



# VIRGINIA MOUNTAIN SECTION NEWSLETTER

IEEE Region 3, Council 09, Section 65

April 2008

Thursday, April 17, Holiday Inn Hotel Roanoke Airport

## Students from Virginia Tech and VMI report and demonstration on the *Robot Design Competition at IEEE SoutheastCon*

### IEEE SoutheastCon Design Competition

A highlight of the annual IEEE SoutheastCon meeting, held this year April 3 –April 6 in Huntsville, AL, was the Student Hardware Design Competition, “Return to the Moon.”

The objective of this year’s competition was:

*“To find, retrieve and return to home base, 2-inch cube, wooden blocks with attached RFID tags within the competition time limit of six minutes. The block point values are determined by their color and numbers encoded on attached RFID tags.”*

The Introduction to the design rules stated:

*“In the not-too-distant future, mankind has returned to the moon, whereupon valuable mineral deposits have been discovered. Exploration and development of this resource has been licensed to private enterprises. Many organizations, perhaps yours, have decided to enter into a competition*

*to harvest the mineral deposits and return them to Earth. The process is arduous and expensive, and international regulations only permit unmanned, autonomous prospecting robots on the moon. The color and magnetic properties of the mineral deposits are correlated with their worth. Good luck in your venture!”*

The competition required numerous engineering skills, from circuits to machinery, and from microprocessors to dynamics of systems. Members of the VMI and Virginia Tech teams will report on their experiences at this competition, and will demonstrate their robots in action. The IEEE Virginia Mountain Section is pleased to be a supporter of the VMI and VT teams. Please join us on April 17 to learn of the results and experiences from Southeastcon, to support the future leaders of our profession, as well as to meet and socialize with your friends and colleagues.

Date: Thursday April 17, 2008  
Social: 6:30 PM  
Dinner: 7:00 PM  
Talks & Demos: 8:00 PM

Cost:	Members	&	Guests
	\$20.00		
	Students		
	\$10.00		

Reserve by 5 PM **Monday April 14**  
**Dr. Wilbur Dale (540) 464-7547**

[mail to:dalewn@vmi.edu](mailto:dalewn@vmi.edu)

Please specify number of attendees.

**Directions to  
Holiday Inn Hotel Roanoke  
Airport**

2727 Ferndale Drive NW  
I581 Exit 3 Hershberger Rd West  
1st Rt. onto Ordway Drive,  
¼ mile, Rt. Into Parking Lot.

**Links to Student Chapter  
Websites**

VMI <http://ieee-vmi.org>

VT <http://www.ieee.vt.edu>

## IEEE.tv Focuses on E-Trash

(from the IEEE Institute, Amanda Davis, April 2008)

IEEE.tv, the institute's Internet television network, is scrutinizing the problems of electronic waste in its recently launched Care Innovations video series. Experts discuss the effects of e-waste on the environment, legislation to help curb the problem, and the challenges engineers face in designing environmentally friendly technology. Here's a sample of what the videos are about.

**DANGEROUS DUMPS** The video "Toxics in Electronics" covers the problems of recycling the hazardous materials found in toys and electronic gear.

Many of these devices contain harmful materials that can become toxic to the environment if they are recycled improperly. Some countries, including Austria, Norway, and Sweden, have facilities to safely extract valuable materials like silver, gold, and copper. But the United States and the U.K. send about 80 percent of their e-waste to China and India, where workers at recycling plants extract metals by melting the electronics, releasing toxins that pollute the air and groundwater.

The European Union wants electronics companies to remove hazardous materials from their products before they leave the factory. Its Reduction on the Use of Certain Hazardous Substances (RoHs) Act, passed in 2003, calls for companies to eliminate six toxic materials from their products, including lead, mercury, and cadmium. Experts in the video discuss the problems this presents for engineers and researchers, who are hard-pressed to find decent replacements for materials like lead, which has been used to solder parts in electronics for decades.

**LEGAL ISSUES** While "Toxics in Electronics" touches on one piece of legislation, the video "WEEE and RoHs" explores issues surrounding the EU's 2002 Waste Electrical and Electronic Equipment Act (WEEE), which mandates that European electronics manufacturers take back their products when they become obsolete.

Because people are less likely to recycle small electronics like cellphones and MP3 players, which are easy to toss in the garbage, the act calls for the building of several recycling plants that will accept these kinds of devices. The EU is also trying to educate consumers about the hazards of e-waste and encourage them to recycle their outdated gadgets.

**WHOSE JOB IS IT, ANYWAY?** "Responsibility for Being Green" highlights what manufacturers and environmental organizations are doing to reduce the amount of e-waste.

The program highlights Microsoft's efforts to sell downloadable software and reduce the amount of packaging and the number of discs it ships to customers. It's also using new packaging made without petroleum-based plastics, which are not biodegradable. Hewlett-Packard has also launched a no-fee program to take back some of its used products, such as inkjet and laser-printer cartridges and rechargeable batteries. Consumers can do their part by choosing companies based on how they deal with e-waste. The international environmental organization Greenpeace puts out the "Guide to Greener Electronics," a quarterly report that ranks electronics companies on what they're doing to eliminate toxics in their products and whether they accept their old products for recycling at no charge. The March 2008 report can be found at <http://www.greenpeace.org/raw/con>

[tent/international/press/reports/guide-to-greener-elect-7.pdf](http://www.ieee.tv/international/press/reports/guide-to-greener-elect-7.pdf).

