

ENGINEERS CLUB OF THE WEST VALLEY

MARCH 2011 NEWSLETTER

www.engineersaz.com

The Engineers Club is a social organization which meets regularly for lunch with a speaker on a technical topic. Spouses are invited and many attend regularly. Short field trips are occasionally scheduled. Membership is open to anyone who has worked in or had close ties to the engineering or scientific fields. Meetings are held at 11:30am on the first Friday of each month, October through June, at Briarwood Country Club, 135th and Meeker in Sun City West, Arizona.

Visitors are always welcome -- Reservations are required -- Just call (623)544-0942 to let us know you are coming.

MARCH 4 PROGRAM

Creating a Seamless Brain-Computer Interface for control of Artificial Limbs

*Dr Stephen Helms Tillery, Assistant Professor
Arizona State University*



People are fond of saying that the brain is a big mystery. Certainly there are things we don't understand, but there also are a lot of things we do understand: enough that we can harness that knowledge to help create interfaces for controlling external systems. What remains in that regard is basic engineering: what kinds of electrodes will work best, how should they be implanted, where will they be implanted, etc. Our group is working on these questions both in a primate laboratory and in humans, and anticipate rapid developments over the next five years.

On the other hand, while we know a lot about how sensory information is processed in the central nervous system, we know less about how to take advantage of that processing to provide, for example, tactile input from an artificial arm. Tactile input would be a key element in moving from an operable but klutzy prosthetic system to a seamlessly integrated system in which an artificial device is perceived as a part of one's body. We are also working on both scientific and engineering issues related to this problem, and I will present some of that work as well.

APRIL 1 PROGRAM

Groundwater and Soil Contamination Assessment and Remediation Systems

*Dr Paul C Johnson, Dean
Fulton School of Engineering, ASU*



Dr Johnson is a Professor in the School of Sustainable Engineering and the Built Environment and is also the Dean of the Ira A Fulton Schools of Engineering. Before joining ASU in 1994, he was a Senior Research Engineer at the Shell Oil/Shell Chemical Westhollow Technology Center.

His teaching, research, and professional activities focus on the application of contaminant fate and transport fundamentals to subsurface soil and groundwater remediation and risk assessment problems.

Groundwater contamination in the Phoenix area is substantial and reflects the local history of both industry and agriculture. Our local experiences are not unique and are mirrored at the national level. Billions of dollars have been spent nationally to clean up and mitigate the impacts of past industrial waste disposal practices and accidental spills. Despite those efforts, there are still more than 100,000 sites remaining with estimated cumulative financial liabilities exceeding hundreds of billions of dollars.

This presentation will provide insight to the issues and technical challenges affecting these efforts at both the national and local level, as well as innovations being developed and tested at Arizona State University

NOTES FROM...

President Don Block

A Tag to Track Them All



RFID (an acronym for Radio Frequency Identification) has come a long way since its initial development as a way of tracking ordinance in and out of government storage facilities. Initially small devices were mounted on missiles and other equipment. A history of where the product was located, where it had been, when it was last serviced and other valuable information was stored right on the product itself.

The small tags emit a radio signal as they pass a scanner. This signal is similar to a barcode -- a long number that can provide a ton of information. Unlike barcodes however, you don't have to scan them individually with a laser; you can use a radio receiver, which makes it much easier to scan items that are densely packed or are moving quickly.

RFID tags are used in some credit cards, allowing users to simply wave their card across a reader, instead of handing a card to a cashier, swiping it through the scanner, and then signing a receipt. And all newly-issued passports contain an RFID chip that can be used to cross-check the information printed in the passport for improved security.

At a Boeing plant in Washington, it used to take two hours a day per employee to read and record all the barcodes from each shipment. And there was no guarantee of accuracy. Now Boeing puts RFID tags on these goods. They need one worker to monitor things, the system is perfectly accurate, and the savings in labor costs alone paid for the hardware investment in just six months.

Now we have progressed to the point where RFID is now being used by Wal-Mart to track individual bottles of the popular and addictive painkiller OxyContin because they have found that it's a target for thieves and counterfeiters, both of which can intrude at vulnerable points in the supply chain. Wal-Mart is able to track each individual bottle of the pills for internal-control purposes and to ensure its customers are getting what they paid for.

