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Sweden and the U.S. DOE signed a Memorandum of Understanding to develop PHEV technologies. Argonne and Test Site Sweden will do the research. Page 2

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Khalil Amine and his team won an R&D 100 Award for work on the EnerDel/Argonne Advanced High-Power Battery for Hybrid Electric Vehicles. Page 5

Integrated Fuel Technologies Gets Worldwide License for Argonne-developed Diesel DeNOx Catalyst

A new, patented catalyst that reduces NOx emissions developed by Argonne National Laboratory has been licensed to Integrated Fuel Technologies, Inc. Page 6

Impact of Drive Cycles on PHEV Component Requirements

Argonne researchers recently studied the impact of drive cycles on the component requirements of PHEVs. Results were presented at the SAE 2008 World Congress. Page 7

Argonne Lends Transportation Research, Organizational Expertise to ALMS Green Challenge

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The newest version of the GREET (Greenhouse gases, Regulated Emissions and Energy use in Transportation) model is now available. Page 10

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Mississippi State U. is the first place winner of Challenge X, the four-year student competition in which university teams from the U.S. and Canada engineered advanced powertrain solutions. Page 11

EcoCAR: The NeXt Challenge Teams Chosen

In May, student teams for EcoCAR: The NeXt Challenge, were announced. Seventeen university teams have been selected from the U.S. and Canada. Page 12

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PUTTING ARGONNE’S RESOURCES TO WORK FOR YOU Page 16
U.S.-Sweden Joint PHEV Research

Looking to jointly develop new plug-in hybrid vehicle (PHEV) technology and accelerate its consumer acceptance and commercialization, the U.S. Department of Energy (DOE) and Sweden signed a Memorandum of Understanding (MOU) in July for a one year, $1 million cost-sharing agreement to be equally funded by DOE and the Swedish Energy Agency.

Through contacts developed over many years conducting international technology assessment for the Department of Energy, Argonne National Laboratory initiated the MOU, which was signed by DOE Assistant Secretary Alexander Karsner and Director General of the Swedish Energy Agency Tomas Kåberger, on the Swedish island of Gotland. The ceremony included comments by Swedish Deputy Prime Minister Maud Olofsson and U.S. Ambassador to Sweden Michael Wood, who were on hand for Almedalen Week (“politician’s week”), traditionally held in the ancient walled city of Visby on the island, three hours (by ferry) southeast of Stockholm. The cooperative activity is made possible by the U.S.-Sweden Science and Technology Implementing Agreement that was signed in June 2006 by Karsner and Olofsson—who demonstrated their support for the activity by “plugging in” the Volvo ReCharge PHEV concept vehicle to a futuristic interactive charger concept developed for this project.

Over the next year, Argonne and Test Site Sweden will collaborate and
- Develop PHEV vehicle instrumentation, vehicle-to-grid hardware and smart-charging systems;
- Research customer behavior in field testing;
- Quantify national, utility and customer benefits; and
- Develop convenient “open” charging stations (for all electric-based vehicles).

“The recent development of our unique technology for onboard data acquisition and analysis, in combination with our expertise in vehicle testing, allowed us to quickly develop a ‘smart charging’ system for electric/hybrid vehicles and respond to Assistant Secretary Karsner’s direction to establish international cooperative programs to address our common global objective to reduce petroleum consumption,” commented Keith Hardy, one of the developers of Argonne’s data acquisition tool, ARDAQ (Argonne Real-Time Data Acquisition).

Argonne engineers developed ARDAQ to provide onboard data collection and diagnostics of PHEVs (see Technology Spotlight on page 4). ARDAQ will enable the U.S.-Sweden joint PHEV research in vehicle-utility interface and communication, and PHEV use patterns and user characteristics in combination with smart-charging.

