

COVER STORY

GREEN RACING GAINS MOMENTUM

Across American motorsports the idea of Green Racing is gaining momentum. With rapidly advancing technologies spurring new opportunities for innovations, race series, automakers, tracks, and researchers are getting behind the technologies and programs that explore alternate fuels, improve fuel efficiency, lower emissions, and make racing more environmentally friendly.

GREEN RACING SERIES

The Indy Racing League (IRL) converted from a blend of methanol and ethanol fuel to 100 percent ethanol in its 2007 season making it the first racing series to switch to a renewable, bio-based fuel. To compensate for the ethanol, Indy switched to a 3.5-liter Honda Indy V-8 engine from a 3.0-liter model and integrated ethanol compatible parts. Competition hasn't changed. The cars keep going at 600 plus horsepower and over 200 mph.

The American Le Mans Series (ALMS) includes alternative fuels in its green initiative. In a partnership with the U.S. Environmental Protection Agency (EPA) the U.S. Department of Energy (DOE), and SAE International, ALMS is the first racing series to institute newly developed criteria for green racing. The EPA, DOE, and SAE have established the initial criterion as the use of renewable bio-based fuel or fuels; the use of multiple engines, fuels and powertrain configurations; the use of regenerative energy powertrain technologies; the use of fuel allocations based on well-to-wheel energy and Green House Gas (GHG) analysis; and the use of emission control strategies and systems.

The kick-off of the 2008 ALMS season at the 56th running of the Mobil 1 Twelve Hours of Sebring marked the first time in history that all the cars in a major American sports car endurance classic ran on either clean diesel, E10 gasoline, or E85 ethanol.

The 2008 ALMS season will also bring the "Green Racing Challenge" award. The series wide challenge will reward the team that incorporates at least three of the five green racing requirements into the technology behind their cars. The Green Challenge will be part of the 1,000-mile Petit Le Mans race on October 4 at Road Atlanta. Final protocols and criteria are in development. ALMS is also working toward a Green Racing Cup for 2009 that will incorporate all five elements of the green racing protocols.

ALMS has the goal of giving manufacturers a laboratory to develop new technologies for racing that can be applied to automobiles for consumers. Their technical rules are designed to encourage automakers participating in the series, which include Audi, Acura, Aston Martin, Corvette, Dodge, Ferrari, Ford, Mazda, Panoz, Porsche and Saleen, to develop new technologies including alternative fuels for racing. Audi competed the last two seasons with a clean diesel powered race car. In past seasons, the



The American Le Mans Series is powered by "green" fuel.

Ethanol Promotion and Information Council (EPIC) introduced E10 (10% ethanol, 90% gasoline) to all other manufacturers in the ALMS. E10 is practically the same blend that most consumers are able to buy. This season, EPIC introduced E85 (85% ethanol, 15% gasoline) as one of its fuel options. ALMS rules also support electric hybrid race cars.

"The auto manufacturers competing in the ALMS have made it very clear that this is a direction and an overall initiative that is important to them," said Scott Atherton, president and CEO of the ALMS, in a release. "The opportunity to formally align with the EPA, DOE, and SAE International makes our platform very special and unique – to auto manufacturers now, but ultimately to consumers. At a time when nearly all of motorsports has lost its relevance regarding progressive technology or any connection from the race track to the showroom floor, the ALMS stands alone in providing a platform of solutions for our nation's automotive and transportation needs."

The development of the green racing criterion began in 2004 at a motorsports conference where topics about making racing relevant and more efficient planted ideas that gained momentum when the EPA contacted SAE for ideas on how to use racing to promote messages about reducing pollutants. The result was an SAE work group that included the EPA, academia, car manufacturers, DOE, and ALMS.

"We're starting with modest goals and building to more ambitious ones," said Wayne Juncho, manager of SAE Motorsports. "To be successful, we need green racing employed by as many race series as possible. They aren't intended for a singular event or series. Any racing series should be able to use them and build a supporting series around them. We are willing to work with those series that are interested. The whole idea is to build off the innovations and inspiration of racing and to educate the public."