## GREENER ALTERNATIVES

Green-engineering experts tell us that electronics not only put a strain on the environment at the end of their lives, they also require massive amounts of energy while in use. The ever-increasing demand for electricity can be met using cleaner alternative energy. However, as seen in the "Green Engineering" video, there are conflicting estimates about how much electricity can be generated by resources like wind and solar power. Many environmental groups say that alternative sources can supply up to 50 percent of our energy once governments crack down on the use of fossil fuels. But the Paris-based International Energy Agency, the intergovernmental organization founded by the Organization for Economic Cooperation and Development in 1974, believes that alternative energy technologies are still too immature, putting that figure at only about 14 percent. For example, wind power requires that transmission lines must be built to carry energy efficiently from sparsely populated regions to populated cities. Experts also point out that in addition to developing cleaner energy sources, engineers must also design products with more energy-saving features.

To watch these videos, visit IEEE.tv's Web site at <http://www.ieee.tv>.

---

## FTTH now being sold to 10M US homes

Ed Gubbins, Telephony Online, April 8, 2008

Fiber-to-the-home (FTTH) is now being marketed to more than 10 million North American homes, according to the [latest report](#) from RVA Market Research &

Consulting. And FTTH networks pass nearly 12 million homes, or nearly 10% of all the homes in North America.

Nearly 3 million homes are connected to fiber, and 770,500 of those (or 26%) were added in the last six months, according to RVA. Bell companies (mainly Verizon Communications) account for 2,079,000 FTTH subscribers (or 72% of the total), while a mix of 593 other providers collectively claim the other 833,500, RVA said. Non-Bell incumbents own 14% of all FTTH customers. CLECs own nearly 5%, municipalities own 4%, developers and integrators own less than 4% and cable companies own nearly 1%.

The most fiber-rich areas of the US are those within the territory of Verizon or third-tier telcos, where a third of all households are located and 5.8% of them are connected to fiber. In areas served by AT&T, Qwest or tier-two telcos—where two-thirds of US homes are found—only 0.6% of homes have fiber.

The take rate for FTTH services is climbing steadily from its low point of 18.4% in 2005 to 28.8% today, RVA said. But the take rate among non-Bell companies is much higher—having hovered around 52% for the past two years.

More than 8 million homes are now able to order television service over fiber, a 36% jump in the last six months, RVA said. And more than 1.6 million homes receive video over fiber, 56% more than in September.

More than 17,000 homes are now able to order 100 Mb/s Internet service, up from about 12,000 a year ago.

RVA's data has drawn scrutiny in the past from other industry analysts who are skeptical of the numbers published in these regular reports. But Michael Render, RVA's president, stands by his data.

## **DVD on George Westinghouse** (from Inecom Press Release)

*Westinghouse* is a feature-length documentary about the life and times of George Westinghouse, his companies, legacy, personality and achievements. Westinghouse is considered America's greatest industrialist and the only man who would go up against Thomas Edison, and win.

His victory over Edison during the Battle of the Currents set the stage for the entire future of electric power and the Westinghouse air brake is considered one of the most important inventions in history. Automobile shock absorbers, railroad signaling and the modern day weekend all owe their existence to the man who Andrew Carnegie called "A genius who can't be downed."

Westinghouse may be most famous for the massive companies that he created, but the man called "Uncle George" was a reserved, creative giant who went out of his way to treat his workforce with dignity and respect. He was an honest millionaire in the days of robber barons, an optimist in the days of skeptics and a generous CEO from whom today's executives can learn.

*Westinghouse* was filmed in cooperation with the George Westinghouse Museum and features rare and never before seen footage, industrial films and photos previously buried deep within the Westinghouse archives. Filmed in High Definition, the film includes an interview with George Westinghouse Museum Executive Director, Edward J. Reis.

This DVD was produced by Inecom Entertainment Company and is available from Internet retailers.

## **Change in VMS Officers**

Owing to health reasons, Glenn Hammond asked to step down as VMS Secretary/Treasurer. At the March 20, 2008 Executive Committee meeting, Gail Gray was appointed to replace Glenn Hammond as Secretary/Treasurer for the remainder of the 2008 term. We all wish Glenn a complete and speedy recovery.

---

### VMS Officers

Chairman: **Wilbur Dale**  
[mail to:dalewn@vmi.edu](mailto:dalewn@vmi.edu) 464-7547

Vice Chairman: **Chris Bonadeo**  
[cbonadeo@verizon.net](mailto:cbonadeo@verizon.net)  
Sec./Treasurer: **F. Gail Gray**  
[fggray@vt.edu](mailto:fggray@vt.edu)

### VMS EXECUTIVE COMMITTEE

**David Geer**  
[dgeer@ieee.org](mailto:dgeer@ieee.org)  
**Robert Hendricks**  
[RobertHendricks@vt.edu](mailto:RobertHendricks@vt.edu)  
**Edward Tuttle**  
[tuttleone@earthlink.net](mailto:tuttleone@earthlink.net)  
**Junior Past Chairman: Jan Helge Bohn**  
[bohn@ieee.org](mailto:bohn@ieee.org)

### VMS Chapter Chairs

**Computer, Control Systems, & Industrial Electronics:**  
**Sandeep Shukla** [shukla@vt.edu](mailto:shukla@vt.edu)

### NEWSLETTER

**Editor: Ira Jacobs**  
[mailto:ijacobs@vt.edu](mailto:mailto:ijacobs@vt.edu) 231-5620

Contact Newsletter Editor to be added to the VMS listserv

### WEBSITE

<http://www.ewh.ieee.org/r3/virginia-mountain>

**Webmaster: Chris Bonadeo**  
[cbonadeo@verizon.net](mailto:cbonadeo@verizon.net)