The concept of Argonne’s Smart-Charge System is to provide the vehicle data and the communication capability to inform both the user and the grid regarding the vehicle’s energy needs, and to control the vehicle charging based on feedback provided by the grid operator. In combination with the interactive charger concept developed by Test Site Sweden, users will be informed by the grid operator regarding the energy sources used for recharging (hydro, wind, coal, nuclear) as well as the consequences of recharging at a specific time and location—giving an informed user the choice of when to recharge.
RESEARCH REVIEW

The objective is optimal accommodation (both environmental and economical) of a large number of electric or plug-in hybrid electric vehicles recharging in the future. Specifically, the onboard vehicular system:

- Communicates vehicle location and charge status to the utility operator, who transmits energy mix, real-time pricing and availability back to the vehicle.
- Allows the utility operator to wirelessly advise the vehicle to maximize the charge rate when a surplus of clean energy is available, and to minimize charge rate when it is not.

The off-board charging stations will inform the user, provide an opportunity for user input to the recharge process, and manage the billing automatically.

Joint activities include a U.S. technology transfer meeting in Sweden and demonstration of the Volvo ReCharge PHEV concept vehicle this fall. The Smart-Charge System will be used in production-intent PHEVs from Swedish manufacturers in Test Site Sweden’s field test program in 2009. Results from the field test will be presented at the International Electric Vehicle Symposium in Stavanger, Norway (May) and the UN Climate Change Conference in Copenhagen (December).

Argonne research is supported by the DOE Office of Energy Efficiency and Renewable Energy, Vehicle Technologies Program.

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How the Smart Charge System Works
Argonne Hosts 1st International Conference on Advanced Lithium Batteries for Automobile Applications

Argonne National Laboratory and the U.S. Department of Energy’s Vehicle Technologies Program hosted the 1st International Conference on Advanced Lithium Batteries for Automobile Applications on September 15-17, 2008. Realizing the significant technological challenges preventing the use of lithium batteries for transportation applications, organizers from the U.S., Japan and Korea jointly initiated the conference.

Among available battery technologies, lithium-ion batteries have the highest capacity and energy density, and are promising candidates for energy storage for hybrid electric (HEV) and plug-in hybrid electric vehicles (PHEVs). However, technological barriers hindering the commercial use of lithium-ion batteries for HEVs and PHEVs are their high cost, short calendar and cycle life, limited low-temperature performance during cold cranking and intrinsic abuse tolerance.

Hence, the mission of the conference was to

- Enhance the global R&D effort on advanced lithium batteries for automobile applications;
- Accelerate the discussion and communication of R&D progress, achievement and problems; and
- Strengthen global collaboration in this important and challenging field.

Conference topics included:

- New cell chemistries (cathode, anode, electrolyte and electrolyte additives);
- Power and capacity fade mechanism of lithium-ion batteries;
- Advanced design for low cost materials and processes;
- Component- and system-level safety mechanisms and novel techniques to improve abuse tolerance;
- Understanding performance limitations at low temperatures at the chemistry and system levels; and
- New lithium battery systems.

The meeting was co-chaired by Dr. Khalil Amine, Argonne National Laboratory; Mr. Tien Duong, U.S. Department of Energy; Prof. Zempachi Ogumi, Kyoto University, Japan; and Prof. Yang-Kook Sun, Hanyang University, Korea.

The international audience included about 400 persons from major auto, battery and material industries, as well as national laboratories and representative universities.

Technology Spotlight

ARDAQ: Onboard PHEV Performance Evaluation

Developed by Argonne, the Argonne Real-Time Data Acquisition (ARDAQ) system provides onboard data collection and diagnostics of PHEVs.

ARDAQ is based on Controller Area Network (CAN) information collected on two separate CAN nodes. CAN technology lets microcontrollers and other devices communicate directly with one another. ARDAQ then uses a global positioning system and other sensors to simultaneously collect moment-by-moment data on 25 vehicle performance measures, including driving and engine speed; fuel flow, use and economy; hybrid battery current; frequency of battery charge; hybrid watt-hours per mile; PHEV watt-hours per mile; and length and distance of trip.