The National Electric Drag Racing Association (NEDRA) based in Santa Rosa, CA is making a statement for the power and environmental advantages of electric vehicles (EVs). They sanction Street Conversion Classes, Pro Street Conversion Classes, Modified Conversion Classes, and an Extreme Street Class. They also have divisions for concept cars, dragsters, high school, high school modified, and motorcycles. The divisions are further classified by voltage, which ranges from 24 to 348 volts. Every class encourages the experimentation and application of new EV technologies. NEDRA's are quiet, but they do not lack speed and competition. The Current Eliminator V dragster at 390 volts holds a 7.956 second record at a speed of 159.85 mph on the quarter mile. The Killacycle at 374 volts reached a speed of 160.69 mph for a 7.991 second record.

GREEN TRACKS

Green racing extends beyond fuel and engines. Infineon Raceway in Sonoma, Ca is focused on recycling. The track collected almost 16 tons of recyclable materials at its 2007 major events that include NASCAR Sprint Cup Series, NHRA POWERade Drag Racing Series, IndyCar Series and the AMA Superbike Series. Since the raceway started recycling in 2004 more than 56 tons of glass, plastic, aluminum cans, and other materials have been collected. Infineon Raceway is the only major racing facility in the country with such a comprehensive recycling program.

"We didn't have any pressure except from ourselves to start recycling," said Infineon President and General Manager Steve Page. "With so much solid waste on weekends, recycling is positive, particularly because Sonoma County has strained landfill capacity. We take it away to put it in a recycling program instead of the landfill. We've had an overwhelming response."

Working with Environmental Event Management Group in San Diego, CA, Page discovered that going green isn't costly. "The bottom line is the first thing you look at," he said. "One thing we discovered is that the program is economically viable. We were spending a lot of money with companies to haul off the garbage. With Environmental Event Management, it's cost neutral."

Infineon also works with Safety Kleen Systems, Inc. to recycle and refine motor oil, gasoline and antifreeze from their events. Safety Kleen provides similar services at 64 race tracks and drag strips.

Dave Risdon, CEO, and Sam Barnett, vice-president of development, have combined all the elements of green racing to position High Rock Raceway in Spencer, NC as the "first green race track in the world." High Rock is also the only dedicated road course in North Carolina. Located between Greensboro and Charlotte off I-85, it will have a 2.15 mile, 40 foot wide asphalt track designed by Elliott Forbes-

Robinson, a renowned professional road racer. The track will host amateur events with groups like the Sports Car Club of America and the National Auto Sports Association. Barnett is working to book ALMS, IRL, Grand Am and AMA races in the future.

Their emphasis on green starts with the construction of the commercial, residential, and track facilities with recycled materials, Energy Star appliances, and LED lighting. All construction will meet North Carolina Healthy Built standards. They've already joined the Anheuser-Busch recycling program and will have facilities to recycle motor oil and coolant. "The whole site will be centered on green," Barnett said. "Everything will reduce the environmental impact all the way to having the hotdogs in wrappers made from recycled paper."

They are also focusing on what will be on the track. Discounts on track rental will be available to those testing alternative fuels and technologies. They're planning a driving school where they hope manufacturers will showcase their new technologies. "We think that green racing is the direction that we should be going for the long term sustainability of the industry," Barnett said. "We want to create the pattern of reducing consumption and minimizing the environmental impact of racing itself by promoting higher fuel economy and alternative fuel technologies like hydrogen, ethanol blends, ethanol, and diesel."

Barnett hopes High Rock will get people excited about racing with three-fold competition, manufacturers, drivers, and technology. "Green racing is trying to race by minimizing the environmental impact. A lot of people think that makes racing less interesting. That's not our experience. We think it's more exciting because you have all these different technologies. You can have diesel versus gasoline versus hydrogen."

High Rock is slated to open in late 2008. They hope the track becomes a model. "We looked at the fact there are racecars out there that are low emission," said Risdon. "We realized we can use the track as a platform to promote these technologies. The demographic that will come to the track will probably be younger. They are going to look at the fact it's fun to race, but they don't want to harm the environment. We think they will be more active because of the green technologies that will be involved."

"We can make a bigger splash by serving as the model," Barnett said. "We don't think a green racetrack should be news. We want green to be the way you run a track."

