Automotive Engineers (SAE) has developed a standard for a 42V power supply system. This standard will provide a roadmap to address future load requirements when it is necessary. The first ballot for approving the draft international standard is expected to be later this year.

So how has the industry responded to the need for more power in vehicles? Improvements in the efficiency of electronic components have slowed the need for a 42V system. Alternators that have decreased electrical losses, more efficient lighting systems and a host of other electrical improvements have contributed to increasing the efficiency of today's vehicle electrical systems. In the U.S. today there are only one or two vehicles on the road with a 42V electrical system. Hybrid vehicles, with their unique electrical requirements, have several systems being used which range from 200V to 600V. The future of the 42V standard is still alive. It just isn't going to happen over night.

Thanks again go to Randy Frank for his wonderful presentation and his insights into the automotive industry today. We hope to be hearing from him again in the future on other industry related topics.

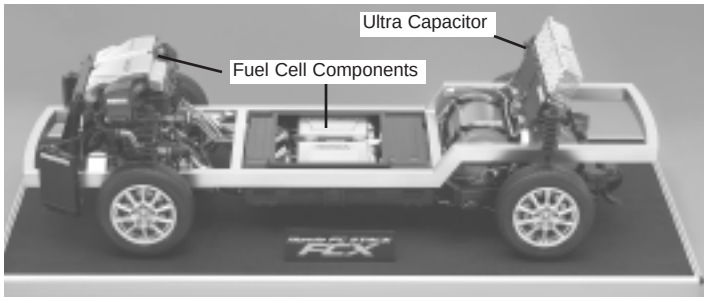
April Program... Connected Vehicles in a Connected World, What is the Future?

We've been reading about Intelligent Vehicles and Highway Systems for some time now, but it is unclear just when these systems will begin making their way to consumers and improving the driving experience of average motorists. Systems range from relatively simply traffic advisories and traffic management to high-tech innovations that can see through fog and darkness, sense impending collisions, and take control of your vehicle to avoid a crash. What does the future really hold? We'll get the latest information on what to expect at our April meeting.

Honda FCX Fuel Cell Proves Cold-Start Performance

Torrance, Calif. 02/27/2004 --Honda Motor Co., Ltd, today announced that it has conducted a successful cold-weather demonstration of its FCX fuel cell vehicle equipped with a Honda Fuel Cell Stack. Demonstrating the vehicle's cold-weather performance capabilities and its ability to start in below freezing temperatures, a major hurdle in the drive to create a truly mass-marketable fuel cell vehicle.

Testing was conducted at Honda's test track and on public roads on the northern Japan island of Hokkaido. As a part of the test, the FCX successfully started after being parked outside overnight in temperatures as low as -11oC (+12oF). Test drives conducted immediately afterward demonstrated the vehicle's excellent cold weather driving performance. Honda will continue cold weather testing in its efforts to make widespread use of fuel cell vehicles a reality.



Honda FCX chassis

The Honda FCX is the first fuel cell vehicle to be certified for regular commercial use by the U.S. Environmental Protection Agency and the California Air Resources Board, and is currently being used by customers in the U.S. and Japan.

The Honda FC Stack - which the company plans to make commercially available within the next year - is the world's first fuel stack to feature below-freezing start capabilities, and the first to utilize a stamped metal separator structure and newly developed electrolyte membranes.

The new stack reduces the number of components by almost 50 percent (compared to earlier Honda prototype units) while more than doubling the output density. Use of newly developed aromatic electrolyte membranes greatly improves durability and allows for power generation at temperatures ranging from -20oC (-4oF) to +95oC (+203oF). Driving range and fuel economy have also been increased by more than 10 percent compared with the FCX currently in fleet use.


Fuel cell stack

In Memory

Robert R. Stewart, Jr. passed away on January 21, 2004. Bob was very active in the early days of the Arizona Section of SAE. He served as Chairman in the 1974-1975 Section year. Bob worked for General Motors for 29 years, including 16 years at the Desert Proving Grounds in Mesa, retiring in 1975.

Services were held January 30. Section Treasurer, John Lester attended.

Meeting Schedule

March 18	- Senior Executive Panel: Can Aero and Auto Engineers Gain Technology from One Another?
April 15	- Connected Vehicles in a Connected World, What is the Future?
May 20	- Nissan Titan Pickup

Newsletter Ad Section

Your ad can appear in this newsletter. For more information and advertising rates, please go to: http://www.saearizona.org/newsletter/

Sign up to Receive Your Newsletter by Email

We are in the process of making a gradual transition to an electronic Newsletter. Members who subscribe will receive a monthly email containing a link to the newsletter. Simply click on it to receive your newsletter. To subscribe, go to: http://www.saearizona.org/newsletter/ and click on the appropriate link.

SAE The Engineering Society For Advancing Mobility Land Sea Air and Space® INTERNATIONAL

Society of Automotive Engineers
Arizona Section
69 West Wilshire Drive
Phoenix, AZ 85003

ADDRESS SERVICE REQUESTED

POSTMASTER: DATED MATERIAL - PLEASE DELIVER PROMPTLY - THANK YOU!