For PHEV and other vehicle platform development purposes, the compact automotive grade processor module and sensor package can be quickly installed and begin collecting information immediately when properly configured. A month’s worth of data can be stored on a 1-gigabyte USB thumb drive. Data from the thumb drive is uploaded to a personal computer after a trip is completed and can be displayed using Google Earth. Wireless data transmission for ARDAQ was demonstrated at a ChallengeX event (see ChallengeX article on page 11).

ARDAQ's development was funded by the DOE Office of Energy Efficiency and Renewable Energy, Vehicle Technologies Program.

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Sponsors supported the conference. Keystone Level sponsors included A123 Systems, EnerDel Lithium Power Systems, ExxonMobil Chemical, and Quallion. Nissan was a Platinum Level sponsor. Envia Systems was a Gold Level sponsor. Silver Level sponsors included the Alfred Mann Foundation, Air Products, and the Mann Medical Research Organization.

**R&D 100 Award: EnerDel/Argonne High-Power Battery for Hybrid Electric Vehicles**

Khalil Amine, a senior scientist and group leader at Argonne National Laboratory, and his team in the advanced battery technology group won an R&D 100 Award for their work on the EnerDel/Argonne Advanced High-Power Battery for Hybrid Electric Vehicles.

The EnerDel/Argonne lithium-ion battery is a highly reliable and extremely safe device that is lighter in weight, more compact, more powerful and longer lasting than the nickel-metal hydride (Ni-MH) batteries found in today’s hybrid electric vehicles (HEVs).

The battery does not use graphite as the anode material, which has been a cause of safety concern in other Li-ion brands. Argonne has developed a new, innovative, and more stable form of nano-phase lithium titanate (LTO) to replace the graphite. Argonne also developed a new way of making the lithium titanate that will allow easier manufacturing and provide a high packing density that can increase the battery’s energy density and provide the power needed for vehicle acceleration and charging.

The battery is expected to be less expensive than Ni-MH batteries for use in HEVs and lower in cost to make than comparable Li-ion batteries. The cost reduction is expected to make HEVs more competitive in the marketplace and enable consumers to receive an immediate payback in gas-cost savings rather than having to wait seven years for the car to “pay for itself.”

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Argonne scientists have received one hundred R&D 100 Awards since R&D Magazine introduced the award in 1964. Winning this prestigious award, dubbed an “Oscar of Innovation” by The Chicago Tribune, provides proof that the product is one of the most innovative ideas of the year, according to the magazine.

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A new, patented catalyst developed at Argonne National Laboratory has been licensed to Integrated Fuel Technologies, Inc. (IFT), a start-up company based in Kirkland, WA. The catalyst reliably and economically reduces 95 to 100 percent of the nitrogen oxide (NOx) emissions from diesel-fueled engines.

IFT plans to integrate the technology, named Diesel DeNOx Catalyst, into the firm’s existing products that reduce emissions of greenhouse gases, said IFT president Robert Firebaugh. The products could be sold to original equipment manufacturers. PACCAR, Cummins, Siemens, BASF, Corning and John Deere have all shown interest.

“The catalyst can also be easily retrofitted for installation on existing diesel engine vehicles,” said Christopher Marshall, the Argonne chemist who led the development of technology (see TransForum 7:2). “There is a potentially large pool of customers for this technology, given the 11 million diesel engines currently on the road.”

IFT is also collaborating with Argonne through a two-year research agreement to test the technology’s longevity in real-world use and to demonstrate it in real-world applications to determine if it can meet a broad array of transportation applications.

Diesel DeNOx Catalyst is economical to make and use. The technology uses inexpensive metals, copper and cerium. The catalyst is applied to a ceramic brick as a coating, like a catalytic converter, and is installed in a vehicle’s emissions system. The technology works in conjunction with the particulate matter (PM) trap’s filter. The PM trap’s filter removes soot from diesel exhaust. The soot free exhaust is then processed by the Diesel DeNOx Catalyst to remove NOx emissions.