I am sure we can all think of other applications where we will see RFID used in the future. One use could be tracking your luggage from the time it leaves your hands until you pick it up at your destination. Technology continues to change the world.

MAY 6

Lightning Phenomena & Protection

Dr George Karady, ASU

2011 OFFICERS

President	Don Block	546-0557
Vice President		
Secretary	Jodie Lawrosky	238-5256
Treasurer	Bob Latvalla	546-7801

COMMITTEE CHAIRPERSONS

Programs	Daryl Lund	271-7337
Membership	Bob Kessler	910-7054
Reservations	Dave Whitehouse	544-0942
Luncheons	Tom Watkins	584-5811
Scholarship	Bill Blackman	214-6550
Scholarship	Don Johnson	975-1657
Scholarship	Don Porter	556-1754
Scholarship	Gerry Montag (Advisor)	546-7963
Member at Large	Les Sherry	975-9081
Newsletter	Bill Harrison	546-4943
Event Support	Ralph Palmer	815-8143
Web Site	Jim & Pat Ardis	362-1013
Publicity	Maurice Hoyt	533-4213
Field Trips	Fred Scheske	556-2892
Past President	Hal Clemett	546-4941

BOARD EMAIL ADDRESS: board@engineersaz.com

TREASURER'S REPORT 1-31-2011

General Fund Balance:	\$6,123.92
Scholarship Fund Balance:	\$2,477.61

LUNCHEON MENUS

March 4: Pork Cutlet Grilled Golden, Buttermilk Mashed Potatoes, Chef's Vegetable and Fudge Nut Brownie with Whipped Cream. (Entrée Option: Fruit Plate)

April 1: Roasted Breast of Turkey with Mashed Potatoes and Gravy, Chef's Vegetable and Vanilla Ice Cream with a Rolled Cookie. (Entrée Option: Fruit Plate)

RESERVATION POLICY

The cost of the monthly luncheon is \$17.00 per person. The reservation deadline is 6PM Monday before the meeting. Late reservations cannot be guaranteed the regular meal. Call Dave Whitehouse if you cannot keep your reservation. **The full luncheon cost is due for "no-shows" and cancellations after 6PM on the Wednesday before the meeting.**

RESERVATIONS Dave Whitehouse (623)544-0942

RAFFLE RESULTS AND DONATIONS

The winner of the raffle at the January meeting was Dick Veazey who received \$114. The total funds collected to date in support of the Scholarship Fund is 556.50

WELCOME NEW MEMBERS

John Barnes, Cernyw Kline, Bill Way,
James Guyaux, Manfred Joeres

PHOENIX TRANSFER STATION TOUR

By Fred Scheske

Twenty-five members and spouses toured the North Gateway Transfer Station on January 25, 2011. The tour began with an explanation of the city's operation in collection of refuse and recyclables. We viewed the operation from an enclosed walkway above the work area.

Each work day Phoenix employees collect about 2000 tons of refuse (garbage) and 250 tons of recyclable materials. All of the refuse and recyclables are collected and moved by city trucks to the transfer center in north Phoenix for sorting. Most trucks unload at the facility three times each day. Refuse is deposited in one half of the huge covered facility where it is moved by a front-end loader to an opening in the floor, through which it is deposited onto 18-wheelers below for trucking to the city landfill on S-85 south of Avondale. Contractors can also unload yard and building refuse in the same part of the facility. About 12 city employees handle this part of the operation.

Recyclable materials are unloaded on the other half of the facility where 25 contract employees hand sort the paper, plastic, aluminum and glass items onto conveyor belts. Items are then baled or boxed and shipped to buyers. Most paper products are sent to Snowflake, AZ for recycling into newsprint. Some of the paper is sent to China for recycling. Plastics are crushed, baled and sent to a facility in California. Aluminum materials are crushed, baled and sent to Arizona buyers. The recycling operation has recently become a money maker for the city of Phoenix.

Analysis has found that garbage deposits in the Phoenix landfills can be as much as 50 years old with little decomposition of materials. Landfill technology has advanced to provide for faster decay of garbage and conversion of property to useful purposes such as sport facilities.



Dr. Denton, receives a certificate of appreciation from Jim Ardis and Don Block for his presentation describing recent developments in personnel scanners that detect explosives. He also talked about his personal involvement with building and driving sports cars to new speed records.