HYPERFUELS and Fuel 1 Rethink Racing Fuel From Formulation to the Pump

EPARTRADE's Race Industry Now examines the chemistry behind an isobutanol-based 93-octane gasoline and the portable dispensing stations designed to bring it to tracks, marinas and performance shops.

A racer can select the right octane for an engine, but that decision is only useful if the fuel is consistent, properly stored and available when it is time to run. In EPARTRADE's Race Industry Now Episode 638, HYPERFUELS and Fuel 1 Solutions addressed that challenge from two directions: the formulation of the gasoline itself and the infrastructure used to deliver it.

The discussion featured Jess Hewitt, President of HYPERFUELS; Connor Chakales, Senior Director of Business Development at HYPERFUELS; and Bill Marr, Director of Fuel 1 Solutions. Brad Gillie of SiriusXM Channel 90's *Late Shift* hosted the webinar.

Their focus was Pure Fuels, a street-legal, ethanol-free 93-octane gasoline, and Fuel 1's portable micro stations. Together, the companies aim to make a premium fuel available through familiar purchasing options, from five-gallon pails to on-site dispensing at dealers, tracks and marinas.

Why replace ethanol with isobutanol?

Chakales explained that Pure Fuels uses isobutanol in place of ethanol as its oxygenate. The distinction matters most in applications where gasoline may sit for extended periods or where a vented fuel system is exposed to humid conditions.

Ethanol is hygroscopic, meaning it attracts water. If enough water enters an ethanol-blended gasoline, the mixture can separate, changing the composition of the fuel left in the tank. Water exposure can also contribute to corrosion and problems with some fuel-system components. Those concerns are familiar to owners of boats, motorcycles, classic vehicles, race cars and seasonal equipment that may spend weeks or months between uses.

Isobutanol is also an alcohol, but its four-carbon molecular structure gives it different properties. Chakales said it contains nearly 90% of gasoline's energy content, compared with approximately 67% for ethanol. He also described greater resistance to water-driven phase separation and improved compatibility, relative to ethanol, with many of the tanks, hoses, primer bulbs, gaskets and O-rings evaluated in the research he presented.

Volatility is another part of the equation. Reid vapor pressure, or RVP, describes a fuel's tendency to evaporate under specified conditions. According to Chakales, ethanol typically raises the RVP of a finished gasoline blend, while the isobutanol formulations discussed in the webinar lowered it by approximately 1 psi on average at concentrations of 12% to 16%. He said weathering tests also found lower evaporation loss and a lower evaporation rate for the isobutanol blend than for E10.

For a technical audience, these are distinct questions. Energy content does not, by itself, establish a horsepower gain; vapor pressure can affect fuel behavior in different operating conditions; and resistance to phase separation matters most when water enters the system. HYPERFUELS' case for the formulation rests on how those properties work together in a finished gasoline.

The marine research behind the formulation

Marine applications helped drive the research Chakales discussed. Boats combine vented tanks, humidity, water exposure and long storage periods, making them a demanding test of fuel stability and material compatibility.

Chakales described a research effort involving engine manufacturers, the U.S. Department of Energy, Argonne National Laboratory, the National Marine Manufacturers Association and the U.S. Coast Guard. According to the figures he presented, the broader program accumulated more than 3,300 documented hours: over 2,200 hours of endurance and durability testing, 750 hours of field operation and more than 430 laboratory hours. He said it covered carbureted and fuel-injected engines, four-strokes and two-strokes, and applications ranging from outboards and inboards to personal watercraft.

One study used matched engine pairs running E10 and an isobutanol blend. Chakales said each engine completed a 350-hour useful-life cycle before researchers inspected components including pistons, cylinder heads, bores, valves, ports, connecting rods and bearings. He reported that the engines running the isobutanol blend completed the cycle without abnormal wear or a durability penalty attributed to the fuel and passed the reported emissions evaluations.

He also cited cold-start work at 31°F. Under those test conditions, he said, Mercury four-stroke engines started approximately 40% faster on average with the isobutanol blend than with the comparison fuel. Chakales cautioned against treating that result as a universal claim: it describes the engines and conditions tested.

The Coast Guard evaluated a 16% bioisobutanol blend as an alternative to E10, Chakales added. Its program progressed through materials, bench, field and operational phases, including use in boats equipped with Honda and Mercury outboards. That matters because fuel behavior in a laboratory does not answer every question about storage, handling and operation in the field.