“The key to the Diesel DeNOx Catalyst technology is the reductant,” Marshall said. “Interestingly, it is the diesel fuel that reduces the NOx to nitrogen, a harmless compound that composes about 79 percent of the Earth’s atmosphere.

The catalyst achieves such high rates of conversion because of its interactions with the hydrocarbons in the diesel fuel. The reduction in NOx emissions comes as a result of its conversion into nitrogen.”

Using diesel fuel as the reductant eliminates the need for onboard storage of compounds like ammonia or urea that existing technologies use as reductants. Compared to existing technologies, Diesel DeNOx reduces the amount of additional weight a vehicle has to carry, allowing for more efficient use of a vehicle’s fuel.

In addition, the Diesel DeNOx Catalyst has increased performance in the presence of water vapors, making it ideal for use in automotive and truck exhaust systems, where water is always present.

“Furthermore,” he said, “the ultra-low sulfur diesel fuel that will soon be required for off-road use and is now mandated for on-highway use actually extends the life of the catalyst technology, which is less effective in the presence of diesel-borne sulfur.”

Diesel DeNOx Catalyst is a low-cost technology given the usable lifetime of the catalyst, which is about 400,000 miles. A typical semi-tractor trailer or shipping and delivery service truck is driven about 45,000 miles in year, according to the American Trucking Association.

Funding to develop the Diesel DeNOx Catalyst was initially provided by Argonne’s Laboratory-Directed Research and Development program and later by the Department of Energy’s Office of Energy Efficiency and Renewable Energy (EERE), Vehicle Technologies Program.

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Impact of Drive Cycles on PHEV Component Requirements

Argonne researchers led by Aymeric Rousseau recently studied the impact of drive cycles on the component requirements of plug-in hybrid electric vehicles (PHEVs). Results showed that vehicles designed to satisfy the urban dynamometer driving schedule (UDDS) may fail to achieve all-electric-range (AER) for real word driving (i.e., the modeled PHEV used more engine energy as driving cycle aggressiveness increased). As a result, drivers would not be able to drive in all-electric mode and would have to start the engine earlier than expected. The results were presented in April at the Society for Automotive Engineers 2008 World Congress.

The Powertrain Systems Analysis Toolkit (PSAT), a software package that simulates fuel efficiency and performance of advanced powertrains, was used for the evaluation. Modeling a midsize pre-transmission parallel hybrid, the researchers studied the sensitivity of driving distance and energy consumption vs. driving cycle aggressiveness. The UDDS and six additional standard driving cycles were assessed.

Researchers Rousseau, Jason Kwon, Jeongmin Kim, Eric Fallas and Sylvain Pagerit evaluated the consequences of sizing the electrical machine and battery power to follow the UDDS and determined the number of other standard driving cycles that can be followed in electric vehicle mode. They then studied the impact of sizing the electrical components on other driving cycles. Two control modes were used. In “Engine Minimum Assistance” mode, the vehicle operated all-electrically until driving demand exceeded battery power alone and the engine provided only the additional power. In “Engine Assistance at Best Efficiency” mode, the engine was operated close to its best efficiency.

The study showed that:

- The choice of driving cycle directly influences decisions on PHEV design. A PHEV is sensitive to increased cycle aggressiveness and driving range because it will be unable to satisfy significant power demands during charge depleting (CD) mode, all electrically as designed.

- When assistance from the engine is necessary, the engine assistance at best efficiency strategy has an advantage in terms of improving driving range and lowering energy consumption of the designed PHEV. However, this strategy increases the charge depleting range, which may lead to the battery not being fully discharged at the end of a trip, thus decreasing fuel efficiency.

- A PHEV sized on the basis of aggressive driving cycles requires larger and more expensive electric components but offers AER operations, the benefits of which include qualifying for greater credits toward satisfying California Air Resources Board’s zero-emission vehicle regulation and a smoother-driving quality.

