



In order to gain competitive advantages, the University of Michigan student solar car team runs its vehicle through wind tunnel testing as rigorously as the major manufacturers typically do.

## U of M's Solar Car Racing Team Uses Oil Dye in Wind Tunnel Test

For years, fluorescent trace dyes from Tracer Products have been used to accurately detect leaks in vehicle air conditioning and fluid systems. But the University of Michigan's Solar Car Team has come up with a rather novel use for one of the company's oil dyes — wind tunnel testing.

The U-M team is a group of students who design and build solar-powered race cars that compete in the American Solar Challenge and World Solar Challenge. Tracer Products donated its OPTIMAX 3000 rechargeable leak detection flashlight and Dye-Lite TP-3330 fluorescent oil dye to aid oil pattern flow testing for their race car, "Infinium."

The U-M student solar racing team applied a very slight coating of oil mixed with the fluorescent dye on the lower surface of the car, then took it into the wind tunnel for several hours.

The purpose was to learn more about the airflow properties of the Infinium in order to reduce aerodynamic drag and improve upon the design of subsequent cars.

The Infinium produced streaks of the oil/dye mixture when subjected to 65 mph gusts of wind, which indicated the local characteristics of the flow by its bright green fluorescent glow.

The TP-3330 dye and the OPTIMAX 3000 flashlight

greatly helped increase the visibility of the streaklines.

In the past, the U-M solar car team only used a smoke and yarn test to visualize phenomena such as flow separation.

"The oil flow visualization tests allow us to locate other phenomena, namely the point where the boundary layer of the airflow transitions from laminar to turbulent," explained Blaine Riley, head of Sourcing for the Solar Car Team.

"The yarn and smoke visualization and oil testing go hand-in-hand. The tests allow us to look at different aspects of the airflow and thus are very complementary.

"I would encourage more such testing to be taught at undergraduate aerospace programs to facilitate further development of the oil pattern method. We will definitely be using this method again.

"We will be taking a couple of 1/4-scale wind tunnel models in for testing this fall and will likely use it then, and on the car itself once the aero body is completed next spring."

As evidenced by the positive feedback from the University of Michigan Solar Car Team, Tracer Products' TP-3330 oil dye and OPTIMAX 3000 flashlight have found a new niche in the automotive arena — determining future design configurations for solar racing cars.

## U-M Students Are Victors In Army Robotics Contest

CONTINUED FROM PAGE 1

the Royal Fairgrounds in Adelaide, robots were required to map the 500-by-500-meter arena and locate and disarm mock bombs in the field without harming any simulated civilians.

Meanwhile, the U-M team fielded significantly more machines than any other team. U-M team adviser Edwin Olson, an assistant professor in the Department of Electrical Engineering and Computer Science, said that the U-M robots operated more autonomously and required lower bandwidth for communication.

"Behind the robots was an amazing team of students who spent countless hours not only building, programming and testing, but also dealing with formidable logistical challenges of putting everything together and then shipping it 10,000 miles away," Olson said.

"MAGIC2010 gave us the chance to show that our research translates to the real

world. Coming home with a check (for \$750,000)? That's an awfully nice bonus."

Open to both academic and industry participants, MAGIC's goal was to demonstrate unmanned technologies that could close the technology gap faced today in urban combat zones, Army officials said.

"While remote-controlled robots are being deployed in operational areas, we need smart, intelligent and fully autonomous systems that can take over from humans in conducting intelligence, surveillance and reconnaissance missions," said Greg Combet, Australian minister for defense personnel, materials and science.

"The ultimate aim is to make these operations much safer for our military personnel, leaving robots to carry out the dirty and dangerous work."

Score another big win for U-M's student engineers, who compete in a variety of disciplines, including now military robotics.

## Harley-Davidson Teams Up with U.S. Military on Baghdad 'Bikes'

Holiday cheer will come early for some of the 50,000 U.S. and Coalition Armed Forces serving in the Middle East. This November and December, Harley-Davidson Motorcycle Co. is teaming up with Bikes Over Baghdad for seven unforgettable and adrenaline-packed action sports performances at military bases throughout Iraq and Kuwait, all with one mission in mind — to thank the troops for their service.

"Harley-Davidson shares a deep sense of freedom and patriotism with the U.S. armed forces, and we are grateful for their many sacrifices, dedication and hard work," said Mike McCann, director of Core Customer Marketing at Harley.

"We have a long-standing relationship with the U.S. military and teaming up with Bikes Over Baghdad is a great way to show our appreciation. We are honored and excited to be a part of this tour."

Bikes Over Baghdad (BOB) is a BMX bike exhibition made up of an elite handful of the world's best action sports

athletes, announcers and ramp builders

The upcoming tour is the third of its kind, following two popular visits in 2009. McCann will be joining the team Nov. 28 - Dec. 9 as they travel to Iraq and Kuwait to perform for an estimated 20,000 U.S. troops, most of whom have little or no access to entertainment of any kind.