These studies form the technical background HYPERFUELS cited for Pure Fuels. The webinar did not establish that every engine will gain power, fuel economy or starting performance simply by switching fuels; engine requirements, calibration and operating conditions still matter.

Consistency matters to engine builders and tuners

During the audience discussion, the speakers turned to a question familiar to anyone who calibrates an engine: how closely will one batch of fuel match the next?

Chakales said HYPERFUELS uses defined blend stocks and controls the percentage of isobutanol in the finished fuel. Variations in octane sensitivity or vapor pressure can change how an engine responds and, in some applications, prompt adjustments to its tune. The company's goal, he said, is to limit those variables and deliver a consistent product throughout the year.

He also explained how HYPERFUELS intends to manufacture fuel near the markets it serves. The company obtains gasoline blend stock through existing regional terminals and introduces isobutanol downstream. That approach uses established distribution networks instead of requiring a finished fuel to be transported from a single production point to every customer.

For larger buyers with suitable storage, Chakales said HYPERFUELS can evaluate direct delivery into existing tanks. The practical arrangement depends on location, tank configuration, expected volume and available transport options. It is a different proposition from a shop buying a few pails, but both routes are part of the same distribution plan.

Fuel 1's portable stations address the last mile

A technically promising fuel still needs a place where customers can purchase it. Marr presented Fuel 1's answer: portable dispensing stations that can be placed at locations where installing a conventional fuel system may be impractical or too costly.

He described a 500-gallon single station and a dual station with two 500-gallon tanks. Fuel 1 also discussed larger portable configurations for higher-volume sites. A shop can begin with packaged fuel or a 250- to 275-gallon tote, then consider a dispensing station as demand develops.

Marr said the micro stations use solar power, with a 110-volt backup available. Fuel 1 monitors tank levels, battery status and location remotely, allowing it to plan refills and service. The stations shown during the webinar also incorporated point-of-sale equipment; Marr described double-wall, self-contained designs and hose-reel configurations for marina installations.

For a racetrack, powersports dealership or marine dealer, that changes the operational question. Rather than building an underground installation before knowing how much premium fuel customers will buy, a location can evaluate a portable on-site system. Site requirements and approvals would still need to be assessed for each installation.

Marr said Fuel 1 supplies and manages stations for participating dealers under a revenue-sharing arrangement. Its responsibilities include equipment, transactions and refilling, while the host location provides access to customers. He discussed an initial rollout through Suzuki Marine dealers, with other applications across marine, powersports and racing.

The webinar also addressed the containers racers commonly carry to events. Five-gallon pails remain one of HYPERFUELS' sales formats, but an on-site pump could reduce the number of containers a customer needs to transport, handle and dispose of. For an event venue, fuel availability at the point of use may be as valuable as the formulation itself.

Where 93 octane fits in racing

The speakers drew a practical boundary around the product. Pure Fuels is a 93-octane gasoline intended for compatible engines that call for premium fuel. Its potential applications include performance cars, motorcycles, ATVs, UTVs, boats, personal watercraft, generators and small engines, as well as portions of the recreational racing market.

It is not a substitute for a specialized high-octane competition fuel when an engine's compression, boost, tune or racing rules require one. Nor does a higher octane number automatically produce more horsepower in an engine that cannot make use of the additional knock resistance.

That distinction leaves a substantial opportunity for tracks and shops. Many customers want a dependable premium gasoline and a convenient place to buy it, without needing a purpose-built fuel for an extreme engine combination. Marr said Fuel 1's initial dispensing focus is the 93-octane product, while HYPERFUELS has broader fuel offerings.

On pricing, Chakales said HYPERFUELS' production approach keeps its cost connected to the conventional gasoline market. He described a typical target of roughly $1 to $2 per gallon above a local E10 93-octane option, while actual pricing depends on the market and delivery arrangement.

For shops, tracks and fuel distributors, the companies offered several entry points: stock packaged fuel, discuss bulk supply, evaluate an existing compliant tank, or explore a Fuel 1 station. The appropriate choice depends on customer demand and how much fuel a location expects to move.

The technical story in Episode 638 is therefore bigger than an octane rating. HYPERFUELS presented isobutanol as a way to address water tolerance, energy content, material compatibility and volatility in a premium gasoline. Fuel 1 presented a monitored, portable dispensing system intended to make that gasoline accessible where customers already race, service and store their vehicles. For the racing industry, the test will be how consistently the companies can deliver both the fuel and the convenience at scale.

For more information, **watch the full webinar here.**