A complete copy of this conference paper can be obtained by ordering it from SAE at https://shop.sae.org/congress/2008/. Select “Technical Papers,” and then “Systems and Components.”

This research was supported by DOE’s Vehicle Technologies Program under the direction of Lee Slezak.

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In a new twist on alternative fuel racing, two winners at Road Atlanta on October 4 were determined by their environmental footprint. The U.S. Department of Energy (DOE), Argonne National Laboratory, the U.S. Environmental Protection Agency (EPA) and Society of Automotive Engineers (SAE) International worked closely with the American Le Mans Series (ALMS) to establish the Green Challenge, a race-within-a-race.

The Green Challenge measured the energy efficiency and environmental impact of each competing car. In a nutshell, the “greenest car would be a winner of this “race.” However, with four different classes of cars, 14 manufacturers, and three alternative fuels used among the competitors, a comprehensive formula and scoring system had to be developed to determine the winner fairly.

Argonne, along with SAE’s Green Racing Work Group and ALMS, developed the formula to determine the winner. The result was a scoring system that ranked cars according to the amount of energy used, greenhouse gases emitted and petroleum consumed, setting a new standard for measuring environmental impacts and introducing a new dimension to motorsport racing.

Calculations for the formula included a distance- and speed-compensated energy efficiency component and a well-to-wheel analysis that accounts for all of the greenhouse gas emissions and petroleum energy required to extract, refine and use the various fuels. Race organizers calculated a principal component of each car’s score by using Argonne’s Greenhouse gas, Regulated Emissions, and Energy use in Transportation (GREET) model to accurately compare the environmental performance of each car.

The winners of the inaugural Green Challenge were a Porsche RS Spyder that finished third in the P2 Prototype class and sixth in the overall race, and a Chevrolet Corvette that finished first in the GT1 Grand Touring Class and tenth overall. The prototypes represent the cars of tomorrow, incorporating the most advanced technologies available in the ALMS. The GT class represents the cars of today, based on production cars from some of the world’s most storied marques like Ferrari, Porsche, Corvette and the Ford GT.

ALMS also relied on Argonne’s 20 years’ experience in organizing collegiate vehicle competitions, such as last year’s Challenge X and this year’s EcoCAR Challenge. These competitions, which focus on developing and demonstrating advanced propulsion technologies and renewable fuels, have led to many innovations in today’s vehicles.

“The Green Challenge provides an outstanding opportunity to demonstrate green technologies and fuels that will soon
Spectators at the race also said the Green Racing Challenge encouraged innovations that could help to alleviate America’s energy crisis. “If they can transfer that technology to the general public, it’s something we can all benefit from,” said Mark Register of Jacksonville, Florida.

The Green Challenge will become a full-season feature in 2009, when all teams will compete for a season-long Green Challenge Championship.

Argonne’s transportation research is sponsored by DOE’s Office of Energy Efficiency and Renewable Energy, Vehicle Technologies Program, which supports the development of more energy efficient and environmentally-friendly transportation technology that will enable America to use less petroleum.

Scott Atherton, President and CEO of the ALMS said, “Where the ALMS has set itself apart is that all the technology being developed in the series has a direct link back to the road car, back to the production car. And in the GT class, it’s the actual car.”

Argonne’s transportation research is sponsored by DOE’s Office of Energy Efficiency and Renewable Energy, Vehicle Technologies Program, which supports the development of more energy efficient and environmentally-friendly transportation technology that will enable America to use less petroleum.

Steve Wesoloski, GM Racing Road Racing Group manager, hoists General Motors’ Green Challenge Trophy. Photo courtesy of ALMS.
**Version 1.8b of GREET Now Available**

The newest version of the GREET (Greenhouse gases, Regulated Emissions and Energy use in Transportation) model is now available from Argonne.

