

CHROMATOGRAPHY AND MATERIALS CHARACTERIZATION

PERKINELMER INSTRUMENTATION GOES THE DISTANCE TO ENSURE FUEL QUALITY IN INDY RACING

PerkinElmer and fuel testing in Indy Racing

Testing and certifying fuel for purity and consistency ensures that every car competing in the 16-race 2008 IndyCar® Series schedule, including the Indianapolis 500, is on a level playing field. Fuel testing is one of more than 130 check points on a race car — from head and neck restraints to tire pressure and engine components — all to ensure that the first car to cross the finish line got there fairly.

Parked in the garage area of each IndyCar Series track is a sophisticated fuel analysis laboratory. Inside, PerkinElmer scientists analyze and report their findings of fuel composition to certify it is race-ready. PerkinElmer has been testing and certifying racing fuel since the inception of the IndyCar Series in 1996.

PerkinElmer helps Indy Racing League go green

IndyCar Series regulations stipulate that the fuel must be 100 percent fuel-grade ethanol, which is a blend of 98 percent ethanol with 2 percent 98 octane unleaded gasoline. The IndyCar Series, guided by PerkinElmer experts, migrated to fuel-grade ethanol in 2007 to achieve more efficient engine performance and contribute to the lessening of dependence on oil-based fuel.

Brett Boyer, Senior Service Engineer, PerkinElmer Life and Analytical Sciences, runs the onsite testing lab. PerkinElmer is the official instrument supplier and fuel certification partner for the Indianapolis 500 and the IndyCar Series. Boyer and his PerkinElmer team test and certify fuel purity and consistency from the source of the fuel and through the supply chain to onsite on race day at IndyCar Series races in the United States.



From methanol to ethanol

For many years, 100 percent methanol was used in the high-performance race car engines. In 2006, the IndyCar Series introduced a blend of 90 percent methanol and 10 percent ethanol as a transition fuel before full incorporation of ethanol. The IndyCar Series' conversion to the renewable fuel was introduced by the late Paul Dana, a driver who was killed in 2006 during a practice session, and was supported by the Ethanol Promotion and Information Council (EPIC), a non-profit alliance of ethanol industry leaders.

The use of the Clarus GC for fuel analysis

PerkinElmer tests use its Clarus® chromatography (GC) controlled by a PerkinElmer TotalChrom® chromatography data system for collecting, processing and reporting data. The Clarus GC separates the fuel to identify additives that may give one car a competitive advantage over others. The testing takes approximately 5 minutes and can detect impurities down to concentrations of 0.10 percent.

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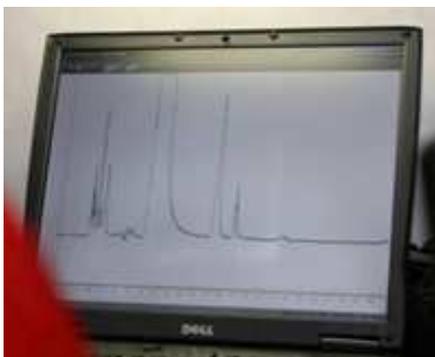
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Kevin Blanch, Technical Director for the IndyCar Series, relies on PerkinElmer for testing the fuel in each car a minimum of three times over the course of a racing weekend. The analysis yielded positive results upon occasion.

To determine the ideal fuel blend, PerkinElmer and IndyCar Series engineers tested a range of options using a dynamometer to gauge the BTUs and RPMs. The transition required minor calibration changes only since the IndyCar Series cars were already running methanol, another alcohol-based fuel. To further protect engine integrity, a Honda engineer is assigned to and stationed with every car to troubleshoot engine issues. Series officials also decided to reduce the size of the fuel cell from 30 gallons to 22 gallons, because ethanol is more fuel efficient than methanol.



The use of the Spectrum™ 100 in engine lubricant analysis

The composition of engine oil also can impact performance. PerkinElmer analyzes the race cars' engine oil lubricants for contaminants and conformance to IndyCar Series requirements. The PerkinElmer Spectrum™ 100 infrared spectrometer is used for both the IndyCar Series and Indy Pro Series and provides instantaneous results to ensure contaminant-free performance. With the conversion to ethanol, the IndyCar Series offers fans and drivers alike all of the fast-paced excitement they've come to enjoy — and the added benefit of a safe, renewable energy source that ensures that the IndyCar Series is on track for a safe, clean and environmentally sound future.

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