For the cycling athletes who make up the tour, BOB3 means putting their lives at risk to provide a few hours of escape, excitement and camaraderie with those who have given everything to protect America's freedom.

"Our mission in Iraq is simple. We want to show the troops that we care, that America hasn't forgotten about them," said Brian Kachinsky, an X Games bronze medalist who participated in the first two BOB tours and later called the experience "exhilarating, intense and life-changing."

McCann will give out various free Harley-Davidson-related clothing, merchandise and gifts at each stop.

# Home Charging Market Blossoms Around Plug-ins

By JONATHAN FAHEY  
AP Energy Writer

NEW YORK (AP) — Getting your home ready to charge an electric car will require little time or money — or a couple months and thousands of dollars.

It depends on what kind of electric car you buy, the wiring in your home and how quickly you want to juice your ride.

Electric cars are powered by batteries that are charged by plugging them into a standard wall socket or a more powerful charging station. The charging station will cut your charging time roughly in half, and reduce the chance you'll trip a circuit in your home. But it will likely cost \$2,000 or more, including installation. The price will rise if you need a new electrical panel, which could add another \$2,000.

The main thing to consider is how you are going to use your electric car.

If your commute is short, or there's a charging station near your office, you might not

need much of a charge at home. You can get away with topping off your battery overnight.

A standard 120-volt wall socket will give a car about five miles of driving for every hour of charging. That means if you had a 40 mile round-trip commute you'd be able to charge in 8 hours.

If you deplete your battery all the way most days, a charging station that is connected to a 240-volt socket, like ones used for most electric dryers, could be worthwhile.

The \$41,000 Chevrolet Volt and the \$33,000 Nissan Leaf are set to go on sale next month. Buyers qualify for a federal tax credit of \$7,500 and additional state and local subsidies in some states.

The two cars have different batteries, and different charging requirements:

- The Volt has a relatively small battery because it also has a gasoline-powered generator that powers the car when the battery runs out. Chevy expects the car to be able to go 25 to 50 miles on electrici-

ty and then an extra 300 miles or so with the help of the gas motor. A standard socket will fully charge the Volt in about eight hours. A charger will do it in four. Chevy recommends drivers first try to get by without a charger.

- The Leaf is powered entirely by electricity, and therefore has a much bigger battery. Nissan says the Leaf can go about 100 miles on a full charge. It will take 20 hours to do this with a standard outlet, and eight hours with a charger. Nissan strongly recommends a charger.

Installing a home charging station could take anywhere from a few days to a couple of months. It depends on the time it takes to get a local work permit and to have the charging station inspected after installation. The installation itself should only take a few hours.

Whether you go for a charging station or not, carmakers and utilities want your home checked out to make sure the wiring in your house and in your neighborhood can handle the extra load. Plugging in-

to a regular socket that serves other appliances will almost certainly trip your circuit breaker. The extra electricity demand from a home charger can overwhelm small neighborhood transformers and kill power to a whole block.

Utilities and carmakers may have a tough time getting the first wave of buyers to heed their advice. These early adopters are used to wrestling with new technology, and they like to do things their own way.

Scott Little, 62, an experimental physicist from Austin, Texas, has reserved a Nissan Leaf, but he's not going to install the charger because of what he calls its "ridiculous" price. "The idea of paying \$2,000 for what amounts to a dryer plug irritates a guy like me," he says. Instead, he's going to use his wall socket for a while, and eventually install chargers himself at his home and his farm, 40 miles away.

At the recent Business of Plugging In conference in Detroit, much of the discussion centered around home and retail EV car charging outlets.

## DIA's Kertész Exhibit Shows World in Black-and-White

By Gerald Scott  
Staff Reporter

There's something about a black-and-white photograph, particularly the elegant, thoughtful kind, that seems like a relaxed breath of fresh air in today's rather go-go text-messaging world.

So it is with a new exhibit at the Detroit Institute of Arts that celebrates the work of 20th century photography pioneer André Kertész.

Entitled, "An Intuitive Eye: André Kertész Photographs 1914-1969," the new black-and-white photo exhibit ponders the work of Kertész, the Hungarian immigrant who worked in both Paris and New York City in the prime of his prolific career.

The exhibition surveys Kertész's career with nearly 100 photographs taken in Hungary, Paris and New York, many of which are drawn from the DIA's own permanent collection. The DIA's Nancy Barr is the curator of the exhibit.

Also, Nancy Sojka, curator of prints and drawings, and department head of Prints, Drawings and Photographs at the DIA, helped introduce the Kertész exhibit at a public talk by a former *New York Times* photo editor recently.