GREET allows researchers and analysts to evaluate energy and emission effects of various vehicle and fuel combinations so that the complete fuel cycle from wells to wheels and the vehicle cycle through material recovery and vehicle disposal can be considered. GREET is a multidimensional spreadsheet model in Microsoft Excel with a graphic user interface program designed in Visual Basic.

Researcher Michael Wang and his team regularly update key parameters and assumptions in the GREET model and expand the model on the basis of new research and development in fuel pathways and vehicle technologies. Today, GREET can simulate more than 100 fuel production pathways and more than 82 vehicle/fuel systems. The model has more than 9,000 registered users worldwide.

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**GREET has more than 9,000 users worldwide.**

**What’s New in GREET 1.8b?**

New fuel production pathways:
- Brazilian sugarcane ethanol,
- Corn to butanol,
- Soybeans to renewable diesel via hydrogenation,
- Coal/biomass co-feeding for Fischer-Tropsch diesel production,
- Various corn ethanol plant types with different process fuels, and
- Pet coke to hydrogen production.

Enhancements of existing pathways:
- Inclusion of three methods in dealing with co-products for soybean-based biodiesel;
- Compression energy efficiencies for natural gas and hydrogen are calculated with the first law of thermodynamics;
- Tube trailer delivery option for gaseous hydrogen to refueling stations;
- Revision of petroleum refining energy efficiencies based on recent Energy Information Administration’s survey data;
- Updated petroleum refinery processes to include hydrogen from different feedstock sources; and
- Updated corn farming energy use.

GREET is available as a FREE download at [www.transportation.anl.gov/modeling_simulation/GREET/](http://www.transportation.anl.gov/modeling_simulation/GREET/).

Funding for the development and maintenance of the GREET project was provided by the U.S. Department of Energy, Office of Energy Efficiency and Renewable Energy through the Vehicle Technologies Program, the Biomass Program and the Hydrogen Program.

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Mississippi State University Wins Challenge X

Mississippi State University is the first place winner of Challenge X, a four-year student competition that pitted 17 university teams from the U.S. and Canada against one another to engineer advanced powertrain solutions that would achieve high fuel economy and low emissions without sacrificing performance and utility. The award was announced by U.S. Secretary of Energy Samuel W. Bodman and presented in Washington, D.C., in May.

University of Wisconsin-Madison’s Second Place Challenge X Vehicle

One of the rally vehicles was used to upload ARDAQ-collected data to the Challenge X data server through a modem. The status and position of each vehicle was displayed in near-real-time on Google Earth maps (see Technology Spotlight on page 4).

Ohio State University’s Third Place Challenge X Vehicle

The second place vehicle was engineered by a team from the University of Wisconsin-Madison and used a TTR parallel hybrid electric vehicle with a 1.9L diesel engine fueled by B20 biodiesel. Ohio State University was awarded third place for its power-split hybrid electric vehicle with a diesel engine fueled by B20 biodiesel.

The next student vehicle competition, EcoCAR: The NeXt Challenge (TransForum 8:1), begins this fall. Seventeen university teams will participate (see EcoCAR on page 12).

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EcoCAR: The NeXt Challenge Teams Chosen

On May 21, the teams for the next student competition, *EcoCAR: The NeXt Challenge*, were announced in Washington, D.C. Seventeen teams have been selected from the U.S. and Canada to participate in this prestigious event.

EcoCAR is the latest in a 19-year series of Advanced Vehicle Technology Competitions sponsored by the U.S. Department of Energy (DOE), an automotive manufacturer, and managed by Argonne National Laboratory. The goals of the competitions are to stimulate the development and demonstration of advanced propulsion and alternative fuel technologies and to train the next generation of engineers to lead the industry in the 21st century.

A three-year competition, *EcoCAR* will challenge students to re-engineer a Saturn Vue donated by General Motors. The EcoCAR teams will design and build fully functional electric, hybrid, plug-in hybrid or fuel cell hybrid vehicles based on the California Zero Emission Vehicle regulations. The student teams will integrate advanced-technology power-trains, lightweight materials, aerodynamic improvements, and will use various alternative fuels such as ethanol, biodiesel and hydrogen into their vehicles.