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Photo courtesy of Rush, Current Eliminator Race Team

The Current Eliminator V Electric Dragster

GREENER RESEARCH

Ford Motor Company, a sponsor of NASCAR, NHRA, Grand Am, FIA, Drifting, the Mustang Challenge, and World Rally Championship, is researching several options for new types of propulsion systems. Hydrogen fuel cells and hydrogen internal combustion engines are two examples. They started their hydrogen research in the early 1990s and released their first prototypes in 2001. "We have an estimated 600,000 hydrogen fuel cells globally in fleets in the U.S. and Canada that are for research only," said Allen Hall, a spokesperson for Ford technology and powertrains. "We have plug in hybrids in a test fleet of 20 vehicles in California to see the impact of the technology on the electric grid as well as to advance the battery technology."

Ford has built and tested a Ford Fusion 999 Hydrogen Fuel Cell racecar. The result was a new land speed record at the Bonneville Salt Flats for a hydrogen powered car of 207.297 mph. The hydrogen racecar is a partnership between Ford, the DOE, and the Ohio State University Center for Automotive Research. OSU's students previously built an electric vehicle that set a land speed record of 314.958 mph. Ballard Power Systems, Inc., a leader in hydrogen fuel cell technology, and Roush Racing partnered in the project as well.

"Bottom line, we're researching all of these potentially advanced systems for availability to our customers in the future. Racing is always good to test new technologies. Some are so far in the future, at this point, there's no reason to race them yet," Hall said.

Kevin Kennedy, communications manager for Ford Racing Technology, is keeping an eye on the horizon for the opportunities to take Ford's technology racing. American Le Mans and open wheel series are possibilities. He knows that moving technology into NASCAR is a multi-faceted challenge. "NASCAR just went to unleaded fuel a year ago and is now anticipating fuel injection. A lot of what has to happen in NASCAR has to make sense for the fuel supplier and for car manufacturers. I think we'll be in the sportsman classes first before getting up to the professional ranks," he said. "Car companies are geared toward long-term strategies for automotive use, and it's way too early to tell where it's all going."

The newly created Biofuels Center of North Carolina is looking at how to maximize natural resources in the state to spur the creation of a biofuels industry. One of their first jobs is to develop a body of research relevant to North Carolina. "Very little research has been done relative to North Carolina," said Norman Smit, marketing and communications director for the Biofuels Center. "The research is specific to the Midwest. For the first generation of fuels, we want to identify crops and feedstocks that are viable for this part of the U.S."

Smit, who once reported on the F1 series while living in South Africa, is excited about the possibilities of working with the motorsports industry to develop applications for biofuels. "If you're driving a modern diesel, you can run 100 percent biodiesel in it, and actually get more out of it. It's clean burning and has a



Photo courtesy of Killacycle

The Killacycle (Electric Motorcycle), is powered by A123 Systems Lithium Ion cells.

pleasant aroma," Smit said. "The rules in motorsports are very specific so the engine technology has to be adapted. Using biofuels in the engine is a win-win for North Carolina to supply a class of racing with a fuel that's made here."

Biofuels are still a few years away. Production capabilities are yet to be developed in the state. One plant is certified and has broken ground. Once the first generation of biofuels is developed from crops like corn, there are still many questions about future sources for biofuels like algae.

"Algae are spheres of oil with no supporting infrastructure like corn," said Jim Cuttino, director of the NC Motorsports and Automotive Research Center at UNC-Charlotte. "They are a very efficient form for biofuels. To create an algae farm, you need tubes with water, the right conditions, and the water will turn green. How do you produce enough? How do you figure out how to circulate it because once algae forms sunlight can't get to the bottom layers."

Cuttino accepts that for a while there will be more questions than answers about biofuels and the concept of green racing. **"Green racing addresses where fuel comes from and what happens when you burn it. Everyone has caught on that we need to be doing something, and now they're figuring out what we need to do,"** Cuttino said. **"So much is pie-in-the-sky when it starts out. Hydrogen fuel cells started out as a stretch. This is a great effort and a huge shot in the arm for racing."**

A shot that's turning today's green markets and their possibilities even greener. 🌱