Of the exhibit, Sojka observed, "It spans his career from the beginning of World War II through the 1960s," she said. "The majority of the exhibition is from the DIA collection with about, oh, 9 or 10 loans from the University of Michigan Art Museum.

"This is one of those kinds of shows we all feel we should do — but its time has come now.

"It also permitted us to make several key acquisitions of images by Kertész that we didn't have in the collection.

"So hopefully it is a lovely win-win-win celebrating (his career work)."

According to the DIA exhibit, for Kertész, the years spent in Paris in the early 20th century were especially pivotal.

"An Intuitive Eye" particularly highlights his Parisian photographs to demonstrate his unique style that combined the techniques and



PHOTO: ANDRE KERTESZ COURTESY OF DIA

The noted 20th century black-and-white photographer André Kertész was famous for his cityscapes of both Paris and New York. This 1929 image, entitled "Shadows of the Eiffel Tower, Paris," is just one of about 100 photographs by Kertész that are on display in a new retrospective at the DIA.

compositions of photojournalism with the aesthetic sensibilities of abstraction employed by Modernist artists.

In his photographs of Parisians at rest, play or work in the side streets, public parks and quiet corners of the city of Lights, Kertész created a vision of Paris that by now has actually helped to define the city as a place where the quiet traditions of daily life are revered.

Look for a signature photo of the Eiffel Tower casting a shadow in one of Kertész's most notable outdoor images.

It seems that Kertész was part of the proverbial "Lost Generation" of artists and writers to inhabit Paris bars and coffee shops in the late 1920s — the so-called Hemingway crowd. He later moved to New York City and spent the rest of his professional career there in the Big Apple.

Note that he was also a contemporary of fellow Hungarian photographer Robert Capa, who went on to found Magnum Photos with Henri Cartier Bresson. Capa and Bresson each expressed admiration for Kertész and the example he set in black-and-white photography circles.

So, 20th century life in Europe and America, the black-



PHOTO: ANDRE KERTESZ COURTESY OF DIA

"Washington Square, New York," above, is a 1954 photograph taken by Kertész that juxtaposes fallen snow in an urban scene.

and-white version, can now be seen through the creative lens of Andre Kertész at the

DIA through April 10, 2011.

The DIA Web site has further details about the exhibit.

## Commerce Report Says Economy Grew During 2010

WASHINGTON (AP) — The economy grew slightly faster last summer than first thought, benefiting from stronger spending by American shoppers and improved overseas sales of U.S. goods.

The Commerce Department reported Tuesday that the economy expanded at a 2.5 percent annual rate in the July-September quarter. That was better than the 2 percent pace initially estimated last month.

The pickup in growth comes after the economy slowed sharply in the spring, advancing at an anemic rate of just 1.7 percent. Still, the economy would need to grow at least twice as fast as it did in the third quarter to make a dent in the 9.6 percent unemployment rate.

That's why the Fed recently jumped in with a second

round of stimulus. The Fed announced Nov. 3 that it will buy \$600 billion worth of government bonds.

The effort is aimed at getting Americans to spend more by making loans cheaper and by boosting stock prices. But no one — including Fed Chairman Ben Bernanke — thinks the program would create the robust growth needed to ratchet down the unemployment rate.

In the third quarter, consumers boosted their spending at a 2.8 percent pace, the most in nearly four years. That was a stronger showing than the 2.6 percent pace first estimated.

Even with the improvement, consumers would need to spend more to have a significant impact on the jobs market. That's because consumer spending accounts for

roughly 70 percent of all national economic. It's the single-largest driver of economic activity.

Sales of U.S. exports to foreign customers grew at a 6.3 percent pace in the third quarter, another factor in the third-quarter bump-up. That compared with a 5 percent growth rate first estimated. A weaker value of the U.S. dollar is helping those sales. The falling dollar makes U.S. goods cheaper — and thus more attractive — to foreign buyers.

Business spending on equipment and software also turned out to be stronger. It grew at a 16.8 percent pace, compared with a 12 percent growth rate first estimated. And spending by state and local governments nudged up at a 0.8 percent rate, another factor in the upward revision.

The government first estimated that such spending dipped by 0.2 percent.

The housing market, which led the U.S. into recession, remains a weight on the economy. Builders slashed spending on housing projects at a pace of nearly 28 percent.

Tuesday's report also showed that growth in companies after-tax profits slowed in the third quarter. Profits increased at a 1 percent pace, compared with a 3.9 percent pace in the second quarter.

Looking ahead, analysts see the economy mired in a rut of slow growth and high unemployment.

Leading economists polled in a recent AP Economy Survey predict the economy will expand at a 2.4 percent pace in the October-December period. Growth would only be a tad better — 2.5 percent.