The seventeen university teams include:
- Embry-Riddle Aeronautical University (Dayton Beach, FL)
- Georgia Tech (Atlanta, GA)
- Howard University (Washington, DC)
- Michigan Technological University (Houghton, MI)
- Mississippi State University (Starkville, MS)
- Missouri University of Science and Technology (Rolla, MO)
- North Carolina State University (Raleigh, NC)
- Ohio State University (Columbus, OH)
- Pennsylvania State University (University Park, PA)
- Rose-Hulman Institute of Technology (Terre Haute, IN)
- Texas Tech University (Lubbock, TX)
- University of Ontario Institute of Technology (Oshawa, Ontario, Canada)
- University of Victoria (Victoria, British Columbia, Canada)
- University of Wisconsin (Madison, WI)
- Virginia Tech (Blacksburg, VA)
- West Virginia University (Morgantown, WV)

For more on *EcoCAR*, see *TransForum* 8:1.
IN THE NEWS

Argonne’s Diesel DeNox, catalyst, developed by Chris Marshall, is featured in the July 7, 2008, Fleets and Fuels’ “Technology Opportunities.” Read more about this innovation on page 6 in this issue of TransForum.


USA Today quoted Bob Larsen in its report on the American Le Mans Series (ALMS) new race-with-a-race, the Green Challenge. The winner of this race will not only have to be the fastest, but the greenest, too. Read the report online at http://www.usatoday.com/sports/motor/2008-06-24-lemans_N.htm?csp=34. See more on page 8 in this issue of TransForum.


The Chicago Tribune spoke with Thomas Wallner about the omnivorous engine project, an effort to design a spark-ignition engine that can run on a variety of liquid fuels. Read more online at http://www.chicagotribune.com/news/local/chi-omnivore-21-jul21,0,2358184.story.

Voice of America spoke with Don Hillebrand about Argonne’s research into other ways to power vehicles and even alternatives to vehicles. Read the article online at http://www.voanews.com/english/2008-08-18-voa53.cfm.

Newsweek interviewed Don Hillebrand on how cell phone batteries may be the key to a new generation of alternatively powered vehicles. Read “Batteries are the Key” online at http://www.newsweek.com/id/157479.

For more press coverage of Transportation Technology R&D Center activities, visit the Press Coverage webpage at http://www.transportation.anl.gov/media_center/ttrdc_in_news.html.

New Organization and Features on the Transportation Web Site!

This summer, the Transportation Technology R&D Center web site (www.transportation.anl.gov) relaunched with a newer, easier-to-surf organization and updated features:

- Research areas are now easily accessible from left navigation
- Totally updated research projects, with more to come
- Revamped photo archives sections with downloadable photos for you to use
- Press Coverage section with stories of the Center “in the news”
- What's New describes the latest breakthroughs and licensing agreements
- Recent Highlights describes what’s happening at the Center
- Hot Topics includes research news everyone is talking about
- PSAT, GREET and other software, as well as modeling/simulation research, are now conveniently grouped together under “Modeling, Simulation & Software”
- Updated staff lists with resumes and contact information

Visit us today and see how Argonne is driving transportation research!
Khalil Amine won a R&D 100 Award for development of the EnerDel/Argonne Advanced High Power Battery for Hybrid Electric Vehicles. The battery is expected to meet the U.S. Advanced Battery Consortium’s $500 manufacturing price criterion for a 25-kilowatt battery, which is almost a sixth of the cost to make comparable Ni-MH batteries intended for use in HEVs. It is also less expensive to make than comparable Li-ion batteries.

Michael Wang received the 2008 Department of Energy (DOE) Hydrogen Program R&D Award in recognition of outstanding hydrogen well-to-wheels analysis and contributions to systems analysis at the 2008 Annual Merit Review Meeting of the DOE Hydrogen Program.

