

## GREEN RACING UPDATE

### The 2008 ALMS Petit Le Mans Green Challenge™ Race

**O**n October 4, 2008, the American Le Mans Series (ALMS) conducted the historical first Green Challenge™ race as part of its Petit Le Mans sports car race at Road Atlanta Race Track in Braselton, Georgia with over 110,000 fans attending. Thirty-seven cars competed in the Green Challenge™ at the race. The ALMS Green Challenge™ was conducted in coordination with EPA, the Department of Energy, and SAE International.

The Green Challenge™ was a race within the ALMS Petit Le Mans racing event. The Petit Le Mans race is a 1,000-mile high-speed endurance race run on a 2.5 mile road track with varying curves and hills. Racing officials tracked the fuel use of each race car and applied life cycle energy and environmental analyses to the data to determine the Green Challenge™ winners for the Prototype and GT classes. (See the Green Racing Initiative Fact Sheet.) Trophies were awarded to the manufacturers of the vehicles and to the racing teams of the winning vehicles.

ALMS qualified to issue green racing challenge awards under the SAE International Recommended Green Racing Protocols (SAE J2880, October, 2008) by including multiple powertrain technologies (spark ignition gasoline, including some with direct injection, and diesel), renewable fuels (E10 in gasoline and cellulosic E85), and a vehicle with an electric hybrid energy recovery system. The car with the electric hybrid system, the Corsa Motorsports Zytek, was unfortunately not able to run the race with the system because of technical difficulties. Nevertheless, it was a race entry.

## Green Challenge™ Awards and Scoring

The principles followed in determining the Green Challenge™ awards included:

- The award recognized the fastest car with the smallest environmental footprint.
- It provided incentives for improved efficiency, use of renewable fuels, and reduced greenhouse gas emissions.
- It did not pre-ordain the winner. Any technology and fuel could win if they are fast enough, efficient enough, and green enough.
- Life-cycle analyses were used to assess both the on-track impacts and the upstream environmental and energy impacts of the fuel.

The life-cycle analysis uses three factors to calculate a score for each car, with lower scores being better. The factors are energy efficiency, greenhouse gas emissions, and petroleum displacement. Using the amount of fuel used during the race, these factors are calculated for both the upstream (well-to-tank) component and the downstream (tank-to-wheels) component, and then added them together for the score. Adjustments are made to account for vehicle mass and average speed in order to prevent cars from running slow just to get a better score. The car with the lowest score is the winner.

### The Winners

The winning Prototype car in the Green Challenge™ with a score of 30.69 was the Number 6 Penske Porsche equipped with an E10 powered gasoline direct injection (GDI) engine. The direct injection technology allowed the Porsche to be very fuel efficient during the race. Another gasoline direct injection Porsche came in second, only 0.532 points behind. A clean diesel Audi TDI came in third, although it was only 0.629 points or about 2% behind the winning car. The Audi TDI was in a close race all day with a Peugeot diesel competitor which caused the car to be less fuel efficient. The record

11 caution periods also was an advantage to the Porsche GDI vehicles because of their ability to save more fuel during caution laps. This result demonstrates that fuel choice is only part of the strategy for victory. It is also very important how efficiently the fuel is used, while allowing the car to remain competitive. The GDI technology provided the advantage.

The winning GT car was GM Corvette Racing's Number 3 C6R Corvette which was fueled with cellulosic (non-food source) E85 ethanol, with a score of 20.391. Coming in second was the E85 fueled Drayson-Barwell Aston Martin Vantage with a score of 20.479, and coming in third was another E85 Corvette at 20.652. The winning Number 3 Corvette was also the winner of the GT1 racing class, and outpaced the Aston Martin by an average of 3.3 mph. However, the Aston Martin retired from the race near the end with mechanical problems. Tom Wallace, General Motors Global Vehicle Chief Engineer for Performance Vehicles, called the Green Challenge™ win "Corvette Racing's greatest victory."



In the winners circle presenting the Green Challenge™ trophies were Margo T. Oge, EPA Director of the Office of Transportation and Air Quality, Pat Davis, the Department of Energy's leading official for vehicle technologies and renewable energy and efficiencies, and Dave Schutt, SAE International's Chief Operating Officer and Executive Vice President. Trophies were presented to manufacturer representatives from Porsche and GM. Trophies were also presented to the winning race teams.

At a press conference following the race Margo Oge commented, "Racing has always been associated with high power and fast driving as well as innovation in safety and performance, but (up until now) we have never been able to put racing and green(ing) together. The truth is we are facing two very severe issues in this country. We have to be self-sufficient when it comes to energy. Burning fossil fuels creates greenhouse gas emissions and has severe consequences. Our hope is by starting here and introducing environmentally friendly technologies, we will continue and transfer such developments to what you and I drive on a daily basis. I applaud the American Le Mans Series and all involved in this effort."

ALMS will conduct the Green Challenge™ competition again in 2009 as a championship series. Teams will start with a points allocation at the beginning of the year and have points deducted every race according the Green Challenge™ finish position for that race. The winner in each class will be the team with the least amount of points at the end of the season.