Richard Doctor, Steve Plotkin, and David Streets each received an Argonne Pacesetter Award on June 23, 2008, for their contributions to the IPCC/Al Gore Nobel Peace Prize. The inscription on the awards reads, “Richard Doctor, Steven Plotkin, and David Streets are recognized for their individual contributions to the Intergovernmental Panel on Climate Change (IPCC). The Contribution of the IPCC was recognized as a co-recipient with Al Gore of the Nobel Peace Prize in 2007. Doctor, Plotkin, and Streets made significant contributions to a number of projects prepared by the IPCC, serving as lead authors, co-chairs, and advocates in their respective areas of expertise.”

Khalil Amine was awarded a 2008 Distinguished Performance Award, which recognizes the outstanding scientific or technical achievements or a distinguished record of achievement of select Argonne employees, on June 24, 2008.

Ali Erdemir won an Honorable Mention award in the 2008 Federal Lab Consortium for Technology Transfer (FLC) Awards for his work, “Near-Frictionless Carbon Coatings.” The FLC—adding value to the federal agencies, laboratories, and their partners to accomplish the rapid integration of research and development resources into the mainstream of the U.S. economy—annually gives Awards of Excellence in Technology Transfer to recognize outstanding technologies brought into the marketplace.

A group of 18 foreign journalists visited Argonne National Laboratory on May 28, 2008, to examine the Transportation Technology R&D Center. The group, made up of print, radio and TV reporters from eight countries in Europe and Asia, were on a tour arranged by the Washington Foreign Press Center, an arm of the U.S. Department of State, to learn more about Chicago’s regional public and private alternative energy efforts.

Argonne has licensed its Diesel DeNox catalyst to Integrated Fuel Technologies of Kirkland, Washington. This technology, developed by Chris Marshall, reliably and economically reduces nearly all of the nitrogen oxide emissions from diesel fuel engines. For more on this innovation, turn to page 6 of this issue of TransForum.

Michael Wang received a Certificate of Appreciation from the DOE Office of Science in recognition of outstanding contributions and commitment to pollution prevention and
PBS’s MotorWeek, television’s original automotive magazine, recently visited Argonne’s Transportation Technology R&D Center “to learn what it really takes to make clean power sources a viable reality.” You can view the video online at http://www.transportation.anl.gov/alt_video.html.

Richard Doctor, Steve Plotkin, and David Streets receive their Argonne Pacesetter Awards.

Environmental stewardship through the development of the GREET life cycle model.

Khalil Amine received the 2008 Federal Laboratory Consortium for Technology Transfer Midwest Region Excellence in Technology Transfer Award for his work on the advanced high-power battery for hybrid electric vehicles. This annual award recognizes laboratory employees who have accomplished outstanding work in the process of transferring a technology developed by a federal laboratory to the commercial marketplace.

Nebraska’s PBS station visited Argonne’s Transportation Technology R&D Center to discuss alternative fuel technologies for its video, The Ethanol Maze. View it online at http://www.netnebraska.org/extras/ethanol/altfuels.html.
Industrial technology development is an important way for the national laboratories to transfer the benefits of publicly funded research to industry to help strengthen the nation’s technology base. The stories highlighted in this issue of TransForum represent some of the ways Argonne works with the transportation industry to improve processes, create products and markets, and lead the way to cost-effective transportation solutions, which in turn lead to a healthier economic future.

By working with Argonne through various types of cost-sharing arrangements, companies can jump-start their efforts to develop the next generation of transportation technologies without shouldering the often prohibitive cost of initial R&D alone. Argonne has participated in dozens of these partnerships and has even been involved in helping to launch start-up companies based on the products and technologies developed here.

If working with world-class scientists and engineers, having access to state-of-the-art user facilities and resources, and leveraging your company’s own capabilities sound like good business opportunities to you, please contact our Office of Technology Transfer and see how we can put our resources to work for you.

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